

**AIR PERMIT DETERMINATION  
HEMLOCK TOWER  
Ravenswood, Jackson County, WV**



**Prepared For:**  
**Cellco Partnership, dba Verizon Wireless**  
18 Abele Road  
Bridgeville, PA 15017

Date: 15 January 2015



**Prepared By:**  
Mead & Hunt, Inc  
400 Tracy Way, Suite 200  
Charleston, West Virginia 25311



WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF AIR QUALITY  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
Phone: (304) 926-0475  
www.dep.wv.gov/daq

**PERMIT DETERMINATION FORM  
(PDF)**

FOR AGENCY USE ONLY: PLANT I.D. # \_\_\_\_\_  
PDF # \_\_\_\_\_ PERMIT WRITER: \_\_\_\_\_

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE): <b>Cellco Partnership, dba Verizon Wireless</b>		
2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE): <b>Hemlock Tower</b>		3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS) CODE: <b>334220</b>
4A. MAILING ADDRESS: <b>18 Abele Road Bridgeville, PA 15017</b>		4B. PHYSICAL ADDRESS: <b>2222 Crooked Run Road Ravenswood, WV 25164</b>
5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE MAP AS ATTACHMENT A): <u>From Charleston, go north on I-77 to exit 146 (Silverton). Take the exit and turn left onto Rt. 33. Take the first left onto Silverton-Hemlock Road (CR 33/3). Proceed about 1.9 miles and continue on CR12 (Crooked Run Road). Approximately 0.4 miles to a driveway on the left leading to the site.</u>		
5B. NEAREST ROAD: <b>Crooked Run Road</b>	5C. NEAREST CITY OR TOWN: <b>Ravenswood</b>	5D. COUNTY: <b>Jackson</b>
5E. UTM NORTHING (KM): <b>4306703</b>	5F. UTM EASTING (KM): <b>437840</b>	5G. UTM ZONE: <b>17S</b>
6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED: <b>Paul (Kim) Marshall</b>		6B. TITLE: <b>Real Estate Specialist</b>
6C. TELEPHONE: <b>304-422-3055</b>	6D. FAX:	6E. E-MAIL: <a href="mailto:Paul.Marshall@VerizonWireless.com">Paul.Marshall@VerizonWireless.com</a>
7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY): _____ - _____	7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19 AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED WITH THIS PROCESS (FOR AN EXISTING FACILITY ONLY): <b>none</b>	
7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST: <b>NO</b>		
8A. TYPE OF EMISSION SOURCE (CHECK ONE): <input checked="" type="checkbox"/> <b>NEW SOURCE</b> <input type="checkbox"/> <b>ADMINISTRATIVE UPDATE</b> <input type="checkbox"/> <b>MODIFICATION</b> <input type="checkbox"/> <b>OTHER</b> (PLEASE EXPLAIN IN 11B)		8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN? <input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b>
9. IS <i>DEMOLITION</i> OR PHYSICAL <i>RENOVATION</i> AT AN EXISTING FACILITY INVOLVED? <input type="checkbox"/> <b>YES</b> <input checked="" type="checkbox"/> <b>NO</b>		
10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE: <b>3/1/2015</b>		10B. DATE OF ANTICIPATED START-UP: <b>3/1/2015</b>
11A. PLEASE PROVIDE A <b>DETAILED PROCESS FLOW DIAGRAM</b> SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS <b>ATTACHMENT B. Diesel generator set at the tower site, see Attachment B.</b>		
11B. PLEASE PROVIDE A <b>DETAILED PROCESS DESCRIPTION</b> AS <b>ATTACHMENT C.</b>		
12. PLEASE PROVIDE <b>MATERIAL SAFETY DATA SHEETS (MSDS)</b> FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS <b>ATTACHMENT D.</b> FOR CHEMICAL PROCESSES, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR.		



**13A. REGULATED AIR POLLUTANT EMISSIONS:**

⇒ **FOR A NEW FACILITY**, PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ **FOR AN EXISTING FACILITY**, PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

*PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.*

POLLUTANT	HOURLY PTE (LB/HR)	YEARLY PTE (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM	0.02	0.088
PM <sub>10</sub>	0.015	0.066
VOCs	0.198	0.87
CO	0.13	0.57
NO <sub>x</sub>	0.51	2.23
SO <sub>2</sub>	0.16	0.72
Pb	-	-
HAPs (AGGREGATE AMOUNT)	Formaldehyde 0.09	Formaldehyde 0.39
TAPs (INDIVIDUALLY)*	-	-
OTHER (INDIVIDUALLY)*		

\* ATTACH ADDITIONAL PAGES AS NEEDED

**13B. PLEASE PROVIDE ALL SUPPORTING CALCULATIONS AS ATTACHMENT E.**

*CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112[b] OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27), AND OTHER AIR POLLUTANTS (E.G. POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).*

**14. CERTIFICATION OF DATA**

I, MIKE MALENICH ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A **RESPONSIBLE OFFICIAL**\*\* (PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: \_\_\_\_\_



TITLE: DIRECTOR-ENGINEERING

DATE: 1 / 13 / 15

\*\* THE DEFINITION OF THE PHRASE 'RESPONSIBLE OFFICIAL' CAN BE FOUND AT 45CSR13, SECTION 2.23.

**NOTE:** PLEASE CHECK ENCLOSED ATTACHMENTS:

- ATTACHMENT A     ATTACHMENT B     ATTACHMENT C     ATTACHMENT D     ATTACHMENT E

RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.

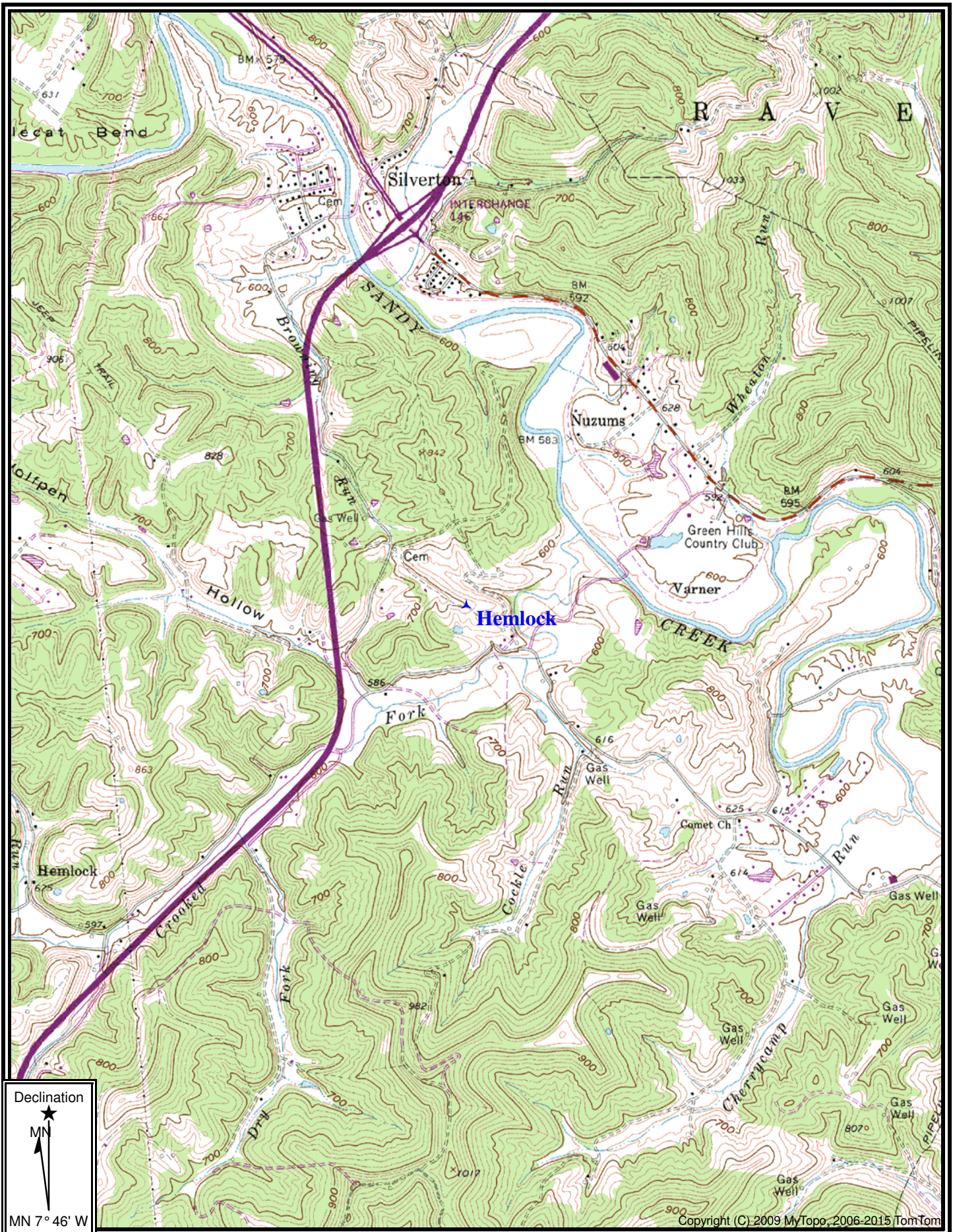
THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE:

[www.dep.wv.gov/daq](http://www.dep.wv.gov/daq)

# Attachment A

## Topo Map





Map Name: SANDYVILLE  
 Scale: 1 inch = 2,000 ft.

