Texas Commission on Environmental Quality
Instructions and Procedural Information
for Filing a Permit Application for a
Hazardous Waste Storage, Processing, or Disposal Facility

Part A

[**Form Availability**: This form, as well as other Industrial and Hazardous Waste documents, is available on the Internet World Wide Web, Industrial and Hazardous Waste home page at address https://www.tceq.texas.gov/permitting/waste_permits/ihw_permits]

General Instructions

1. A person (individual, corporation or other legal entity) who stores, processes or disposes of hazardous waste (except where such storage and/or processing is excluded from permit requirements in accordance with 30 Texas Administrative Code (TAC) Section 335.2) must obtain a permit pursuant to the Texas Health and Safety Code. In applying to the Texas Commission on Environmental Quality, hereafter referred to as the Commission, the applicant shall follow the procedures outlined below, on the application and in the Rules of the Commission.

2. The application (one original plus three (3) complete copies[1]) should be mailed to:

   Texas Commission on Environmental Quality
   Attention: Waste Permits Division, MC126
   P. O. Box 13087
   Austin, Texas 78711-3087

3. Signature on Application [30 TAC 305.44]. The application shall be signed by the owner and operator or by a duly authorized agent, employee, officer, or representative of the owner or operator and shall be verified before a notary public. When another person signs on behalf of the owner and operator, this person's title or relationship to the owner or operator should be shown. In all cases, the person signing the form should be authorized to do so by the owner or operator (the Commission may require a person signing on behalf of an owner or operator to provide proof of authorization). An application submitted for a corporation must be signed by (or the signatory must be authorized by) a responsible corporate officer such as a president, secretary, treasurer, vice-president, or designated manager; or for a partnership or sole proprietorship, by a general partner or the proprietor, respectively. In the case of a municipal, state, federal, or other public facility, the application shall be signed by either a principal executive

[1] The third copy may optionally consist of paper copies of all plans and maps and a computer diskette of the remaining document. The document should be formatted in Word processing software up to and including version 6.1 or a 100% compatible format. Files may be compressed using PKZIP Ver. 2 or a 100% compatible program.

officer or ranking elected official.

4. An application will not be processed until all information required to properly evaluate the application has been obtained. When an application is severely lacking in detail and/or the applicant fails to submit additionally requested information in a timely manner, the application will not be considered to be "filed in accordance with the rules and regulations of the Commission."

   Please submit any application revisions with a revised date and page numbers at the bottom of the page(s).

5. Fees and Costs

   a. The fee for filing an application is discussed in Section XII of Part B, form number TCEQ-0376.

   b. The applicant for a permit is required to bear the cost of publication of notice of the application in a newspaper as prescribed by 30 TAC Section 39.5(g).

6. A person may not commence operation of a hazardous waste management facility until the Commission has issued a permit to authorize the storage, processing, or disposal of hazardous waste, except with the approval of the Commission.

7. Designation of Material as Confidential

   The designation of material as confidential is frequently carried to excess. The Commission has a responsibility to provide a copy of each application to other review agencies and to interested persons upon request and to safeguard confidential material from becoming public knowledge. Thus, the Commission requests that the applicant (1) be prudent in the designation of material as confidential and (2) submit such material only when it might be essential to the staff in their development of a recommendation.

   The Commission suggests that the applicant NOT submit confidential information as part of the permit application. However, if this cannot be avoided, the confidential information should be described in non-confidential terms throughout the application, and submitted as a document or binder, and conspicuously marked "CONFIDENTIAL."

   Reasons of confidentiality include the concept of trade secrecy and other related legal concepts which give a business the right to preserve confidentiality of business information to obtain or retain advantages from its right in the information. This includes authorizations under 18 U.S.C. 1905 and special rules cited in 40 CFR Chapter I, Part 2, Subpart B.

   Section 361.037 of the Texas Health and Safety Code does not allow an applicant for an industrial and hazardous waste permit to claim as confidential any record pertaining to the characteristics of the industrial solid waste.

   The applicant may elect to withdraw any confidential material submitted with the application. However, the permit cannot be issued, amended, or modified if the application is incomplete.

Part II

Procedural Information

After the submittal of Parts A and B of the application, the TCEQ will provide public notice of receipt of the application. The Executive Director's staff will review the application for completeness of information submitted. During the review, the applicant may be contacted for clarification or additional information. When all pertinent information is present, the application or a summary of its contents will be forwarded for review by other state agencies and local governmental entities interested in water quality control and solid waste management. After technical evaluation, opportunity for public hearing will be afforded.