Horizontal Datum: NAD83  
 State Name: WV

Date Photo Revised: 1988  
 Date Published: 1960

# **Attachment B**

## **Process Flow Diagram**



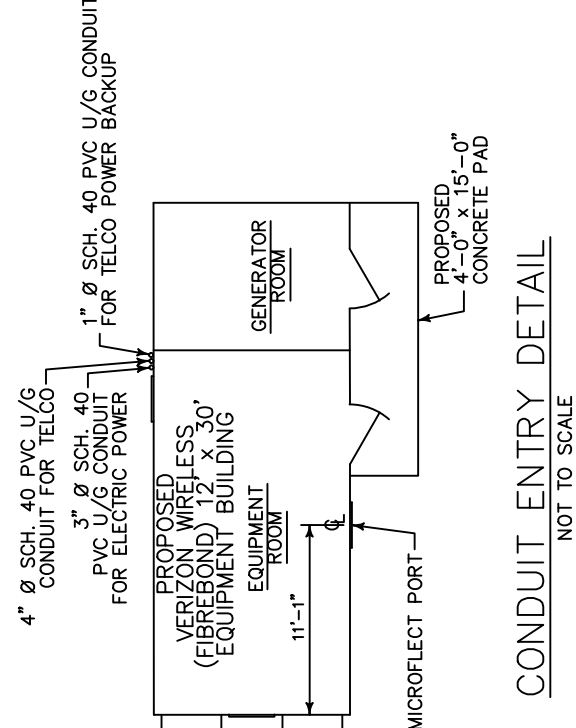
# HEMLOCK, WVA CONSTRUCTION PLAN JACKSON COUNTY, WEST VIRGINIA



**EXISTING BACKBOARD (FRONT) FACING FENCE**  
NOT TO SCALE

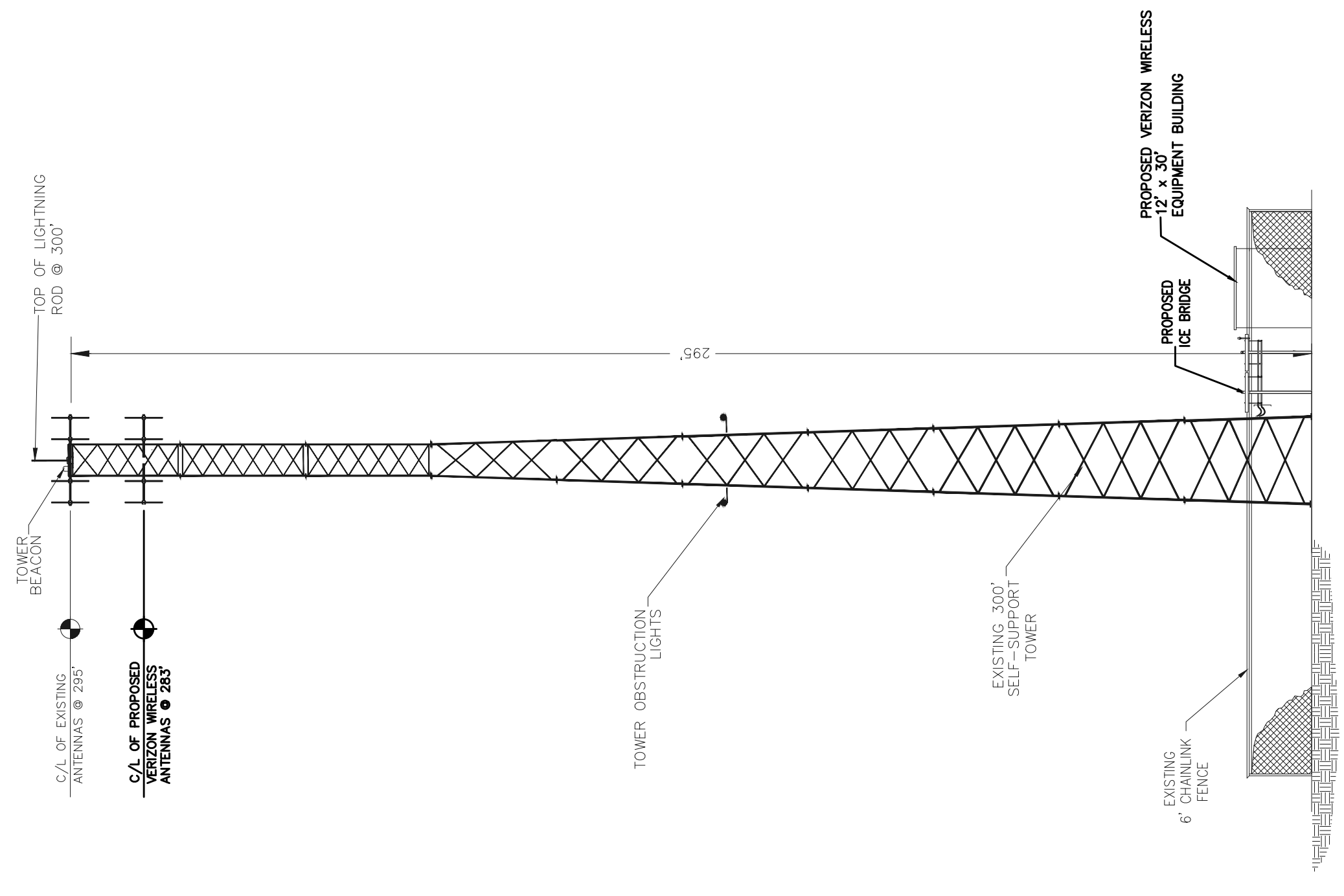
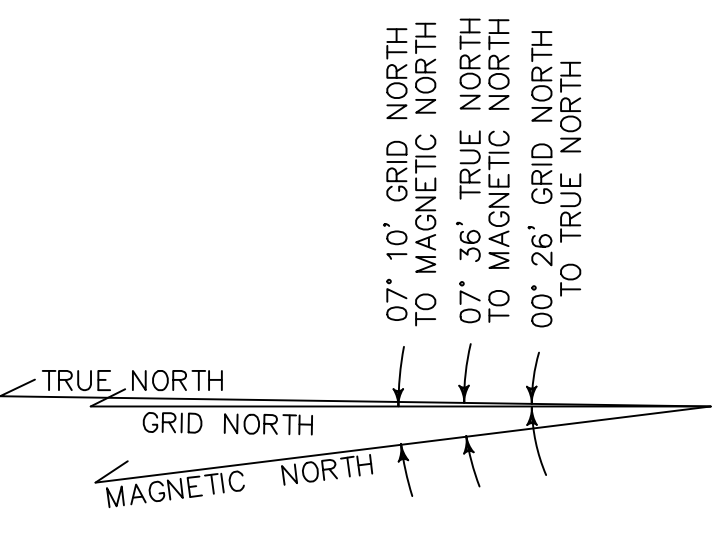
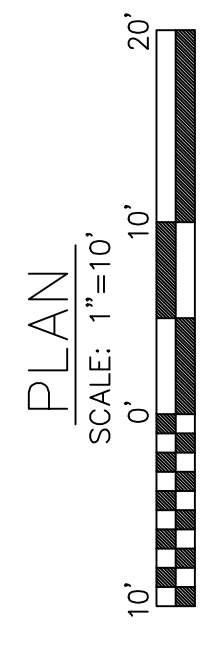
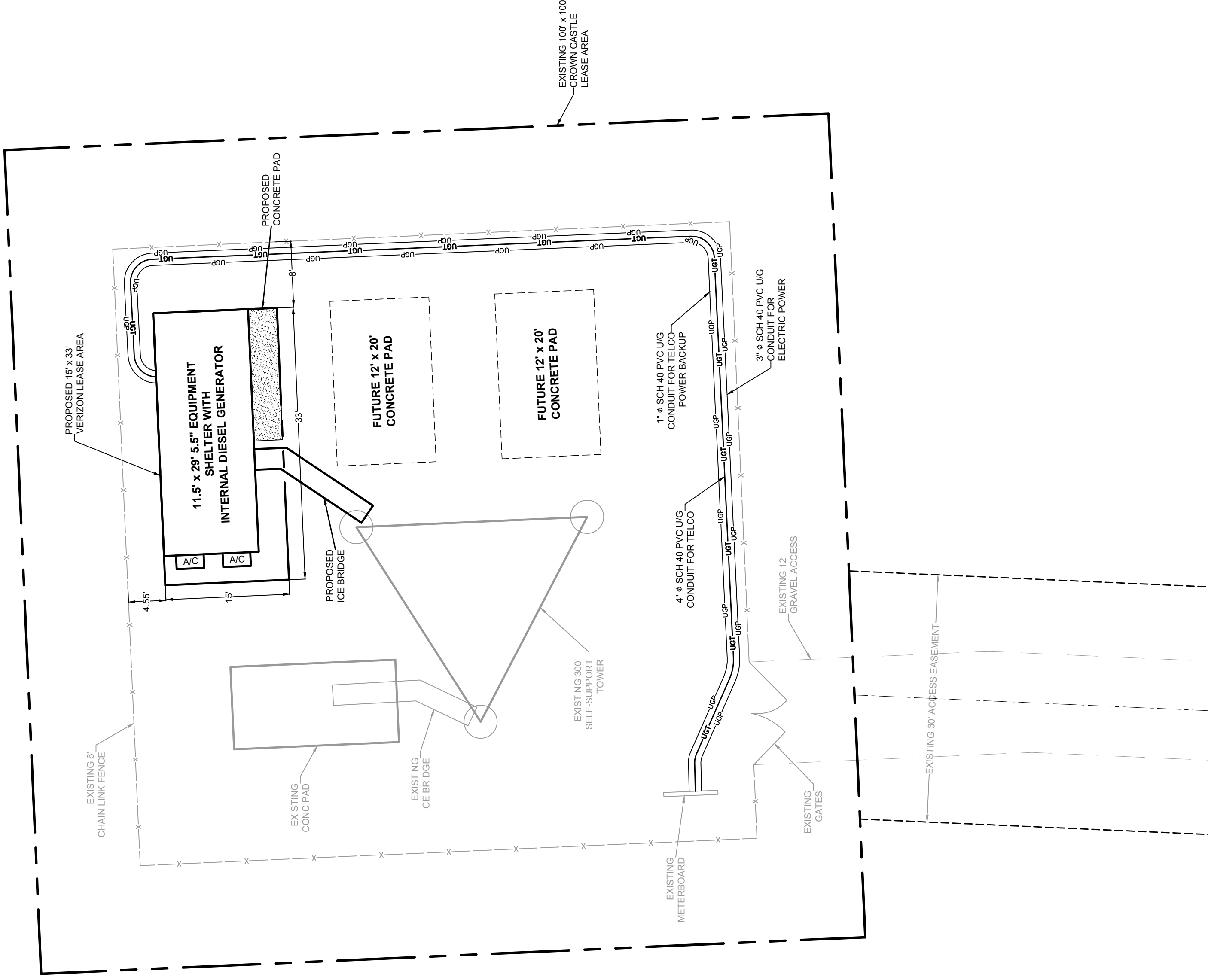


**EXISTING BACKBOARD (REAR) FACING TOWER**  
NOT TO SCALE



NO.	DESCRIPTION OF CHANGE	DATE	ISSUE	STATUS	
7					
6					
5	ANTENNA REVISIONS	MRW	BVC	IFC	7-25-14
4	ANTENNA DESIGN	MRW	BVC	IFC	6-5-14
3	REVISED ANTENNA RAD CENTER	JAC	BVC	IFC	1-10-13
2	ISSUED FOR CONSTRUCTION	JAC	BVC	IFC	12-14-12
1	VERIZON COMMENTS	JAC	BVC	REV	3-9-11
0	ISSUED FOR REVIEW	JAC	BVC	IFC	11-8-10
REV		DRAWN BY	AUTH.	ISSUE	DATE

**NOTES**



SCHEDULE OF REVISIONS	
7	
6	
5	ANTENNA REVISIONS
4	ANTENNA DESIGN
3	REVISED ANTENNA RAD CENTER
2	ISSUED FOR CONSTRUCTION
1	VERIZON COMMENTS
0	ISSUED FOR REVIEW
REV	

**FOR CONSTRUCTION**

**TIMMONS GROUP**  
17813  
7-25-14  
REGISTERED PROFESSIONAL ENGINEER  
STATE OF WEST VIRGINIA  
No. 37937

**verizon wireless**  
18 Abele Road  
Bridgeville, PA, 15017

APPROVED BY: \_\_\_\_\_ DATE \_\_\_\_\_  
DIRECTOR - IMPLEMENTATION

**CONSTRUCTION PLAN**  
VERIZON WIRELESS  
HEMLOCK CELL SITE  
PROPERTY OWNER: Crown Communications, Inc.

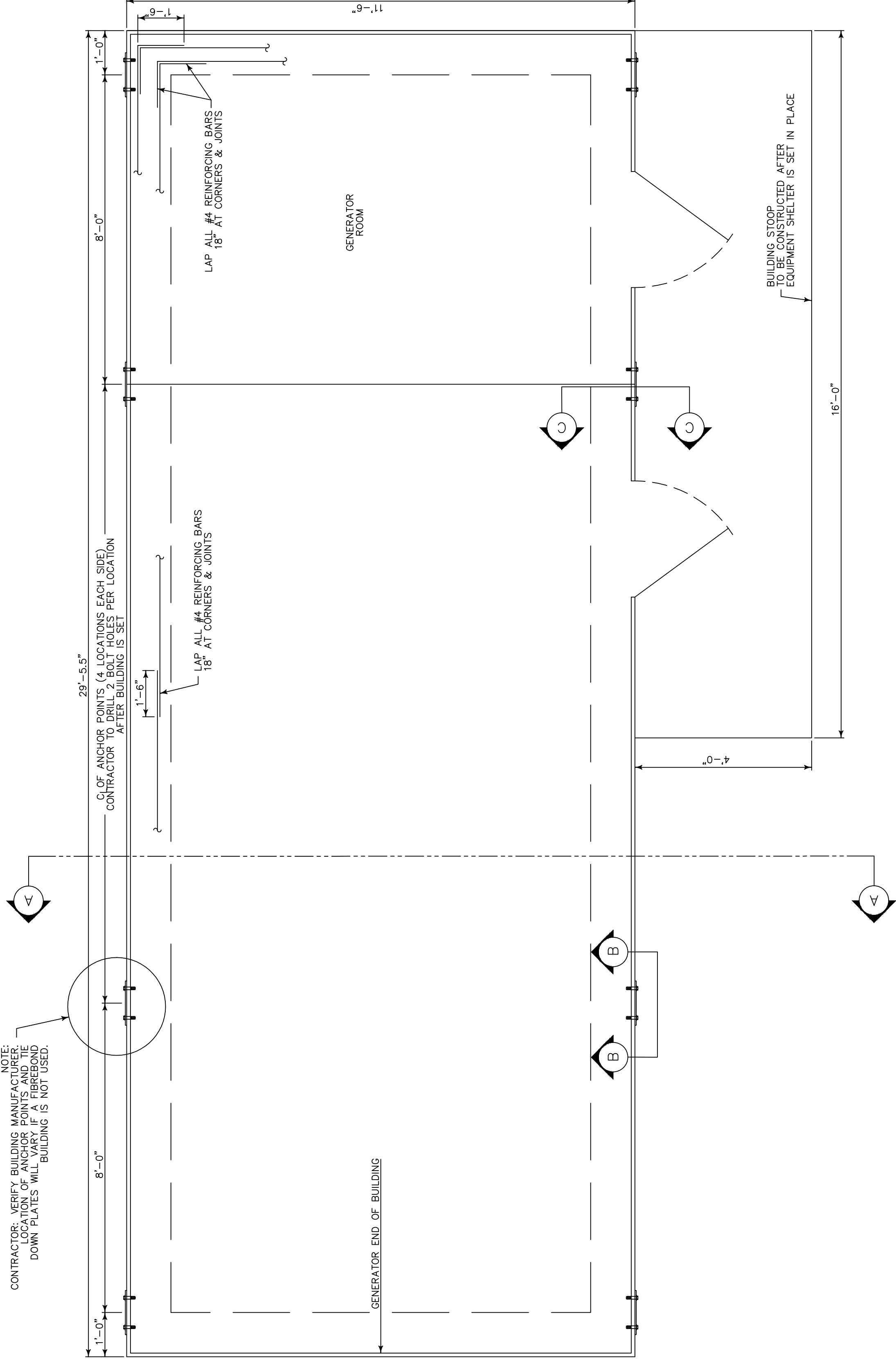
DRAWING ISSUE STATUS CURRENTLY  
A - ISSUED FOR PRELIMINARY INFORMATION ONLY  
B - ISSUED FOR MUNICIPAL REVIEW/APPROVALS  
C - ISSUED FOR PERMITTING  
D - ISSUED FOR CONSTRUCTION  
E - (SPECIAL)

DATE PRINT MADE: 7/25/14

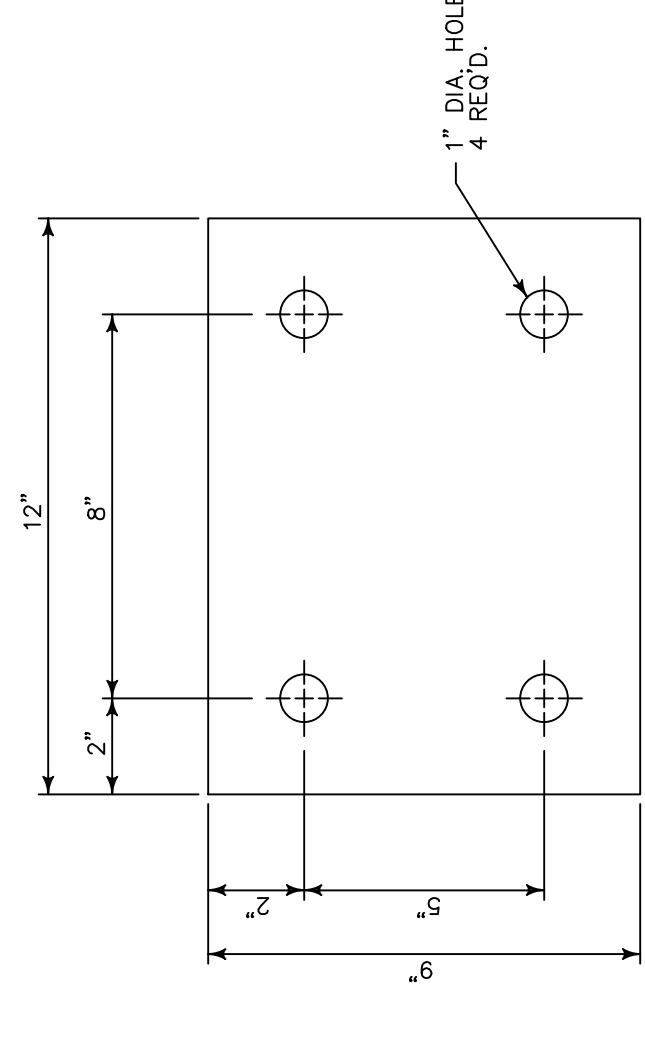
FIRST ISSUE: 02/10/2012  
DRAWN BY: A. CARROLL  
CHECKED BY: B. CROUCHFIELD  
SCALE: 1" = 10'  
PROJECT NO.: 21513  
SHEET NO.: 3 OF 6  
FILE NAME: \_\_\_\_\_  
DRAWING NO.: C-1  
DOCUMENT NO.: \_\_\_\_\_



CONTRACTOR, VERIFY BUILDING MANUFACTURER'S LOCATION OF ANCHOR POINTS AND TIE DOWN PLATES WILL VARY IF A FIBREBOND BUILDING IS NOT USED.