Note that for facilities which had "commenced on-site storage, processing, or disposal of hazardous waste" [see 30 TAC Section 335.43(b)] on or before the date such waste is identified or listed as hazardous by EPA, the Texas Health and Safety Code provides in Section 361.082(f) that these facilities may continue to manage hazardous waste until such time as the Commission approves or denies the application, provided that the applicant has filed the permit application in accordance with the rules and regulations of the Commission.

The Commission may act upon an application for a permit, permit amendment, permit modification, or renewal of a permit without the necessity of holding a public hearing:

1. (a) When notice of the application has been mailed to persons possibly affected by the proposed permit; and

   (b) When notice has been published at least once in a newspaper regularly published or circulated within each county where the proposed facility is located; and

   (c) Within forty-five (45) days following publication of the Commission's notice, a Commissioner, the Executive Director or an affected person has not requested a public hearing; or

2. For a Class 1 or a Class 2 permit modification or a minor amendment to a permit. The Commission may, in certain cases, hold a public hearing for a Class 2 permit modification or a minor amendment.

A public hearing may be scheduled on an application for a RCRA hazardous waste permit when requested by a Commissioner, the Executive Director, or an affected person within forty-five (45) days following the newspaper publication.

Requirements of Giving Notice of the Application:

1. By the Applicant: Every applicant for a permit, permit amendment, permit modification, or permit renewal shall publish notice (see note below) of the application at least once in a newspaper regularly published or circulated within each county where the proposed facility is located. Where a public hearing has been requested, notice will be mailed to the applicant in ample time for publication, which shall be not less than thirty (30) days prior to the date set for the hearing. Except in the case of a notice of a permit modification request, the Commission will mail the appropriate notice and instructions for publication to the applicant.

   NOTE: Additional publication and direct mail notice to affected persons will result if a public hearing is requested following newspaper publication of the notice of application. The cost of providing this additionally required publication and service of notice to affected persons will be assumed by the applicant.

2. By the Texas Commission on Environmental Quality: The Commission will mail notice

of the application (except for permit modifications) to affected persons and certain governmental entities. The notice will be mailed at the same time instructions for newspaper publications are mailed to the applicant.

3. Bilingual Notice Instructions:

   For certain permit applications, public notice in an alternate language is required. If an elementary school or middle school nearest to the facility offers a bilingual program, notice may be required to be published in an alternative language. The Texas Education Code, upon which the TCEQ alternative language notice requirements are based, requires a bilingual education program for an entire school district should the requisite alternative language speaking student population exist. However, there may not be any bilingual-speaking students at a particular school within a district which is required to offer the bilingual education program. For this reason, the requirement to publish notice in an alternative language is triggered if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available to qualifying students and either the school has students enrolled at such a program on-site, or has students who attend such a program at another location to satisfy the school's obligation to provide such a program.

   If it is determined that a bilingual notice is required, the applicant is responsible for ensuring that the publication in the alternate language is complete and accurate in that language. Electronic versions of the Spanish template examples are available from the TCEQ to help the applicant complete the publication in the alternative language.

Bilingual Notice Application Form:

Bilingual notice confirmation for this application:

1. Is the school district of the elementary or middle school nearest to the facility required by the Texas Education Code to have a bilingual program?

   ☐YES ☒ NO

   (**If NO**, alternative language notice publication not required)

2. **If YES** to question 1, are students enrolled in a bilingual education program at either the elementary school or the middle school nearest to the facility?

   ☐ YES ☐ NO

   (**If YES** to questions 1 and 2, alternative language publication is required; **If NO** to question 2, then consider the next question)

3. **If YES** to question 1, are there students enrolled at either the elementary school or the middle school nearest to the facility who attend a bilingual education program at another location?

   ☐ YES ☐ NO

   (**If Yes** to questions 1 and 3, alternative language publication is required; **If NO** to question 3, then consider the next question)

4. **If YES** to question 1, would either the elementary school or the middle school nearest to the facility be required to provide a bilingual education program but for the fact that it secured a waiver from this requirement, as available under 19 TAC '89.1205(g)?