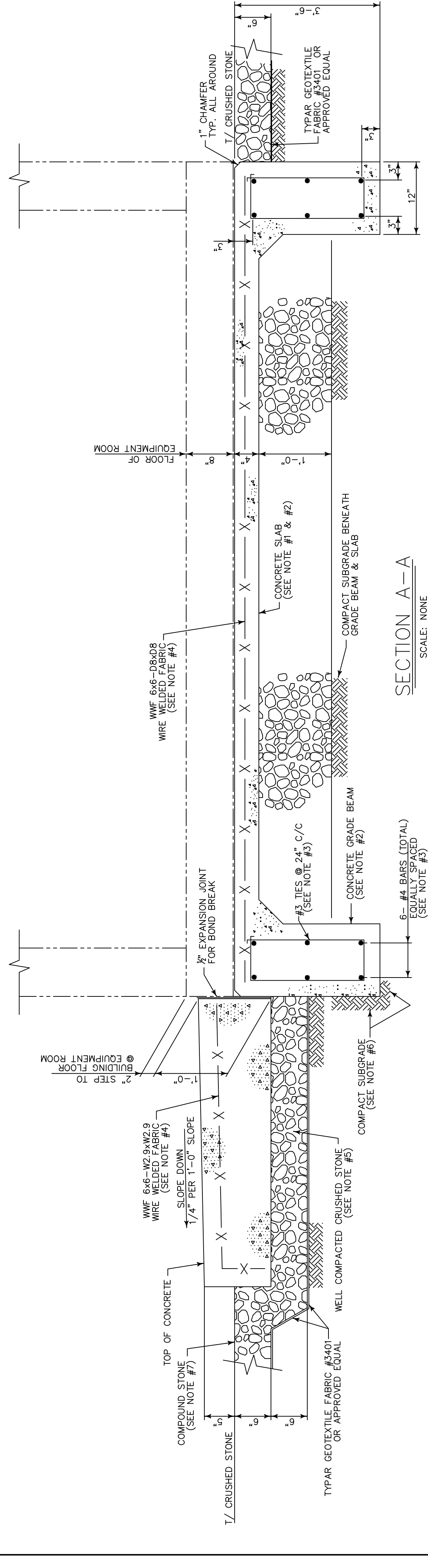
**SLAB FOUNDATION**  
SCALE: NONE



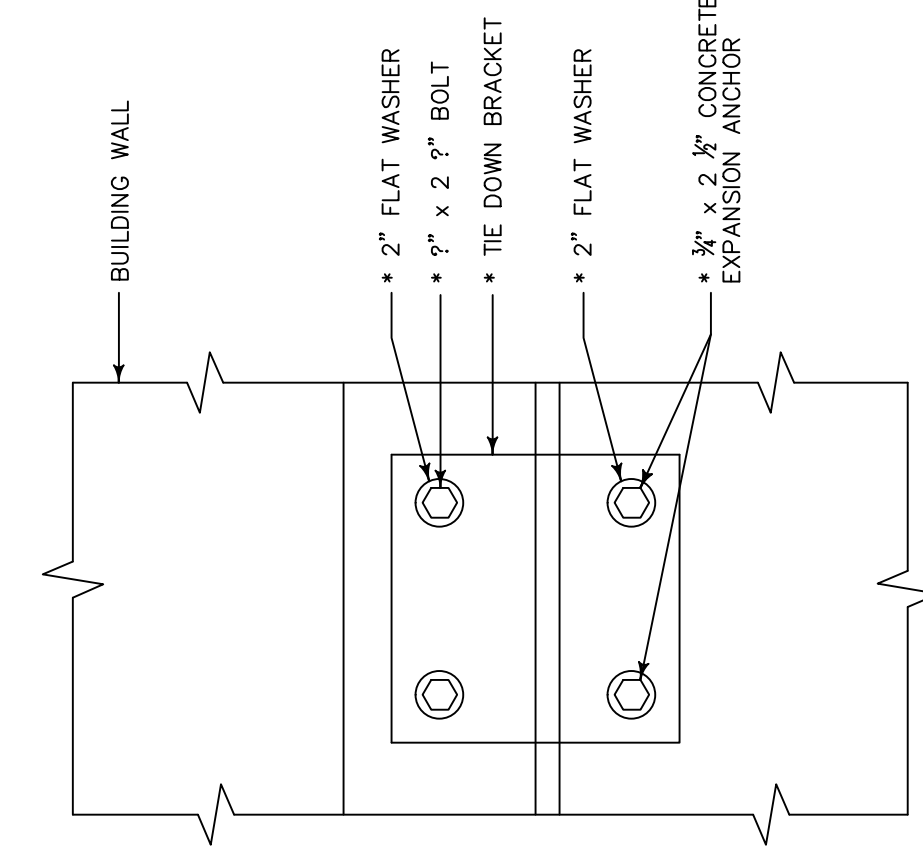
**TIE DOWN PLATE**  
(\* PROVIDED BY BUILDING MANUFACTURER)  
RAW MATERIAL  
1/4\"/>

**FOUNDATION NOTES:**

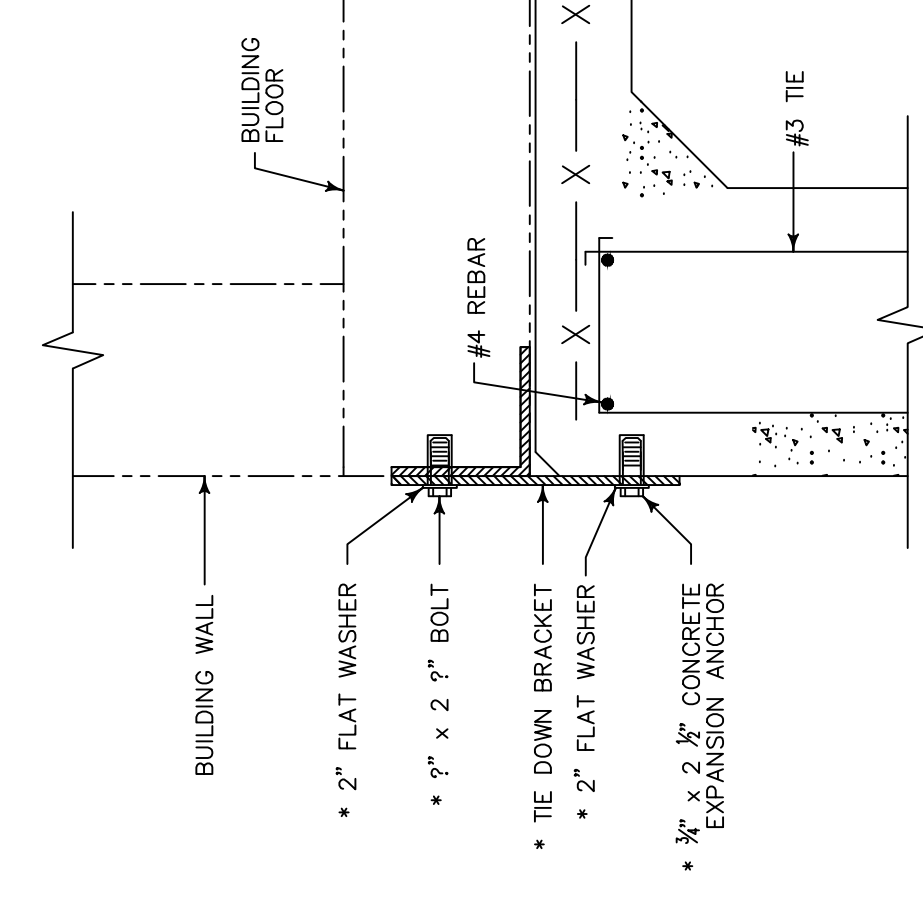
1. SLAB TO BE LEVEL  $\pm 1/4"$ .
2. ALL CONCRETE SHALL HAVE A 28 DAY STRENGTH OF 4000 PSI (MIN.) WITH A MAXIMUM SLUMP OF 3 INCHES AND SHALL BE AIR ENTRAINED ( $\% \text{ AIR} = 0.8$ )  $1 \frac{1}{2}\%$ .
3. REINFORCING STEEL: INTERMEDIATE GRADE DEFORMED BARS OF NEW BILLET STEEL, CONFORMING TO ASTM A615, GRADE 60.
4. WELDED WIRE FABRIC: SHALL CONFORM TO THE LATEST EDITION OF ASTM A185, GRADE 65.
5. THE SUBGRADE BENEATH THE CRUSHED STONE SHALL BE SCARIFIED FOR A DEPTH OF 6 INCHES BELOW THE CRUSHED STONE AND BE COMPACTED TO VISUAL NO MOVEMENT AND TO THE SATISFACTION OF THE ENGINEER.
6. BACKFILL AROUND AND BELOW FOOTING SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY (ASTM D1557), BEFORE EQUIPMENT IS PLACED OR STRUCTURAL STEEL IS ERECTED.



**SECTION A-A**  
SCALE: NONE



**SECTION B-B**  
SCALE: NONE



**SECTION C-C**  
SCALE: NONE

\* THIS MATERIAL PROVIDED BY BUILDING MANUFACTURER

**SCHEDULE OF REVISIONS**

NO.	DESCRIPTION OF CHANGE	DRAWN BY	ISSUE DATE	STATUS
7				
6				
5	ANTENNA REVISIONS	MRW	7-25-14	
4	ANTENNA DESIGN	MRW	6-5-14	
3	REVISED ANTENNA RAD CENTER	JAC	1-10-13	
2	ISSUED FOR CONSTRUCTION	JAC	12-14-12	
1	VERIZON COMMENTS	JAC	3-9-11	
0	ISSUED FOR REVIEW	JAC	1-8-10	
REV		AUTH.	ISSUE	DATE



**TIMMONS GROUP**  
YOUR VISION. ACHIEVED THROUGH OURS.  
VIRGINIA | NORTH CAROLINA | WEST VIRGINIA  
THIS DRAWING PREPARED AT THE  
CHARLOTTE OFFICE  
2030 South Tryon Street, Suite 3C  
Charlotte, NC 28203  
TEL: 704.376.1075  
FAX: 704.376.1076  
www.timmons.com  
Site Development | Industrial | Infrastructure | Technology  
37573

**verizonwireless**  
18 Abele Road  
Bridgeville, PA, 15017

**DRAWING TITLE:**  
FIBREBOND MODULAR BUILDING FOUNDATION LAYOUT PLAN

**PROJECT:**  
VERIZON WIRELESS HEMLOCK CELL SITE

**PROPERTY OWNER:**  
Crown Communications, Inc

**APPROVED BY:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**DIRECTOR - IMPLEMENTATION**

**DRAWING NO.:** F-1

**DRAWN BY:** A. CARROLL

**CHECKED BY:** B. CRUICKSHANK

**SCALE:** NO SCALE

**PROJECT NO.:** 21513

**SHEET NO.:** 6 OF 6

**FILE NAME:**

**DATE PRINT MADE:** 7/25/14

**DRAWING ISSUE STATUS CURRENTLY:**  
A - ISSUED FOR PRELIMINARY INFORMATION ONLY  
B - ISSUED FOR MUNICIPAL REVIEW/APPROVALS  
C - ISSUED FOR PERMITTING  
D - ISSUED FOR CONSTRUCTION  
E - (PENDING)

**FOR CONSTRUCTION**



# Attachment C

## Process Description

## **ATTACHMENT B: PROCESS DESCRIPTION**

The installation will be a John Deere 50KW, Tier 3 Diesel generator, Model 4024HF285B. The generator will be used to supply power to the wireless communications facility in case of power failure. During normal operation, the generator may be exercised weekly for approximately one hour for an annual run time of 52 hours. It is not expected that the generator will not exceed 8,760 hours/year allowed by the State of West Virginia.

The generator/shelters installed on all properties have the following useful fuel safeguards:

- The generator room has a spill containment pan that is rated at 125% of the fuel stored in the diesel generator.
- The internal generator fuel tank is a U.L. 142 and NFPA 30 approved double wall sub-base fuel tank and meets Local, State, and Federal codes.
- The generators have remote alarms that are monitored 24 x 7. There is a fuel tank rupture sensor that reports back any spillage that occurs within the fuel containment pan. The network also monitors low-level fuel, generator on and operating in emergency mode.
- For remote generator installations (generators not installed in a shelter), the entire unit is housed in a "Crystal Quiet Enclosure" with an internally mounted silencer.



# Attachment D

## MSDS for Diesel Fuel

## SAFETY DATA SHEET

### SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT

**Product Name:** NO. 2 DIESEL FUEL  
**Product Description:** Hydrocarbons and Additives  
**Product Code:** 123455-22, 123455-29, 152017-00  
**Intended Use:** Diesel engine fuel, Heating Oil

#### COMPANY IDENTIFICATION

**Supplier:** EXXON MOBIL CORPORATION  
3225 GALLOWS RD.  
FAIRFAX, VA. 22037 USA

**24 Hour Health Emergency:** 609-737-4411  
**Transportation Emergency Phone:** 800-424-9300 or 703-527-3887 CHEMTREC  
**Product Technical Information:** 800-662-4525  
**MSDS Internet Address:** <http://www.exxon.com>, <http://www.mobil.com>

### SECTION 2 HAZARDS IDENTIFICATION

This material is hazardous according to regulatory guidelines (see (M)SDS Section 15).

#### CLASSIFICATION:

Flammable liquid: Category 3.  
Acute inhalation toxicant: Category 4. Skin irritation: Category 2. Carcinogen: Category 2. Specific target organ toxicant (repeated exposure): Category 2. Aspiration toxicant: Category 1.

#### LABEL:

##### Pictogram:



**Signal Word:** Danger

#### Hazard Statements:

H226: Flammable liquid and vapor. H304: May be fatal if swallowed and enters airways. H315: Causes skin irritation. H332: Harmful if inhaled. H351: Suspected of causing cancer. H373: May cause damage to organs through prolonged or repeated exposure. Liver, Bone marrow, Thymus



Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 2 of 14

## Precautionary Statements:

P101: If medical advice is needed, have product container or label at hand. P102: Keep out of reach of children. P103: Read label before use. P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P210: Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. P233: Keep container tightly closed. P240: Ground / bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating, and lighting equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P260: Do not breathe mist / vapours. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection. P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P308 + P313: IF exposed or concerned: Get medical advice/ attention. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P331: Do NOT induce vomiting. P332 + P313: If skin irritation occurs: Get medical advice/ attention. P362 + P364: Take off contaminated clothing and wash it before reuse. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish. P391: Collect spillage. P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up. P501: Dispose of contents and container in accordance with local regulations.

**Contains:** DIESEL OIL..C9-20

## Other hazard information:

**HAZARD NOT OTHERWISE CLASSIFIED (HNOC):** None as defined under 29 CFR 1900.1200.

## PHYSICAL / CHEMICAL HAZARDS

Material can accumulate static charges which may cause an ignition. Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited.

## HEALTH HAZARDS

May cause central nervous system depression. High-pressure injection under skin may cause serious damage. Under conditions of poor personal hygiene and prolonged repeated contact, some polycyclic aromatic compounds (PACs) have been suspected as a cause of skin cancer in humans. May be irritating to the eyes, nose, throat, and lungs.

## ENVIRONMENTAL HAZARDS

Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

<b>NFPA Hazard ID:</b>	Health: 2	Flammability: 2	Reactivity: 0
<b>HMIS Hazard ID:</b>	Health: 2*	Flammability: 2	Reactivity: 0

**NOTE:** This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

## SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 3 of 14

**Hazardous Substance(s) or Complex Substance(s) required for disclosure**

Name	CAS#	Concentration*	GHS Hazard Codes
DIESEL OIL..C9-20	68334-30-5	80 - > 99%	H226, H304, H332, H351, H315, H373, H401, H411

**Hazardous Constituent(s) Contained in Complex Substance(s) required for disclosure**

Name	CAS#	Concentration*	GHS Hazard Codes
ETHYL BENZENE	100-41-4	0.1 - 1%	H225, H332, H351
NAPHTHALENE	91-20-3	0.1 - 1%	H302, H351, H400(M factor 1), H410(M factor 1)

\* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

NOTE: Composition may contain up to 0.5% performance additives and / or dyes.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

**SECTION 4 FIRST AID MEASURES**

**INHALATION**

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

**SKIN CONTACT**

Remove contaminated clothing. Dry wipe exposed skin and cleanse with waterless hand cleaner and follow by washing thoroughly with soap and water. For those providing assistance, avoid further skin contact to yourself or others. Wear impervious gloves. Launder contaminated clothing separately before reuse. Discard contaminated articles that cannot be laundered. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

**EYE CONTACT**

Flush thoroughly with water. If irritation occurs, get medical assistance.

**INGESTION**

Seek immediate medical attention. Do not induce vomiting.

**NOTE TO PHYSICIAN**

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

**PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE**

Contains hydrocarbon solvent/petroleum hydrocarbons; skin contact may aggravate an existing dermatitis.



Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 4 of 14

## SECTION 5 FIRE FIGHTING MEASURES

### EXTINGUISHING MEDIA

**Appropriate Extinguishing Media:** Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

**Inappropriate Extinguishing Media:** Straight Streams of Water

### FIRE FIGHTING

**Fire Fighting Instructions:** Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

**Unusual Fire Hazards:** Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

**Hazardous Combustion Products:** Sulfur oxides, Oxides of carbon, Incomplete combustion products, Smoke, Fume, Aldehydes

### FLAMMABILITY PROPERTIES

**Flash Point [Method]:** >38 °C (100 °F) [ASTM D-93]

**Flammable Limits (Approximate volume % in air):** LEL: 0.6 UEL: 7.0

**Autoignition Temperature:** >200 °C (392 °F)

## SECTION 6 ACCIDENTAL RELEASE MEASURES

### NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

### PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: half-face or full-face respirator with filter(s) for organic vapor and, when applicable, H<sub>2</sub>S, or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to aromatic hydrocarbons are recommended. Note: gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

### SPILL MANAGEMENT

**Land Spill:** Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak

Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 5 of 14

if you can do it without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapor; but may not prevent ignition in closed spaces.

**Water Spill:** Stop leak if you can do it without risk. Eliminate sources of ignition. Warn other shipping. If the Flash Point exceeds the Ambient Temperature by 10 degrees C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Air Temperature by at least 10C, use booms as a barrier to protect shorelines and allow material to evaporate. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

## ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

## SECTION 7 HANDLING AND STORAGE

### HANDLING

Avoid all personal contact. Do not siphon by mouth. Do not use as a cleaning solvent or other non-motor fuel uses. For use as a motor fuel only. It is dangerous and/or unlawful to put fuel into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapors and cause fire. Place container on ground when filling and keep nozzle in contact with container. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices, etc.) in or around any fueling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

**Static Accumulator:** This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

### STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Storage containers should be grounded and bonded. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge. Keep away from incompatible materials.

Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 6 of 14

<b>SECTION 8</b>	<b>EXPOSURE CONTROLS / PERSONAL PROTECTION</b>
------------------	--

### EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit / Standard			NOTE	Source
DIESEL OIL..C9-20	Stable Aerosol.	TWA	5 mg/m <sup>3</sup>		N/A	ExxonMobil
DIESEL OIL..C9-20	Vapor.	TWA	200 mg/m <sup>3</sup>		N/A	ExxonMobil
DIESEL OIL..C9-20 [total hydrocarb, vapor&aerosol]	Inhalable fraction and vapor	TWA	100 mg/m <sup>3</sup>		Skin	ACGIH
ETHYL BENZENE		TWA	435 mg/m <sup>3</sup>	100 ppm	N/A	OSHA Z1
ETHYL BENZENE		TWA	20 ppm		N/A	ACGIH
NAPHTHALENE		TWA	50 mg/m <sup>3</sup>	10 ppm	N/A	OSHA Z1
NAPHTHALENE		TWA	10 ppm		Skin	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

### Biological limits

Substance	Specimen	Sampling Time	Limit	Determinant	Source
ETHYL BENZENE	Creatinine in urine	End of shift	0.15 g/g	Sum of mandelic acid and phenylglyoxylic acid	ACGIH BELs (BEIs)
NAPHTHALENE	No Biological Specimen provided	End of shift	Not Assigned	1-Naphthol, with hydrolysis + 2-Naphthol, with hydrolysis	ACGIH BELs (BEIs)

### ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Use explosion-proof ventilation equipment to stay below exposure limits.

### PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

**Respiratory Protection:** If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Half-face filter respirator

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.



Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 7 of 14

**Hand Protection:** Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Chemical resistant gloves are recommended. If contact with forearms is likely wear gauntlet style gloves.

**Eye Protection:** If contact with material is likely, chemical goggles are recommended.

**Skin and Body Protection:** Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

Chemical/oil resistant clothing is recommended.

**Specific Hygiene Measures:** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

## ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

**Note:** Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

### GENERAL INFORMATION

**Physical State:** Liquid  
**Color:** Clear (May Be Dyed)  
**Odor:** Petroleum/Solvent  
**Odor Threshold:** N/D

### IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

**Relative Density (at 15 °C):** 0.81 - 0.87  
**Density (at 15 °C):** 810 kg/m<sup>3</sup> (6.76 lbs/gal, 0.81 kg/dm<sup>3</sup>) - 876 kg/m<sup>3</sup> (7.31 lbs/gal, 0.88 kg/dm<sup>3</sup>)  
**Flammability (Solid, Gas):** N/A  
**Flash Point [Method]:** >38°C (100°F) [ASTM D-93]  
**Flammable Limits (Approximate volume % in air):** LEL: 0.6 UEL: 7.0  
**Autoignition Temperature:** >200°C (392°F)  
**Boiling Point / Range:** 145°C (293°F) - 370°C (698°F)  
**Decomposition Temperature:** N/D  
**Vapor Density (Air = 1):** > 2 at 101 kPa  
**Vapor Pressure:** 0.067 kPa (0.5 mm Hg) at 20 °C  
**Evaporation Rate (n-butyl acetate = 1):** N/D  
**pH:** N/A  
**Log Pow (n-Octanol/Water Partition Coefficient):** > 3.5  
**Solubility in Water:** Negligible

Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 8 of 14

**Viscosity:** 1.7 cSt (1.7 mm<sup>2</sup>/sec) at 40 °C - 4.1 cSt (4.1 mm<sup>2</sup>/sec) at 40 °C

**Oxidizing Properties:** See Hazards Identification Section.

**OTHER INFORMATION**

**Freezing Point:** N/D

**Melting Point:** N/A

**Pour Point:** < -6°C (21 °F)

<b>SECTION 10</b>	<b>STABILITY AND REACTIVITY</b>
-------------------	---------------------------------

**REACTIVITY:** See sub-sections below.

**STABILITY:** Material is stable under normal conditions.

**CONDITIONS TO AVOID:** Open flames and high energy ignition sources.

**MATERIALS TO AVOID:** Halogens, Strong Acids, Strong Bases, Strong oxidizers

**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

**POSSIBILITY OF HAZARDOUS REACTIONS:** Hazardous polymerization will not occur.

<b>SECTION 11</b>	<b>TOXICOLOGICAL INFORMATION</b>
-------------------	----------------------------------

**INFORMATION ON TOXICOLOGICAL EFFECTS**

<b>Hazard Class</b>	<b>Conclusion / Remarks</b>
<b>Inhalation</b>	
Acute Toxicity (Rat) 4 hour(s) LC50 4100 mg/m <sup>3</sup> (Vapor and aerosol)	Moderately toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 403
Irritation: No end point data for material.	Elevated temperatures or mechanical action may form vapors, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs.
<b>Ingestion</b>	
Acute Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 401
<b>Skin</b>	
Acute Toxicity (Rabbit): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 434
Skin Corrosion/Irritation (Rabbit): Data available.	Irritating to the skin. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 404
<b>Eye</b>	
Serious Eye Damage/Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 405
<b>Sensitization</b>	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: Data available.	Not expected to be a skin sensitizer. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 406
<b>Aspiration:</b> Data available.	May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material.

Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 9 of 14

<b>Germ Cell Mutagenicity:</b> Data available.	Not expected to be a germ cell mutagen. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 471 475
<b>Carcinogenicity:</b> Data available.	Caused cancer in laboratory animals, but the relevance to humans is uncertain. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 451
<b>Reproductive Toxicity:</b> Data available.	Not expected to be a reproductive toxicant. Test(s) equivalent or similar to OECD Guideline 414
<b>Lactation:</b> No end point data for material.	Not expected to cause harm to breast-fed children.
<b>Specific Target Organ Toxicity (STOT)</b>	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: Data available.	Concentrated, prolonged or deliberate exposure may cause organ damage. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 410 413

## TOXICITY FOR SUBSTANCES

NAME	ACUTE TOXICITY
ETHYL BENZENE	Inhalation Lethality: 4 hour(s) LC50 17.8 mg/l (Vapor) (Rat); Oral Lethality: LD50 3.5 g/kg (Rat)
NAPHTHALENE	Inhalation Lethality: 4 hour(s) LC50 > 0.4 mg/l (Max attainable vapor conc.) (Rat); Oral Lethality: LD50 533 mg/kg (Mouse)

## OTHER INFORMATION

### For the product itself:

Target Organs Repeated Exposure: Liver, Bone marrow, Thymus

Vapor concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Diesel fuel: Caused cancer in animal tests. Caused mutations in vitro. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased fetal resorptions at maternally toxic doses. Dermal exposure to high concentrations resulted in severe skin irritation with weight loss and some mortality. Inhalation exposure to high concentrations resulted in respiratory tract irritation, lung changes/infiltration/accumulation, and reduction in lung function.

Diesel exhaust fumes: Carcinogenic in animal tests. Inhalation exposures to exhaust for 2 years in test animals resulted in lung tumors and lymphoma. Extract of particulate produced skin tumors in test animals. Caused mutations in vitro.

### Contains:

NAPHTHALENE: Exposure to high concentrations of naphthalene may cause destruction of red blood cells, anemia, and cataracts. Naphthalene caused cancer in laboratory animal studies, but the relevance of these findings to humans is uncertain.

ETHYLBENZENE: Caused cancer in laboratory animal studies. The relevance of these findings to humans is uncertain.

The following ingredients are cited on the lists below:



Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 10 of 14

Chemical Name	CAS Number	List Citations
ETHYL BENZENE	100-41-4	5
NAPHTHALENE	91-20-3	2, 5

--REGULATORY LISTS SEARCHED--

1 = NTP CARC

2 = NTP SUS

3 = IARC 1

4 = IARC 2A

5 = IARC 2B

6 = OSHA CARC

**SECTION 12 ECOLOGICAL INFORMATION**

The information given is based on data available for the material, the components of the material, and similar materials.