   ☐ YES ☐ NO

(**If Yes** to questions 1 and 4, alternative language publication is required; **If NO** to question 4, alternative language notice publication not required)

If a bilingual education program(s) is provided by either the elementary school or the middle school nearest to the facility, which language(s) is required by the bilingual program? _____

Consideration of the Permit Application by the Commission:

The applicant will be notified by the Commission when the application is set for final consideration. If the Commission issues the permit, the applicant will be mailed a copy of the permit by the TCEQ Office of the Chief Clerk within one (1) month following Commission approval. (NOTE: Only one copy is mailed to the applicant and that copy will be sent to the official mailing address of the applicant as shown on the permit application form.)

Table of Contents

Texas Commission on Environmental Quality
Permit Application for a Hazardous Waste Storage/Processing/Disposal Facility
Part A - Facility Background Information

I. General Information

A. Facility Name: **US Department of the Navy, Naval Air Station Corpus Christi**

(Individual, Corporation, or Other Legal Entity Name)

TCEQ Solid Waste Registration No: **30479** EPA I.D. No.: **TX7170022787**

Street Address (If Available): **306 Crecy Street**

City: **Corpus Christi**, State: **TX** Zip Code: **78419**

County: **Nueces**

Telephone Number: **361-961-3776** Charter Number: **N/A**

If the application is submitted on behalf of a corporation, please identify the Charter Number as recorded with the Office of the Secretary of State for Texas.

B. Facility Contact

1. List those persons or firms who will act as primary contact for the applicant during the processing of the permit application. Also indicate the capacity in which each person may represent the applicant (engineering, legal, etc.). The person listed first will be the primary recipient of correspondence regarding this application. Include the complete mailing addresses and phone numbers.
Mr. Randall Bishop
NAVFAC SOUTHEAST, Environmental Compliance
PO BOX 30, Bldg. 903/Yorktown
Jacksonville, FL 32212-0030
Phone: 904-542-6860
Email: randy.bishop1@navy.mil

2. If the application is submitted by a corporation or by a person residing out of state, the applicant must register an Agent in Service or Agent of Service with the Texas Secretary of State's office and provide a complete mailing address for the agent. The agent must be a Texas resident.
N/A – Federal Facility

C. Operator[2]: Identify the entity who will conduct facility operations.

Operator Name: **Naval Air Station, Corpus Christi**

Address: **11001 D Street, Suite 143**

City: **Corpus Christi**, State: **TX** Zip Code: **78419**

Telephone Number: **361-961-2331** Charter Number: **N/A**

[2] The operator has the duty to submit an application if the facility is owned by one person and operated by another [30 TAC 305.43(b)]. The permit will specify the operator and the owner who is listed on this application [Section 361.087 Texas Health and Safety Code].

D. Owner

1. Indicate the ownership status of the facility:

   a. Private _____

      (1) _____Corporation
      (2) _____Partnership
      (3) _____Proprietorship
      (4) _____Non-profit organization

   b. Public __X_____

      (1) _____Federal
      (2) __X_____Military
      (3) _____State
      (4) _____Regional
      (5) _____County
      (6) _____Municipal
      (7) _____Other (specify)

2. Does the operator own the facility units and facility property?

   ☒ Yes ☐ No

   If you checked "no",

   a. Submit as "Attachment A" a copy of the lease for use of or the option to buy said facility units and/or facility property, as appropriate; and

   b. Identify the facility units' owner(s) and/or facility property owner(s). Please note that the owner(s) is/are required to sign the application on page 5.

Owner Name: __**same as operator**_____

Address: _____

City: _____, State: _____ Zip Code: _____

Telephone Number: _____

Owner Name: _____

Address: _____

City: _____, State: _____ Zip Code: _____

Telephone Number: _____

E. Type of Application Submittal:

Initial _____ or Revision _**X**_____

F. Registration and Permit Information

Indicate (by listing the permit number(s) in the right-hand column below) all existing or pending State and/or Federal permits or construction approvals which pertain to pollution control or industrial solid waste management activities conducted by your plant or at your location. Complete each blank by entering the *permit number*, or the *date of application*, or *"none"*.