**ECOTOXICITY**

Material -- Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

**MOBILITY**

More volatile component -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

High molecular wt. component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

**PERSISTENCE AND DEGRADABILITY**

**Biodegradation:**

Material -- Expected to be inherently biodegradable

**Atmospheric Oxidation:**

More volatile component -- Expected to degrade rapidly in air

**ECOLOGICAL DATA**

**Ecotoxicity**

Test	Duration	Organism Type	Test Results
Aquatic - Acute Toxicity	96 hour(s)	Fish	LL50 1 - 100 mg/l: data for similar materials
Aquatic - Acute Toxicity	48 hour(s)	Daphnia magna	EL50 1 - 1000 mg/l: data for similar materials
Aquatic - Acute Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	EL50 1 - 100 mg/l: data for similar materials
Aquatic - Chronic Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	NOELR 1 - 10 mg/l: data for similar materials

**Persistence, Degradability and Bioaccumulation Potential**

Media	Test Type	Duration	Test Results
Water	Ready Biodegradability	28 day(s)	Percent Degraded < 60 :

Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 11 of 14

			similar material
--	--	--	------------------

## SECTION 13

## DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

### DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

### REGULATORY DISPOSAL INFORMATION

RCRA Information: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Potential RCRA characteristics: IGNITABILITY.

**Empty Container Warning** Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

## SECTION 14

## TRANSPORT INFORMATION

### LAND (DOT)

**Proper Shipping Name:** DIESEL FUEL

**Hazard Class & Division:** COMBUSTIBLE LIQUID

**ID Number:** NA1993

**Packing Group:** III

**Marine Pollutant:** Yes

**ERG Number:** 128

**Label(s):** NONE

**Transport Document Name:** NA1993, DIESEL FUEL, COMBUSTIBLE LIQUID, PG III, MARINE POLLUTANT

Footnote: The flash point of this material is greater than 100 F. Regulatory classification of this material varies. DOT: Flammable liquid or combustible liquid. OSHA: Combustible liquid. IATA/IMO: Flammable liquid.

### LAND (TDG)

**Proper Shipping Name:** GAS OIL

**Hazard Class & Division:** 3

**UN Number:** 1202

**Packing Group:** III

### SEA (IMDG)

**Proper Shipping Name:** GAS OIL

Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 12 of 14

**Hazard Class & Division:** 3  
**EMS Number:** F-E, S-E  
**UN Number:** 1202  
**Packing Group:** III  
**Marine Pollutant:** Yes  
**Label(s):** 3  
**Transport Document Name:** UN1202, GAS OIL, 3, PG III, (55°C c.c.), MARINE POLLUTANT

**AIR (IATA)**

**Proper Shipping Name:** GAS OIL  
**Hazard Class & Division:** 3  
**UN Number:** 1202  
**Packing Group:** III  
**Label(s) / Mark(s):** 3  
**Transport Document Name:** UN1202, GAS OIL, 3, PG III

<b>SECTION 15</b>	<b>REGULATORY INFORMATION</b>
-------------------	-------------------------------

**OSHA HAZARD COMMUNICATION STANDARD:** This material is considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

**Listed or exempt from listing/notification on the following chemical inventories:** AICS, DSL, IECSC, KECI, PICCS, TSCA

**EPCRA SECTION 302:** This material contains no extremely hazardous substances.

**CERCLA:** This material is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Contact local authorities to determine if other reporting requirements apply.

**SARA (311/312) REPORTABLE HAZARD CATEGORIES:** Fire. Immediate Health. Delayed Health.

**SARA (313) TOXIC RELEASE INVENTORY:**

Chemical Name	CAS Number	Typical Value
NAPHTHALENE	91-20-3	0.1 - 1%
ETHYL BENZENE	100-41-4	0.1 - 1%

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
DIESEL OIL..C9-20	68334-30-5	1, 18
ETHYL BENZENE	100-41-4	1, 4, 10, 17, 19
NAPHTHALENE	91-20-3	1, 4, 10, 17, 19



Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 13 of 14

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

**SECTION 16**

**OTHER INFORMATION**

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm are created by the combustion of this product.

N/D = Not determined, N/A = Not applicable

**KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):**

H225: Highly flammable liquid and vapor; Flammable Liquid, Cat 2

H226: Flammable liquid and vapor; Flammable Liquid, Cat 3

H302: Harmful if swallowed; Acute Tox Oral, Cat 4

H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1

H315: Causes skin irritation; Skin Corr/Irritation, Cat 2

H332: Harmful if inhaled; Acute Tox Inh, Cat 4

H351: Suspected of causing cancer; GHS Carcinogenicity, Cat 2

H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2

H400: Very toxic to aquatic life; Acute Env Tox, Cat 1

H401: Toxic to aquatic life; Acute Env Tox, Cat 2

H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1

H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

**THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:**

Updates made in accordance with implementation of GHS requirements.

**THIS MSDS COVERS THE FOLLOWING MATERIALS:** DIESEL NO. 2 | ESSO DIESEL FUEL | EXXON DIESEL FUEL | LOW SULFUR DIESEL | MARINE DIESEL FUEL | MOBIL DIESEL FUEL | ULTRA LOW SULFUR DIESEL | WINTERIZED DIESEL FUEL

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.



Product Name: NO. 2 DIESEL FUEL

Revision Date: 09 Jan 2015

Page 14 of 14

---

Internal Use Only

MHC: 1A, 0B, 2, 0, 4, 1

PPEC: C

DGN: 7079307XUS (1012398)

---

Copyright 2002 Exxon Mobil Corporation, All rights reserved

# **Attachment E**

## **Calculations and Supporting Documents**



**Emissions Definitions Regarding John Deere 4024HF285B Used in MTU Onsite Energy  
50 kW Stationary Gen Application Operation at 75% Capacity  
POTENTIAL Emissions Rates given by Technical Specs in lb/hr**

Certified Values for this specific engine were used in the below calculations. Carb Certification attached. Since the motor meets Tier 3 requirements they emit no more than what is specified in 40 CFR §89.112, Table 1. **For annual POTENTIAL calculations, 8760 hrs/year was used. The generator will be used intermittently (<500 hrs/yr).**

**NO<sub>x</sub> - on the attached EPA Engine Certification**

Hourly NO<sub>x</sub> = 4.59 g/kW-hr \* 50 kW \* 1 lb/453.592g = 0.51 lb/hr  
Annual NO<sub>x</sub> = 0.51 lb/hr \* 8760 hr/yr \* 1 ton /2000lbs = 2.23 ton/yr

**CO - on the attached EPA Engine Certification**

Hourly CO = 1.16 g/kW-hr \* 50 kW \* 1 lb/453.592g = 0.13 lb/hr  
Annual CO = 0.13 lb/hr \* 8760 hr/yr \* 1ton/2000lbs = 0.57 ton/yr

**PM - on the attached EPA Engine Certification**

Hourly PM = 0.16 g/kW-hr \* 50 kW \* 1 lb/453.592g = 0.02 lb/hr  
Annual PM = 0.02 lb/hr \* 500 hr/yr \* 1ton/2000 lb= 0.088 ton/yr

**HC - on the attached EPA Engine Certification**

Hourly HC = 0.1 g/kW-hr \* 50 kW \* 1 lb/453.592g = 0.01 lb/hr  
Annual HC = 0.01 lb/hr \* 8760 hr/yr \* 1ton/2000 lb= 0.044 ton/yr

**VOC - AP42**

Per AP-42 Table 3.3-1, the emission factor of #2 Diesel Fuel is 0.00247 lb/hp-hr  
Hourly VOC = 0.00247 lb/hp-hr \* 80 bhp = 0.198 lb/hr  
Yearly VOC = 0.198 lb/hr \* 8760 hr/yr \* 1 ton/2000 lb= 0.87 ton/yr

**SO<sub>x</sub> - AP42**

Per AP-42 Table 3.3-1, the emission factor of #2 Diesel Fuel is 0.00205 lb/hp-hr  
Hourly SO<sub>2</sub> = 0.00205 lb/hp-hr \* 80 bhp = 0.164 lb/hr  
Yearly SO<sub>2</sub> = 0.164 lb/hr \* 8760 hr/yr \* 1ton/2000 lb= 0.72 ton/yr

**Formaldehyde - AP42**

Per AP-42 Table 3.3-2, the emission factor of #2 Diesel Fuel is 0.00118 lb/hp-hr  
Hourly VOC = 0.00118 lb/hp-hr \* 80 bhp = 0.09 lb/hr  
Yearly formaldehyde = 0.09 lb/hr \* 8760 hr/yr \* 1ton/2000 lb= 0.39 ton/yr



**Emissions Definitions Regarding John Deere 4024HF285B Used in MTU Onsite Energy  
50 kW Stationary Gen Application Operation at 75% Capacity  
ACTUAL Emissions Rates given by Technical Specs in lb/hr**

Certified Values for this specific engine were used in the below calculations. Carb Certification attached. Since the motor meets Tier 3 requirements they emit no more than what is specified in **40 CFR §89.112, Table 1. For annual ACTUAL calculations, 500 hrs/year was used. The generator will be used intermittently.**

**NO<sub>x</sub> - on the attached EPA Engine Certification**

Hourly NO<sub>x</sub> = 4.59 g/kW-hr \* 50 kW \* 1 lb/453.592g = 0.51 lb/hr

Annual NO<sub>x</sub> = 0.51 lb/hr \* 500 hr/yr \* 1 ton /2000lbs = 0.13 ton/yr

**CO - on the attached EPA Engine Certification**

Hourly CO = 1.16 g/kW-hr \* 50 kW \* 1 lb/453.592g = 0.13 lb/hr

Annual CO = 0.13 lb/hr \* 500 hr/yr \* 1ton/2000lbs = 0.032 ton/yr

**PM - on the attached EPA Engine Certification**

Hourly PM = 0.16 g/kW-hr \* 50 kW \* 1 lb/453.592g = 0.02 lb/hr

Annual PM = 0.02 lb/hr \* 500 hr/yr \* 1ton/2000 lb= 0.005 ton/yr

**HC - on the attached EPA Engine Certification**

Hourly HC = 0.1 g/kW-hr \* 50 kW \* 1 lb/453.592g = 0.01 lb/hr

Annual HC = 0.01 lb/hr \* 500 hr/yr \* 1ton/2000 lb= 0.003 ton/yr

**VOC - AP42**

Per AP-42 Table 3.3-1, the emission factor of #2 Diesel Fuel is 0.00247 lb/hp-hr

Hourly VOC = 0.00247 lb/hp-hr \* 80 bhp = 0.198 lb/hr

Yearly VOC = 0.198lb/hr\* 500 hr/yr \* 1 ton/2000 lb= 0.05 ton/yr

**SO<sub>x</sub> - AP42**

Per AP-42 Table 3.3-1, the emission factor of #2 Diesel Fuel is 0.00205 lb/hp-hr

Hourly SO<sub>2</sub> = 0.00205 lb/hp-hr \* 80 bhp = 0.164 lb/hr

Yearly SO<sub>2</sub> = 0.164 lb/hr\* 500 hr/yr \* 1ton/2000 lb= 0.04 ton/yr

**Formaldehyde - AP42**

Per AP-42 Table 3.3-2, the emission factor of #2 Diesel Fuel is 0.00118 lb/hp-hr

Hourly VOC = 0.00118 lb/hp-hr \* 80 bhp = 0.09 lb/hr

Yearly formaldehyde = 0.09 lb/hr\* 500 hr/yr \* 1ton/2000 lb= 0.02 ton/yr

## OEM Emissions Data

---

Rating Data	
Rating	4024HF285B
Spec Rated Power (kW)	60
Rated Speed	1,800
Vehicle Model Number	OEM (Gen Set)

Emissions Data	
Rating	4024HF285B
Units	g/kW-hr
CO	1.16
Pm	0.16
NOx	4.59
HC	0.1
NOx + HC	4.69

Certificate Data	
EPA Family Name	8JDXL03.0113
EPA JD Family	250HAA
EPA Certificate Number	JDX-NRCI-08-30
CARB Certificate Number	

# DIESEL ENGINE-GENERATOR SET

## AIR CHARGE-AIR COOLING

50 kWe / 60 Hz / Standby  
208 - 600V

(Reference DP45D6S for Prime Rating Technical Data)



### SYSTEM RATINGS

Standby	DS50D6SGA	DS50D6SDA	DS50D6SPA	DS50D6SJA	DS50D6SRA	DS50D6SNA
<b>Voltage (L-L)</b>	<b>240V**</b>	<b>240V**</b>	<b>208V**</b>	<b>240V**</b>	<b>480V**</b>	<b>600V**</b>
Phase	1	1	3	3	3	3
PF	1.0	1.0	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	50	50	50	50	50	50
kVA	50	50	62.5	62.5	62.5	62.5
AMPS	208	208	173	150	75	60
skVA@30%						
Voltage Dip	127	130	105	105	140	138
Generator Model	362CSL1606	361CSL1613	361CSL1601	361CSL1601	361CSL1601	361PSL1633
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

\*\* UL 2200 Offered

### CERTIFICATIONS AND STANDARDS

// **Emissions** – EPA Tier 3 Certified

// **Engine-generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**

- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**

- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**

- Engine-Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**

- Accepts Rated Load in One Step Per NFPA 110



## STANDARD FEATURES\*

- // MTU Onsite Energy is a single source supplier
- // Global Product Support
- // 2 Year Standard Warranty
- // 4024HF285 Diesel Engine
  - 2.4 Liter Displacement
  - Electronic Unit Pump Injection
  - 4-Cycle
- // Engine-generator resilient mounted
- // Complete Range of Accessories
- // Generator
  - Brushless, Rotating Field Generator
  - 300% Short Circuit Capability
  - 2/3 Pitch Windings
- // Digital Control Panel(s)
  - UL Recognized, CSA Certified, NFPA 110
  - Complete System Metering
  - LCD Display
- // Cooling System
  - Integral Set-Mounted
  - Engine Driven Fan

## STANDARD EQUIPMENT\*

### // Engine

Air Cleaner  
 Oil Pump  
 Oil Drain Extension & S/O Valve  
 Full Flow Oil Filter  
 Fuel Filter with Water Separator  
 Jacket Water Pump  
 Thermostat  
 Blower Fan & Fan Drive  
 Radiator - Unit Mounted  
 Electric Starting Motor - 12V  
 Governor - Electronic Isochronous  
 Base - Formed Steel  
 SAE Flywheel & Bell Housing  
 Charging Alternator - 12V  
 Battery Box & Cables  
 Flexible Fuel Connectors  
 Flexible Exhaust Connection  
 EPA Certified Engine

### // Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting  
 Sustained short circuit current of up to 300% of the rated current for up to 10 seconds  
 Self-Ventilated and Drip-Proof  
 Superior Voltage Waveform  
 Digital, Solid State, Volts-per-Hertz Regulator  
 No Load to Full Load Regulation

Brushless Alternator with Brushless Pilot Exciter  
 4 Pole, Rotating Field  
 130 °C Maximum Standby Temperature Rise  
 1 Bearing, Sealed  
 Flexible Coupling  
 Full Amortisseur Windings  
 125% Rotor Balancing  
 3-Phase Voltage Sensing  
 ±1% Voltage Regulation  
 100% of Rated Load - One Step  
 3% Maximum Harmonic Content

### // Digital Control Panel(s)

Digital Metering  
 Engine Parameters  
 Generator Protection Functions  
 Engine Protection  
 SAE J1939 Engine ECU Communications  
 Windows-Based Software  
 Multilingual Capability  
 Remote Communications to RDP-110 Remote Annunciator  
 16 Programmable Contact Inputs  
 Up to 11 Contact Outputs  
 UL Recognized, CSA Certified, CE Approved  
 Event Recording  
 IP 54 Front Panel Rating with Integrated Gasket  
 NFPA 110 Compatible

\* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

## APPLICATION DATA

### // Engine

Manufacturer	John Deere
Model	4024HF285
Type	4-Cycle
Arrangement	4 In-Line
Displacement: L (in <sup>3</sup> )	2.4 (146)
Bore: cm (in)	8.6 (3.4)
Stroke: cm (in)	10.5 (4.1)
Compression Ratio	18.2:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	60 (80)
Speed Regulation	±0.25%
Air Cleaner	Dry

### // Liquid Capacity (Lubrication)

Total Oil System: L (gal)	7.9 (2.1)
Engine Jacket Water Capacity: L (gal)	2.6 (0.68)
System Coolant Capacity: L (gal)	11.4 (3)

### // Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	750

### // Fuel System

Fuel Supply Connection Size	3/8" NPT
Fuel Return Connection Size	3/8" NPT
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	82 (21.7)

### // Fuel Consumption

	STANDBY
At 100% of Power Rating: L/hr (gal/hr)	16.3 (4.3)
At 75% of Power Rating: L/hr (gal/hr)	12.1 (3.2)
At 50% of Power Rating: L/hr (gal/hr)	8.3 (2.2)

### // Cooling - Radiator System

	STANDBY
Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Allowable Static Pressure on Rad. Exhaust: kPa (in. H <sub>2</sub> O)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	100 (26)
Heat Rejection to Coolant: kW (BTUM)	34.9 (1,988)
Heat Rejection to Air to Air: kW (BTUM)	10.7 (608)
Heat Radiated to Ambient: kW (BTUM)	9 (510)

### // Air Requirements

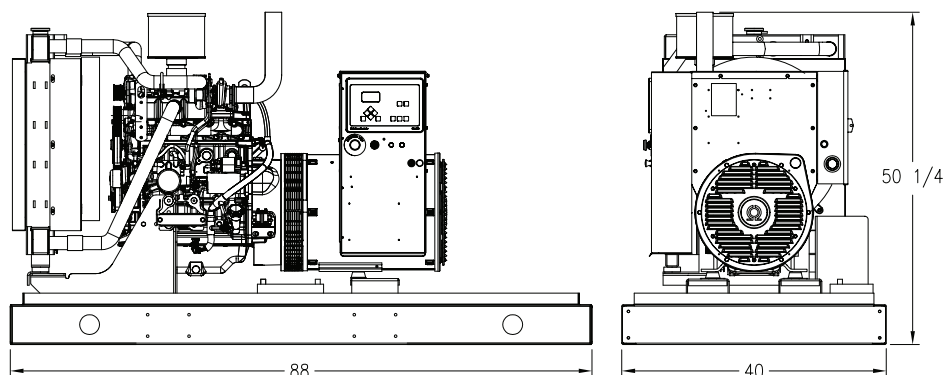
	STANDBY
Aspirating: *m <sup>3</sup> /min (SCFM)	4.3 (151)
Air Flow Required for Rad. Cooled Unit: *m <sup>3</sup> /min (SCFM)	156 (5,506)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m <sup>3</sup> /min (SCFM)	33 (1,150)

\* Air density = 1.184 kg/m<sup>3</sup> (0.0739 lbm/ft<sup>3</sup>)

### // Exhaust System

	STANDBY
Gas Temp. (Stack): °C (°F)	572 (1,062)
Gas Volume at Stack Temp: m <sup>3</sup> /min (CFM)	11.9 (419)
Maximum Allowable Back Pressure: kPa (in. H <sub>2</sub> O)	7.5 (30)
Minimum Allowable Back Pressure: kPa (in. H <sub>2</sub> O)	4 (16)

## WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt engine-generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (LxWxH)	Weight (dry/less tank)
Open Power Unit (OPU)	2,235 x 1,016 x 1,276 mm (88 x 40 x 50.25 in)	842 kg (1,857 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific engine-generator set.

## SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit (dBA)	79.5

Sound data is provided at 7 m (23 ft). Engine-generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

## EMISSIONS DATA

NO <sub>x</sub> + NMHC	CO	PM
3.2	0.8	0.15

### All units are in g/hp-hr and are EPA D2 cycle values.

Emission levels of the engine may vary as a function of ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data provided are laboratory results from one engine representing this rating. The data was obtained under controlled environmental conditions with calibrated instrumentation traceable to the United States National Bureau of Standards and in compliance with US EPA regulations found within 40 CFR Part 89. The weighted cycle value from each engine is guaranteed to be below the US EPA Standards at the US EPA defined conditions.

## RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, AS 2789, and DIN 6271.

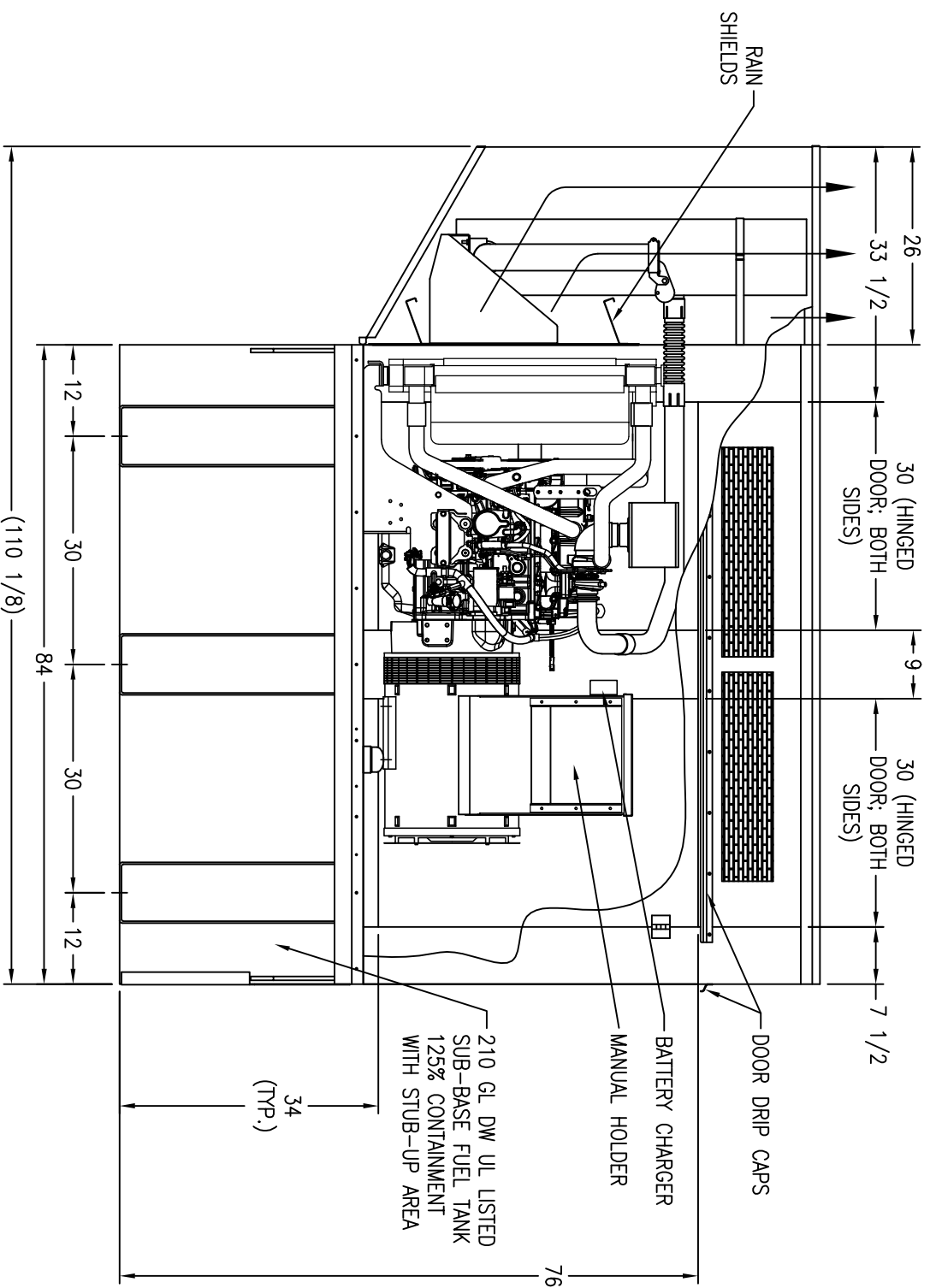
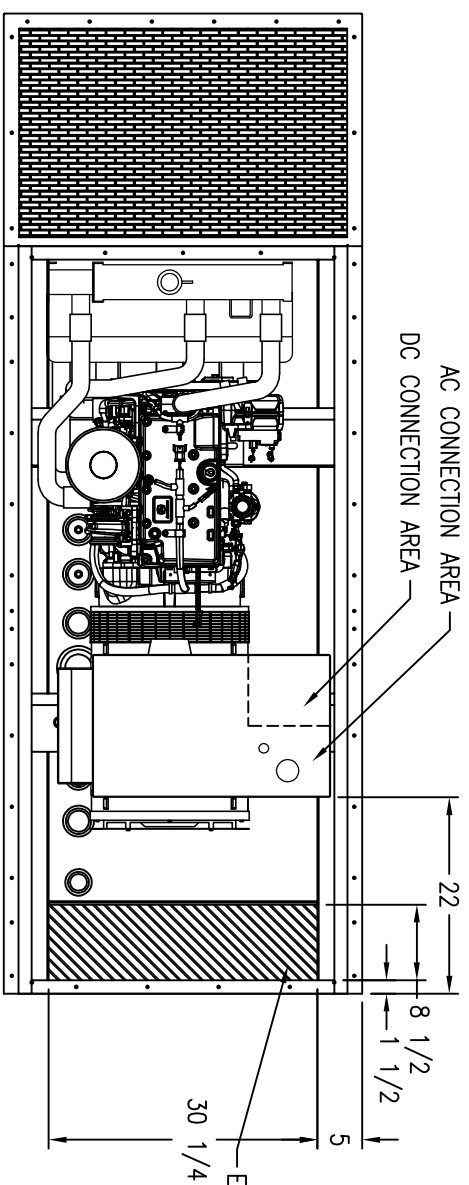
// Deration Factor:

**Altitude:** Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.

**Temperature:** Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

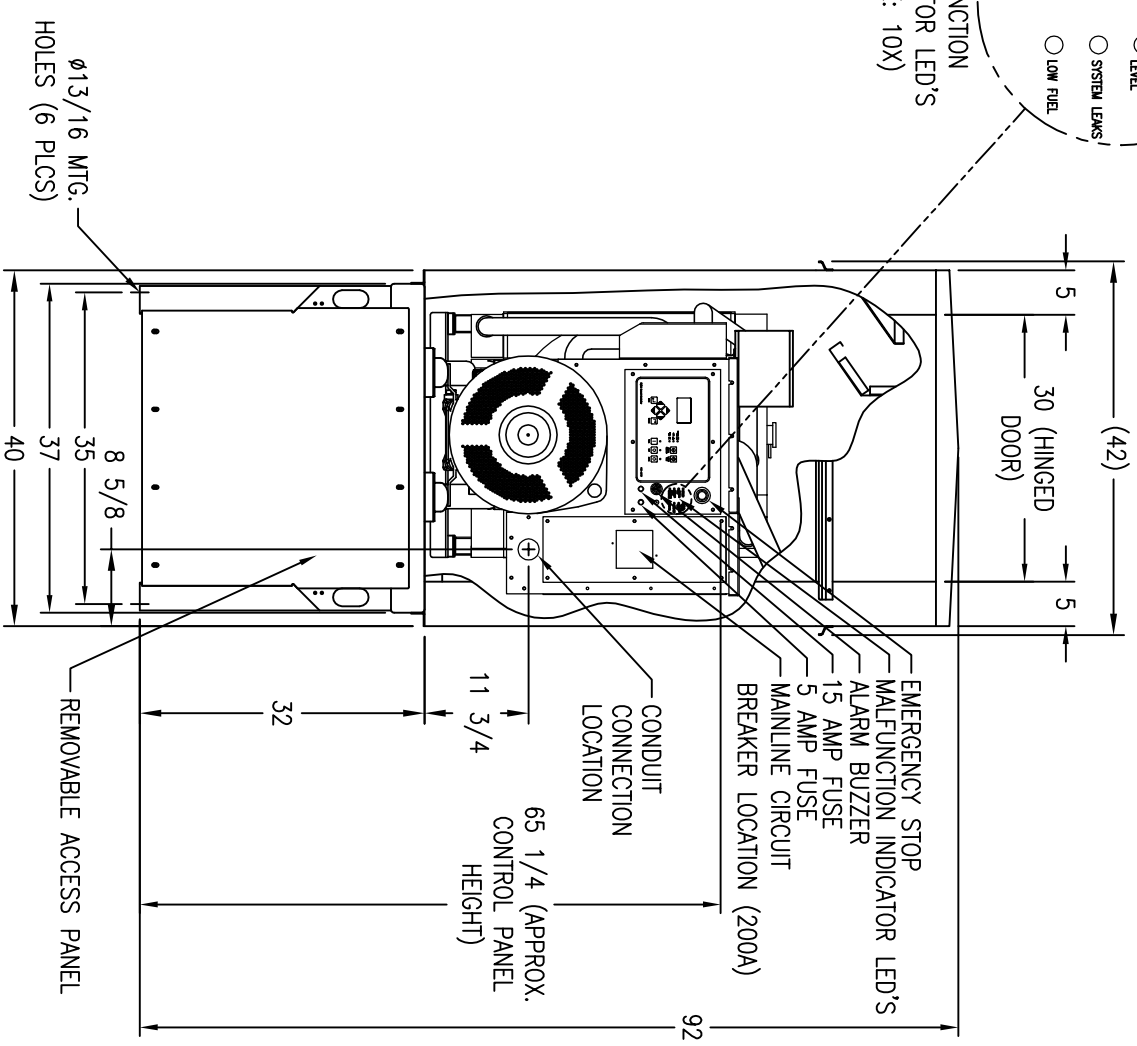
Materials and specifications subject to change without notice.

C/F = Consult Factory/MTU Onsite Energy Distributor



MALFUNCTION INDICATOR LED'S (SCALE: 10X)

- OVERCRANK
- OVER/UNDER SPEED
- OVER/UNDER VOLTAGE
- HIGH COOLANT TEMPERATURE
- LOW OIL PRESSURE
- LOW COOLANT LEVEL
- SYSTEM LEAKS
- LOW FUEL



- NOTES:
- 1) APPROX. WEIGHT: (WET) 3505#
  - 2) REFERENCE ENCLOSURE DRAWING: COE-729
  - 3) REFERENCE TANK DRAWING: 108-2514
  - 4) SOUND LEVEL: 57.3 DBA @ 23 FT. (INFINITE EXHAUST)
  - 5) GEN-SET IS OFF-SET 1 1/2" TO LEFT SIDE OF BASE/ENCL.
  - 6) ENCLOSURE & EXHAUST SYSTEMS ARE NOT SHOWN ON TOP VIEW

GEN-SET INFORMATION

ENGINE: 4024HF285  
 GENERATOR: 361  
 RADIATOR: 86880 (DR-2853)  
 RADIATOR AMBIENT: 50C  
 DUCT FLANGE: NA  
 CONTROL PANEL: DGC-2020  
 BASE: 108-2514

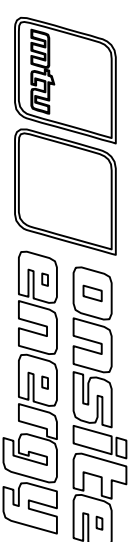
ENCLOSURE: COE-729  
 BREAKER: 200A  
 TANK: 210 GALLON  
 MUFFLER: 3 1/2 CRITICAL  
 TRAILER: NA  
 ISOLATORS: PADS

DIMENSIONAL LAYOUT

DRAWN TO SCALE  
 ALL DIMENSIONS ARE IN INCHES

MODEL: VER50\_JC6DT3  
 DRAWN BY: KAP

DWG. #: VER50\_JC6DT3(4024HF285)COE-MD-3



THIS DRAWING IS PROPERTY OF ONSITE ENERGY CORPORATION AND CANNOT BE USED EXCEPT AS SPECIFIED HEREIN. ALL RIGHTS OF THE DRAWING ARE RESERVED. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION OF THIS DRAWING IS PROHIBITED.

REVISION	DATE	REVISION DESCRIPTION	INITIALS
A	4-7-09	INITIAL RELEASE SALES AND ENGINEERING	KAP
B	11-23-09	CORRECTED TANK CAPACITY FROM 100GL TO 210GL	KAP



# 4024HF285 Genset

AIRBORNE NOISE ANALYSIS  
50 / 1800

Onsite Energy  
VER-S50D-CQE-TANK-100-7  
Data No.: S090  
Date: 10/15/2009

## Genset Surface And Exhaust Noise Analysis - 1/3-Octave

ENGINE TYPE:	<b>4024HF285</b>	ENGINE NO.:	4024L016925
GENERATOR:	<b>361 / 1613</b>	TYPE:	60 Hz
POWER / SPEED:	<b>50 / 1800</b>	TEST CELL:	LB T1
ORDER / PROJECT NO.:	<b>302089-1-1</b>	DATE MEASURED:	9/11/2009
TEST LOAD:	50 kW / 100%	TANK:	210 GALLON
INTAKE AIR OPENING:	Paper filters with housing	ENCLOSURE:	CQE
MEASURING DISTANCE:	7 m		
MEASURING SURFACE DIMENSION:	29.4 dB		
NO. OF MEASURING POINTS:	12		
SOUND PROPAGATION:	Free-field		
MEASUREMENT STANDARD:	ISO 8528		
TOLERANCE:	+5 dB for single 1/3 octave band, +2 dB(A) for total A-weighted level.		

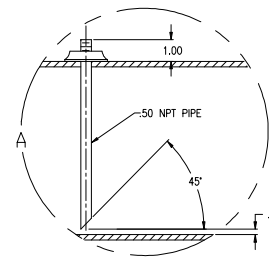
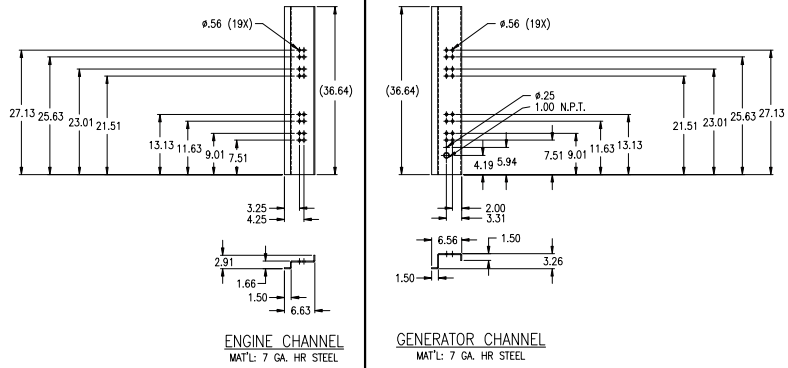
Energy mean sound pressure levels of the airborne noise that is emitted by the generator-set surface and exhaust. For project purposes only.

Energy mean free-field level                      Average Level at 7 meters:      57.3 dB(A)

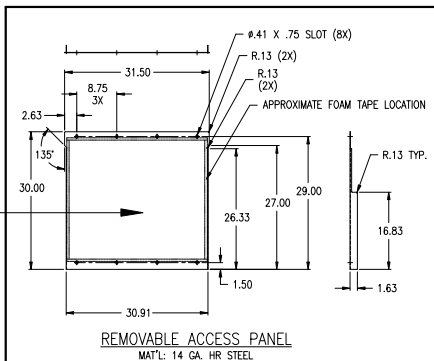
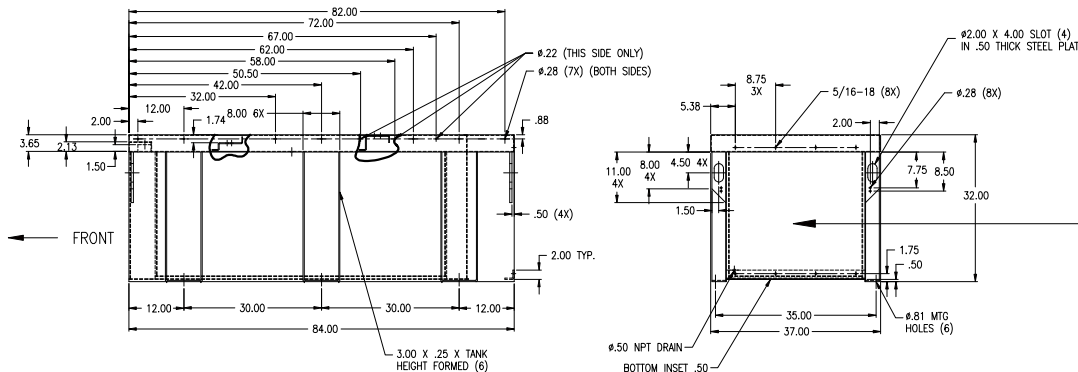
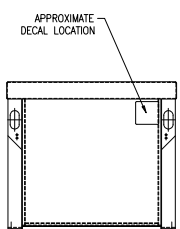
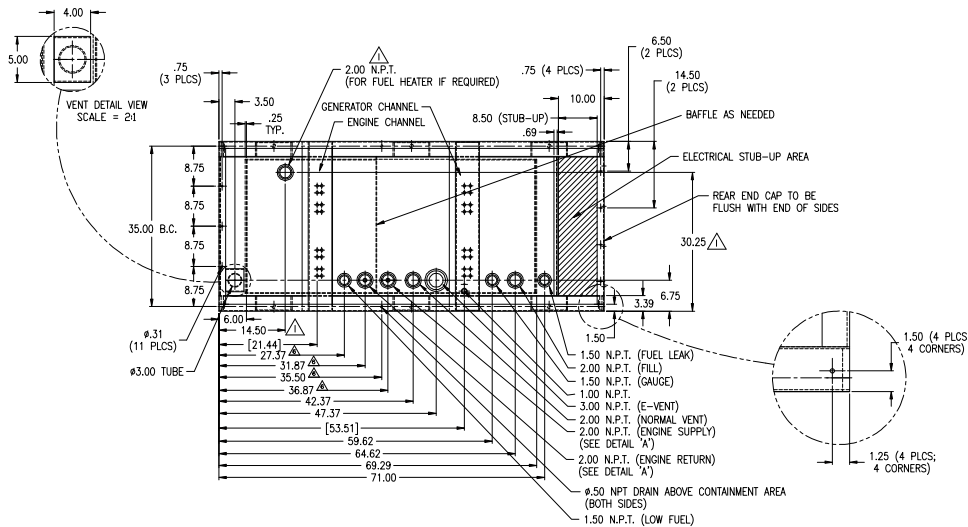
Level per Position [dB(A)]						Average
1	2	3	4	5	6	[dB(A)]
56.7	57.2	57.2	58.5	57.6	56.8	57.3

f [Hz]	Level per Frequency per Position [dB(A)]					
	1	2	3	4	5	6
25	-0.9	0.8	1.5	-2.6	1.6	-0.3
31.5	8.3	14.4	17.6	5.4	17.6	14.5
40	1.6	15.2	11.0	9.8	9.7	13.8
50	18.4	19.3	23.9	34.2	37.1	23.6
63	48.3	43.5	47.2	57.3	59.6	45.9
80	28.7	30.2	33.3	36.3	32.4	31.5
100	45.3	43.0	45.3	43.1	38.8	41.5
125	47.3	53.4	52.1	60.8	54.2	50.1
160	46.1	49.6	45.4	48.2	43.4	51.3
200	50.5	52.3	47.0	48.8	49.1	54.1
250	49.6	49.0	50.2	46.6	48.4	49.4
315	51.8	51.5	50.7	53.4	51.4	50.3
400	49.0	48.6	50.8	50.1	51.4	51.0
500	46.9	49.0	49.0	48.4	49.3	46.3
630	47.0	47.3	47.8	49.3	46.9	47.3
800	47.8	48.4	47.2	48.1	46.9	46.5
1k	45.2	46.2	45.8	47.0	45.9	44.4
1.25k	44.8	45.6	44.4	45.9	45.7	45.3
1.6k	44.7	45.1	45.4	46.7	46.0	45.0
2k	44.3	44.6	44.7	46.5	45.3	43.8
2.5k	44.0	44.6	44.9	46.6	45.7	44.7
3.15k	44.3	44.7	45.0	47.0	46.0	44.8
4k	41.6	41.9	42.2	44.1	42.8	41.8
5k	42.3	42.2	42.4	43.9	43.2	42.2
6.3k	42.1	42.4	42.3	43.3	43.0	41.8
8k	41.8	42.0	41.9	43.0	42.3	41.4
10k	39.0	39.1	39.2	40.4	39.7	38.5





- 14.1846:NOTES:
1. REMOVE ALL BURRS AND SHARP EDGES
  2. BAFFLE MUST BE CENTERED BETWEEN FUEL PIPES TO SEPARATE HOT AND COLD FUEL
  3. TANK IS DESIGNED TO SUPPORT GENSET
  4. THIS FUEL TANK IS UL LISTED 142 AS AN OPEN TOP DIKED GENERATOR BASE TANK
  5. TANK TO BE INSTALLED IN ACCORDANCE WITH AFFIXED LABELING; THE FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE, NFPA 30 AND ANY OTHER PREVAILING CODES.
  6. DISTANCE BETWEEN INNER/OUTER TANK IS TO BE .50" UNLESS OTHERWISE SPECIFIED
  7. TANK IS TO BE 125% CONTAINMENT
  8. ALL GAUGES & SWITCHES SUPPLIED BY MTU
  9. [X] DIMENSIONS ARE CRITICAL
  10. REFERENCE MATERIAL IS 10 GA. HRPO UNLESS OTHERWISE NOTED
  11. PRESSURE TEST AT 5 PSI
  12. STEEL PLUGS REQUIRED
  13. RUST INHIBITOR TO BE APPLIED TO INSIDE OF INNER TANK