	Relevant Program and/or Law	Permit No.	Agency*
1.	Texas Solid Waste Disposal Act	**30479**	**TCEQ**
2.	Wastewater disposal under the Texas Water Code	**WQ0002317000**	**TCEQ**
3.	Underground injection under the Texas Water Code	**none**	
4.	Texas Clean Air Act	**77242**	**TCEQ**
5.	Texas Uranium Surface Mining & Reclamation Act	**none**	
6.	Texas Surface Coal Mining & Reclamation Act	**none**	
7.	Hazardous Waste Management program under the Resource Conservation and Recovery Act	**HW50038**	**TCEQ**
8.	UIC program under the Safe Drinking Water Act	**none**	
9.	TPDES program under the Clean Water Act	**TXR040329**	**TCEQ**
		TXR05P596	**TCEQ**
10.	PSD program under the Clean Air Act	**none**	
11.	Nonattainment program under the Clean Air Act	**none**	
12.	National Emission Standards for Hazardous Pollutants (NESHAP) Pre-construction approval under the Clean Air Act	**none**	
13.	Ocean dumping permits under the Marine Protection Research and Sanctuaries Act	**none**	
14.	Dredge or fill permits under section 404 of the Clean Water Act	**19637**	**CORPS**
15.	Other relevant environmental		

permits **none**

*Use the following acronyms for each agency as shown below:

TCEQ = Texas Commission on Environmental Quality
TRC = Texas Railroad Commission
TDH = Texas Department of Health
TDA = Texas Department of Agriculture
EPA = U.S. Environmental Protection Agency
CORPS = U.S. Army Corps of Engineers

G. Give a brief description of the nature of your business.

Military activities for national defense.

H. TCEQ Core Data Form

The TCEQ requires that a Core Data Form (Form 10400) be submitted on all incoming applications. For more information regarding the Core Data Form, call (512) 239-1575 or go to the TCEQ website at http://www.tceq.texas.gov/permitting/central_registry/guidance.html.

No core data has changed

Signature Page

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Operator Signature: _____ Date: 24 SEP 2020

Name and Official Title (type or print): **C.C. Jason, Commanding Officer**

Operator Signature: _____ Date: _____

Name and Official Title (type or print): _____

Operator Signature: _____ Date: _____

Name and Official Title (type or print): _____

Owner Signature: **same as operator** Date: _____

Name and Official Title (type or print): **C.C. Jason, Commanding Officer**

To be completed by the operator if the application is signed by an authorized representative for the operator

I, _____ hereby designate _____
(operator) (authorized representative)
as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

_____
Printed or Typed Name of Operator or Principal Executive Officer

_____
Signature

(Note: Application Must Bear Signature & Seal of Notary Public)

Subscribed and sworn to before me by the said Christopher C. Jason on this 24th day of Sept., 2020.

My commission expires on the 06 day of 13 2021

_____
Notary Public in and for Nueces County, Texas

II. Facility Background Information

A. Location of Facility for which the application is submitted

1. Give a description of the location of the facility site with respect to known or easily identifiable landmarks.

Naval Station Corpus Christi is located on the north end of Encinal Peninsula in the city of Corpus Christi, Nueces County, Texas. It is bound4d by Corpus Christi Bay to the north, Cayo del Oso Bay to the west, and Laguna Madre to the east.

2. Detail the access routes from the nearest U.S. or State Highway to the facility.

The main gate of the Naval Station is accessed via State Route 358, Naval Air Station Drive.

3. Enter the geographical coordinates of the facility:

Latitude: ___**27**_____ deg __**42**____ min __**00**____ sec

Longitude: _**97**_____ deg __**17**____ min __**00**____ sec

4. Is the facility located on Indian lands?

☐ Yes ☒ No

B. Legal Description of Facility

Submit as "Attachment B" a legal description(s) of the tract or tracts of land upon which the waste management operations referred to in this permit application occur or will occur. Although a legal description is required, a metes and bounds description is not necessary for urban sites with appropriate "lot" description(s). A survey plat or facility plan drawing which shows the specific points referenced in the survey should also be included in Attachment B.

C. SIC Codes

List, in descending order of significance, the four digit standard industrial classification (SIC) codes which best describe your facility in terms of the principal products or services you produce or provide. Also, specify each classification in words. These classifications may differ from the SIC codes describing the operation generating the hazardous wastes.

4-digit SIC Code	Description
9711	**National Security**

SIC code numbers are descriptions which may be found in the Standard Industrial Classification Manual prepared by the Executive Officer of the President, Office of Management and Budget, which is available from the Government Printing Office, Washington, D.C. Use the current edition of the manual.

III. Wastes and Waste Management

A. Waste Generation and Management Activities

Is any hazardous waste [see Title 40, Code of Federal Regulations (CFR), Part 261] presently or proposed to be generated or received at your facility?