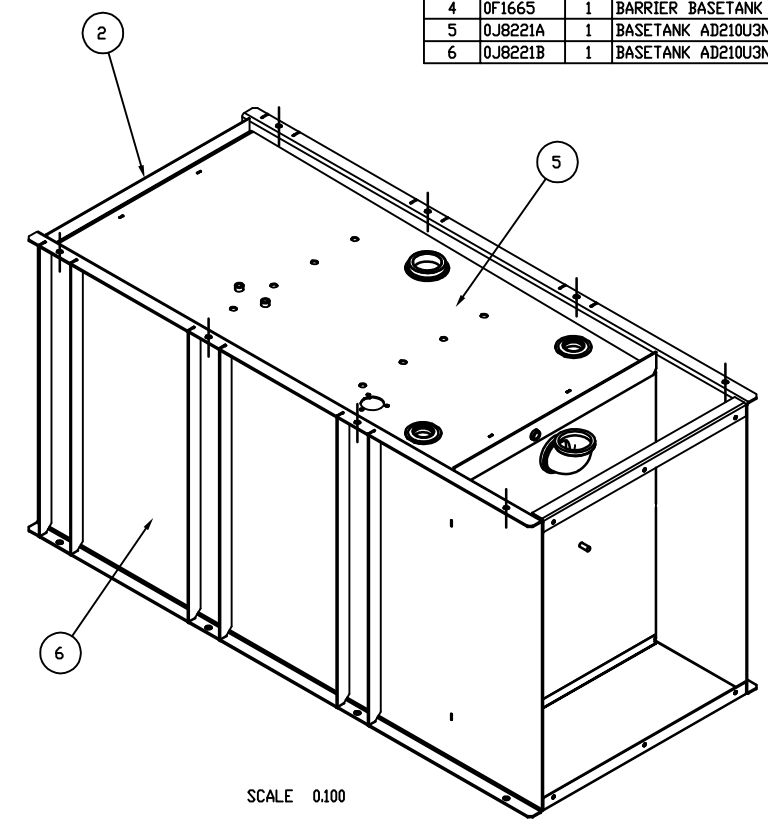
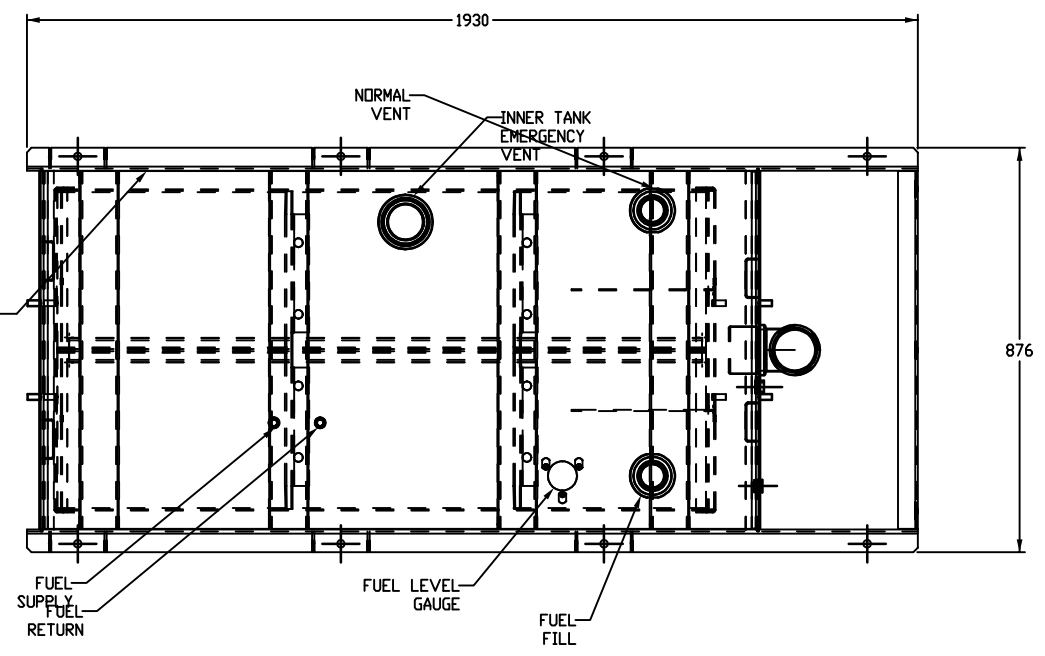
REV	EDD	REVISION DESCRIPTION	DATE	BY
1	02682	ADDED 2" NPT WELD FLANGE	01-06-12	JDA
11	02007	REVISED DWG NOTES	11-11-10	MTH
10	00958	MOVED ENGINE/GEN MTG. HOLES .25" TO THE LEFT	11-5-09	MTH
09	00894	MOVED LEAK SWITCH FROM 71.50 TO 71.00, ADD RETURN BEND TO STUB-UP	6-3-09	KJR
08	00381	SWAPPED LOCATION OF 3.00 NPT E-VENT AND 2.00 NPT FILL	6-3-09	KJR
07	87452-07	MODIFIED OVERFLOW VENT HEIGHT	3-25-08	KAP
06	87452-06	MOVED SUPPLY/RETURN, GAUGE, LOW FUEL, E-VENT TO NEW LOCATIONS, SHORTEN VENT	3-17-09	KAP
05	87452-05	ADDED 1.50 NPT LOW FUEL	03-04-09	JDA
04	87452-04	REMOVED WELD ALONG FRONT OF CHANNELS, CHANNELS OFFSET .250 FROM TANK TOP	12-16-08	JDA
03	87452-03	ADDED VENT COVER, DECAL & FOAM TAPE LOCATION, WELD ALONG FRONT OF CHANNELS	11-25-08	JDA
02	87452-02	ADDED (4) 3.00 X .25 X TANK HEIGHT SUPPORTS TO SIDES	10-10-08	JDA
01	87452-01	DELETED "C" VIEW, REMOVED END CAP NOTE	09-23-08	JDA



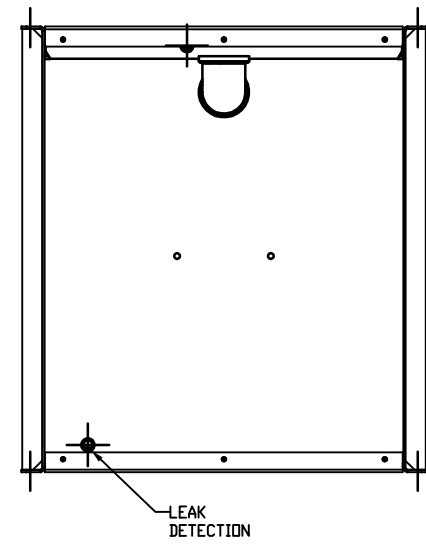
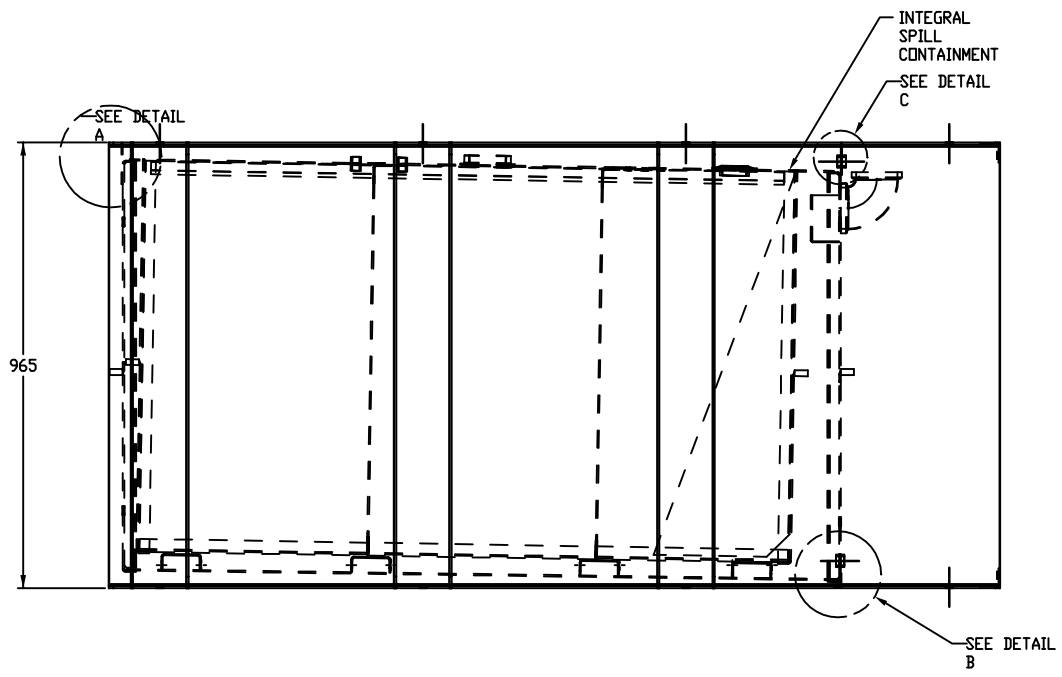
<b>TOLERANCES</b>	<b>MATERIAL:</b> SEE NOTES
X = +/- .005	<b>FINISH:</b> GLOSS BLACK
XX = +/- .002	<b>DATE:</b> 08-27-08
XXX = +/- .001	<b>DRAWN BY:</b> JDA
FRACTIONAL = +/- 1/8 (UNLESS OTHERWISE SPECIFIED)	<b>PART NO.:</b> 87452
<b>DRAWN TO SCALE</b>	<b>WEIGHT:</b> 1500#
<b>ALL DIMENSIONS ARE IN INCHES</b>	<b>SHEET:</b> 1 OF 1

<b>DESCRIPTION:</b>
TANK SB 210GL DW UL
VERZON CONTAINMENT
W/ STUB-UP 84 X 37 X 32
<b>DWG. #:</b> 108-2514

ITEM #	PART #	QTY	DESCRIPTION
1	030984A	1	COUPLING HALF 1/2" NPT
2	0D5525	1	PLATE,FRONT BASIN RETAINMENT
3	0E5123C	1	PLT RR BASIN RETAINMENT Y02(A)
4	0F1665	1	BARRIER BASE TANK STUB-UP 773
5	0J8221A	1	BASE TANK AD210U3N Y02 INNER
6	0J8221B	1	BASE TANK AD210U3N Y02 OUTER



SCALE 0.100

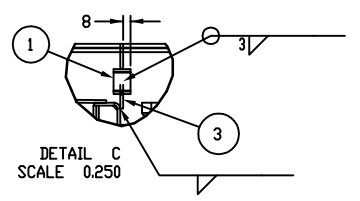
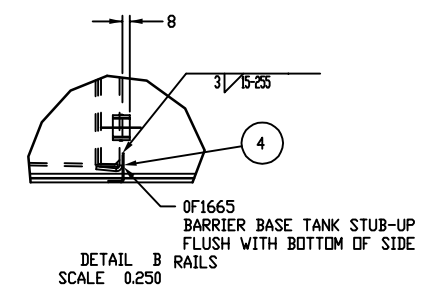
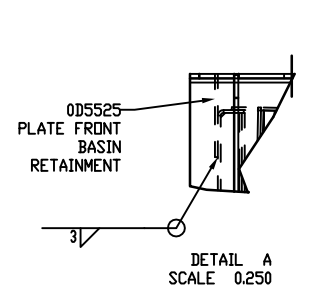


NOTES:

1. PLUG WELD ALL LOCATING TABS.
2. WHERE APPLICABLE USE TARGET MARKS TO AID IN LOCATING TANK COMPONENTS.
3. WELD 3MM FILLET ALL AROUND ALL FITTINGS AND COUPLINGS.
4. PLUG ALL FITTINGS AND COUPLINGS.
5. CONTINUOUS WELD 3MM FILLET ALL AROUND OUTSIDE EDGES TO MAKE INNER AND OUTER TANK AIR/LIQUID TIGHT.
6. FOLLOW GENERAC TANK TESTING PROCEDURE DPS-19F.
7. OIL FOG TANK, PER CURRENT GENERAC PROCEDURE.
8. PAINT PERFORMANCE PER GENERAC STANDARD GMS-7100 OR GMS-7200.
9. PAINT COLOR PER ORDER AND PER CHART SHOWN ON GENERAC STANDARD SHEET S-343.
10. MARK TANK IN COMPLIANCE WITH UL 142.
11. FIT UL CERTIFIED ID TAG.

CAPACITY	GALLONS	LITERS
TOTAL TANK	217	821
USABLE TANK CAPACITY	210	795

PART TYPE	PART NUMBER
RAW	0J82210STOR
FINISHED	SEE ORDER AND DWG. NOTES



UL 142 210 GALLON FUEL TANK BASE WITH SECONDARY CONTAINMENT

DRAWING CREATED FROM PRO/ENGINEER 3D FILE. FOR INSPECTION TO BE APPLIED TO SOLID MODEL ONLY.

- A - RELEASED FOR PRODUCTION

<b>GENERAL TOLERANCES UNLESS NOTED</b> XX = ± 1 MM XXX = ± 1 MM ALL ANGLES = ± 1° ALL PUNCHED HOLES = ± 0.10 MM ALL PROFILED HOLES = ± 1 MM INTERPRET DIM AND TOL PER ASME Y14.5M-1994		<b>THIRD ANGLE PROJECTION</b> 		GENERAC POWER SYSTEMS OWNS THE COPYRIGHT OF THIS DRAWING WHICH IS SUPPLIED IN CONFIDENCE AND MUST NOT BE USED FOR ANY PURPOSE OTHER THAN FOR WHICH IT IS SUPPLIED WITHOUT THE EXPRESS WRITTEN CONSENT OF GENERAC POWER SYSTEMS © GENERAC POWER SYSTEMS 2010	
APPROVALS DRAWN BY: WMF CHECKED BY: MFG ENG: APPROVED BY:		DATE: 1/18/12		TITLE: BASE TANK AD210U3N Y02	
DATUM INDICATING SYMBOL POSITION PROFILE OF A SURFACE FLATNESS		PERPENDICULARITY ANGULARITY CIRCULAR RUNOUT PARALLELISM		MATERIAL: SEE DRAWING DETAILS GENERAC MATL SPECIFICATION: GMS-4100 PAINT SURFACE FINISH: CLASS A	
FIRST USE: CD 1387145 ELECTRONICALLY APPROVED INSIDE WINDCHELL LIFECYCLE STATE: In Work		SIZE: D CAGE NO: N/A DWG NO: 0J8221\$ SCALE: 0.125		WT-KG: 441.96 SHEET: 1 of 1	