☒ Yes ☐ No

If no, skip to question Number 2 below.

If yes, answer the following question.

1. Are you presently registered with TCEQ as a solid waste generator?

   ☒ Yes ☐ No ☐ Pending

   If no, contact the Industrial and Hazardous Waste Division of TCEQ in Austin, Texas to obtain registration information. Also, continue with the application form (go to Number 2 below).

   If yes, go to Section I of your TCEQ Notice of Registration, determine which of your wastes are hazardous, and list these wastes (and mixtures) in Table III-1 (see Number 2 below).

2. Complete Table III-1, Hazardous Wastes and Management Activities, below, listing all hazardous wastes, all mixtures containing any hazardous wastes, and hazardous debris which were, are presently, or are proposed to be handled at your facility in interim status or permitted units. See 40 CFR 261 and 268.2, attaching additional copies as necessary.

   Guidelines for the Classification & Coding of Industrial Wastes and Hazardous Wastes, TCEQ publication RG-22, contains guidance on how to properly classify and code industrial waste and hazardous waste in accordance with 30 TAC 335.501-335.515 (Subchapter R).

   If you are not registered with TCEQ, enter "NA" for TCEQ Waste Code Number.

   For the EPA Hazardous Waste Numbers, see 40 CFR 261.20-33. For annual quantity, provide the amount in units of pounds (as generated and/or received) for each waste and/or waste mixture.

B. Waste Management Units Summary

1. For each waste and waste mixture listed in Table III-1 that is stored, processed, and/or disposed on-site (except where such storage and/or processing is excluded from permit requirements in accordance with Texas Administrative Code (TAC) Section 335), complete Table III-2, Hazardous Waste Management Unit Checklist, and enter the name of each hazardous waste management unit (Note: Please make copies of Table III-2 if necessary).

Give the design capacity of each hazardous waste management unit in any of the units of measure shown. In the case of inactive or closed units for which design details are unavailable, an estimate of the design capacity is sufficient.

Please provide a description for each waste management unit described in your own words on the line provided for "Waste Management Unit."

2. Has the applicant at any time conducted the on-site disposal of industrial solid waste now identified or listed as hazardous waste?

   ☐ Yes ☒ No

   If yes, complete Table III-2 indicating the hazardous waste management units which were once utilized at your plant site but are no longer in service (i.e., inactive or closed facility units).

   If no, and if no hazardous waste is presently or proposed to be stored [for longer than 90 days (see 30 TAC Section 335.69)], processed, or disposed of at your facility, then you need not file this permit application. Otherwise proceed with the application form.

3. Provide an estimate of the total weight (lbs) of hazardous waste material that has been disposed of and/or stored within your site boundaries and not removed to another site.

   Zero pounds of hazardous waste material has been disposed of/or stored within site boundaries and not been moved to another site.

C. Location of Waste Management Units

1. Submit as "Attachment C" a drawn-to-scale topographic map (or other map if a topographic map is unavailable) extending one mile beyond the facility boundaries, depicting the following:

   NAS Corpus Christi, TX topographical map is included in Attachment C.

   a. The approximate boundaries of the facility (described in Section II.B) and within these boundaries, the location and boundaries of the areas occupied by each active, inactive, and proposed hazardous waste management unit (see Table III-2). Each depicted area should be labeled to identify the unit(s), unit status (i.e., active, inactive, or proposed), and areal size in acres.

   b. The overall facility and all surface intake and discharge structures;

   c. All on-site injection wells where liquids are injected underground;

   d. All known monitor wells and boreholes within the property boundaries of the facility; and

   e. All wells, springs, other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within the map area and the purpose for which each water well is used (e.g., domestic, livestock, agricultural, industrial, etc.).

2. Submit as "Attachment D" photographs which clearly delineate all hazardous

3. waste management storage, processing, and disposal units, as well as sites of future storage, processing and disposal units.

D. Flow Diagram/Description

Show as "Attachment E" process flow diagrams and step-by-step word descriptions of the process flow, depicting the handling, collection, storage, processing, and/or disposal of each of the hazardous wastes previously listed in this application.

Process Flow Diagrams are in Attachment E.

The flow diagrams or descriptions should include the following information:

1. Originating point of each waste and waste classification code;

2. Means of conveyance utilized in every step of the process flow;

3. Name and function of each facility component through which the waste passes;

4. The ultimate disposition of all wastes (if off-site, specify "off-site") and waste residues.

IV. Index Of Attachments

List and index below all attachments to this application and indicate if included or not included:

Item	Attachments	Attachment	Included	Not Included
I.D.2.a	Lease/Option to buy	A		**X (N/A)**
II.B	Site legal description	B		X (no change)
III.C.1	Facility boundaries and adjacent waters map	C	**X**	
III.C.2	Photographs	D	**X**	
III.D	Process flow diagram/description	E	**X**	

Table III-1 Hazardous Wastes and Management Activities

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Fluorescent lights	0500319H	D009	N	N	N	Y	N	N	0
Construction debris	0501319H	D007,8	N	N	N	Y	N	N	0
Lab pack, expired chemicals	1000001H	D001-11,18-43; F027;P001; U002,19,55,77, 80,112,140,154, 159,162,188,196, 201,210,220,226, 238,359	N	N	N	Y	N	N	70,970 lbs
Lab pack – acute hazardous chemicals	1001004H	D003; P030,98,105 106	N	N	N	Y	N	N	0
Overpack, expired organic liquid chemicals	1002219H	D001, 2, 3, 5, 6, 7, 8, 9, 11, 18, 22, 34, 35, 39, 40; U019,44,112,154	N	N	N	Y	N	N	0
Overpack, expired organic solid chemicals	1003409H	D001, 2, 3, 5, 6, 7, 8 ,10, 11, 18, 26, 27, 28, 29, 34, 35, 39, 40	N	N	N	Y	N	N	0
Acid with metals	1100103H	D001, 2, 4, 5, 6, 7, 8, 9, 10, 11; F006,19	N	N	N	Y	N	N	50,157 lbs
Acid without metals	1101104H	D002	N	N	N	Y	N	N	0
Alkaline solution	1102109H	D001, 2, 6, 7, 8, 28, 29,30,39, F001 , F002	N	N	N	Y	N	N	7,797 lbs
Alkaline with cyanide	1103108H	D002, 3; F006,7,8,9,19	N	N	N	Y	N	N	44 lbs

Table III-1 Hazardous Wastes and Management Activities

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Alkaline with metal	1104106H	D002, 4, 5, 6, 7, 8, 9, 10, 11, 35; F003, 5	N	N	N	Y	N	N	104,688 lbs
Alkaline with metals and cyanide	1105107H	D002 3, 4, 5, 6, 7, 8, 9, 10, 11; F007	N	N	N	Y	N	N	9,936 lbs
Aqueous with reactive sulfides	1106111H	D002, 3, 6, 11	N	N	N	Y	N	N	32
Mercury liquid	1107117H	U151, D002,9	N	N	N	Y	N	N	0
Oxidizer, liquid	1108119H	D001, 2, 5, 6,7, 8, 9, 10, 11	N	N	N	Y	N	N	49,690 lbs
Inorganic aqueous with low solvents	1109101H	D002, 6, 7, 8, 9, 10, 11 F002,3,5	N	N	N	Y	N	N	0
Scrubber water	1110115H	D001,2,6,7,8	N	N	N	Y	N	N	0
Inorganic aqueous with low solvents	1111101H	D001, 2 ,6, 7, 8, 11	N	N	N	Y	N	N	16,788 lbs
Monitoring well water	1112102H	D001, 4, 8,10, 11, 18, 39, 40	N	N	N	Y	N	N	0
Inorganic Catalyst Waste	1113119H	D001, 2, 6, 7	N	N	N	Y	N	N	11,964 lbs
Hospital tissue preparation reagent	1114119H	D001	N	N	N	Y	N	N	0
Corrosion prevention material	1115319H	D001, 2, 6, 7, 8, 10	N	N	N	Y	N	N	0
Reagent containing cyanides	1116108H	D002, 3	N	N	N	Y	N	N	0

Table III-1 Hazardous Wastes and Management Activities

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
High pressure blast water - painted surfaces	1117113H	D002,7,8,18, 35, F001, 2,3,4,5	N	N	N	Y	N	N	0
Inorganic acidic compounds	1118119H	D001, 2, 5, 6,7,8	N	N	N	Y	N	N	19,938 lbs
Acidic aqueous wastewater	1119105H	D002,6,7,8	N	N	N	Y	N	N	0
Acidic solution	1120105H	D002,6,7,8	N	N	N	Y	N	N	0
Water contaminated with metals	1121119H	D006, 7, 8, 9, 10, 11	N	N	N	Y	N	N	6,274 lbs
Inorganic caustic	1122119H	D002	N	N	N	Y	N	N	0
Organic Adhesives	1200210H	D001, 2, 3, 5, 6, 7, 8, 11, 18, 23, 35, 39, 40, 43 F003, 5 U002, 122	N	N	N	Y	N	N	7,026 lbs
Antifreeze	1201296H	D001, 6, 8, 10	N	N	N	Y	N	N	0
Fuel	1202219H	D001,5,6,8,18, F003,5	N	N	N	Y	N	N	330 lbs
Oil wastes	1203206H	D001, 5, 6, 7, 8, 9, 10, 11, 17, 18, 19, 22, 23, 28, 35, 39, 40, 43 F001, 2, 3, 5 U002, 52, 117, 211	N	N	N	Y	N	N	20,376 lbs
Oil/water mixture	1204205H	D001, 5, 6,7, 8	N	N	N	Y	N	N	232 lbs

Table III-1 Hazardous Wastes and Management Activities

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Paint/ink/ lacquer/varnish	1205209H	D001, 2, 3, 5, 6, 7, 8, 10, 18, 19, 22, 27, 28, 29, 35, 40 F003, 5 U154	N	N	N	Y	N	N	0
Paint Thinners	1206211H	D001, 2, 3, 5, 6, 7, 8, 10, 18, 19, 22, 28, 29, 35, 40 F002, 3, 5 U154	N	N	N	Y	N	N	0
Solvent, halogenated organic	1207202H	D001, 3, 6, 7, 8, 10, 19, 26, 27, 28, 29, 35, 37, 39, 40 F001, 2, 3, 5 U080, 226	N	N	N	Y	N	N	0
Solvent - non-halogenated organic	1208203H	D001, 2, 5, 6, 7, 8, 9, 10, 11, 28, 29, 35 F003, 5	N	N	N	Y	N	N	233,338 lbs
Solvent mixture-halogenated and non halogenated organic	1209204H	D001, 2, 4, 5, 6, 7, 8, 9, 10, 17, 18, 19, 28, 29, 35, 40 F001, 2, 3, 5	N	N	N	Y	N	N	9,184 lbs
Aerosol cleaning mixture/paint	1210219H	D001, 3, 5, 6, 7, 8, 27, 35, 39, 40	N	N	N	Y	N	N	714 lbs
Aviation fuel/oil	1211219H	D001,6,7,8,40	N	N	N	Y	N	N	0
Petroleum Distillates	1212206H	D001, 6, 7	N	N	N	Y	N	N	21,498 lbs

Table III-1 Hazardous Wastes and Management Activities

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Oils from lab analysis	1213206H	D001-043 F002, 3, 4	N	N	N	Y	N	N	440 lbs
Batteries or battery parts	1300309H	D002, 3, 4, 6, 8, 9	N	N	N	Y	N	N	516 lbs
Catalyst waste	1301393H	D001	N	N	N	Y	N	N	37,530 lbs
Construction Debris-inorganic solids	1302319H	D005, 6, 7, 8, 11 F006, 8, 19	N	N	N	Y	N	N	284,288 lbs
Oil filters, scrubber cone dust	1303310H	D001, 5, 6, 7, 8, 11, 18	N	N	N	Y	N	N	2,414 lbs
Filter press sludge	1304319H	D006, 7 F006, 19	N	N	N	Y	N	N	21,692 lbs
Fluorescent lamps	1305319H	D008, 9	N	N	N	Y	N	N	1,102 lbs
Inorganic solids containing cyanide	1306312H	D001, 3, 5, 6, 7, 8, 11, 35 F007, 8 P029	N	N	N	Y	N	N	304 lbs
Inorganic solids	1307316H	D001, 2, 3, 6, 7, 8, 10, 11	N	N	N	Y	N	N	5,330 lbs
Mercury containing solids	1308319H	D005, 9, 11	N	N	N	Y	N	N	12 lbs
Soil, concrete, and absorbents contaminated with organics	1309301H	D004, 5, 6, 7, 8, 9, 10, 11, 18, 19, 21, 27, 28, 35, 40 F002, 3, 5 U080, 226, 359	N	N	N	Y	N	N	42,360 lbs

Table III-1 Hazardous Wastes and Management Activities

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Soil contaminated w/ inorganics	1310302H	D002, 6, 7, 8, 9, 10, 11, 18, 19, 21, 27, 28, 35, 40 F001, 2, 3, 5 U080, 226, 359	N	N	N	Y	N	N	89,894 lbs
Sampling debris	1311319H	D001, 4, 5, 6, 7, 8, 9, 10, 11, 18, 27, 28, 35, 40 F002, 3, 5, 6, 19	N	N	N	Y	N	N	4,096 lbs
Polymerized epoxy, organic	1312403H	D001, 3, 5, 6, 7, 8, 11, 18, 35 F003, 5 U041, 122	N	N	N	Y	N	N	20,805 lbs
Organic solids with cyanide	1313312H	D006	N	N	N	Y	N	N	0
Rags, paper, PPE contaminated with NDI chemicals	1314319H	D040	N	N	N	Y	N	N	0
Organic solids w/out cyanide	1315409H	D006, 7, 8	N	N	N	Y	N	N	0
Inorganic flammable and oxidizing solids	1316319H	D001, 2, 3, 5, 6, 7, 8, 9	N	N	N	Y	N	N	2,548 lbs
Fuel bladders, empty	1317409H	D006, 18	N	N	N	Y	N	N	710 lbs
Asbestos solids	1318311H	D006, 7, 8	N	N	N	Y	N	N	0
Packing material and desiccants	1319319H	D006, 7, 8	N	N	N	Y	N	N	148 lbs
Ion exchange resin	1320319H	D006, 8	N	N	N	Y	N	N	0

Table III-1 Hazardous Wastes and Management Activities

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Electronic waste - computers, monitors, etc.	1321319H	D004, 6, 7, 8, 9, 11	N	N	N	Y	N	N	0
Inorganic solids with cyanide	1322319H	D006,7,8	N	N	N	Y	N	N	0
Aerosol cans, unpunctured	1323801H	D001, 3, 5, 6, 7, 8, 35, 39, 40 U228	N	N	N	Y	N	N	560 lbs
Inorganic Compressed gas cylinders	1324701H	D001	N	N	N	Y	N	N	0
Biological sludge	1401492H	D006,7,8	N	N	N	Y	N	N	0
Explosives, devices and flares	1402405H	D003	N	N	N	Y	N	N	0
Inorganic filters and debris	1403407H	D001, 3, 4, 5, 6, 7, 8, 9, 10, 11 F002, 3, 5	N	N	N	Y	N	N	8,424 lbs
Paint contaminated debris	1404409H	D002, 5, 6, 7, 8, 18, 22, 29, 35, 39, 43 F001, 2, 3, 4, 5	N	N	N	Y	N	N	7,124 lbs
Paint solid	1405409H	D001, 6, 7, 8, 9, 10, 11, 18, 19, 21, 27, 28, 29, 35, 40 F001, 2, 3, 5 U080, 226, 359	N	N	N	Y	N	N	0
Paint stripping plastic media - not pumpable	1406409H	D006, 7, 8, 9, 10 F006, 19	N	N	N	Y	N	N	5,408 lbs

Table III-1 Hazardous Wastes and Management Activities

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Rags, petroleum contaminated	1407489H	D001, 5, 6, 7, 8, 10, 11, 18, 35, 39, 40 F002, 3, 5, 6, 19	N	N	N	Y	N	N	43,250 lbs
Wood debris	1408488H	D006, 7, 8	N	N	N	Y	N	N	0
Debris contaminated with metals	1409409H	D004, 5, 6, 7, 8, 9, 10, 11 F003, 5	N	N	N	Y	N	N	33,777 lbs
Expended shell casings and projectiles	1410307H	D008	N	N	N	Y	N	N	0
Anodes discarded after use	1411409H	D008	N	N	N	Y	N	N	172 lbs
Contaminated rubber scrap debris	1412403H	D006, 7, 8	N	N	N	Y	N	N	954 lbs
Aircraft engine parts, radiation waste	1413319H	D006,7	N	N	N	Y	N	N	0
Plastic coating compound and debris	1414319H	D006, 7, 8	N	N	N	Y	N	N	4,160 lbs
Dust from sanding & grinding operations	1415319H	D005, 6, 7, 8	N	N	N	Y	N	N	3,500 lbs
Filters and adsorbents with corrosives	1416310H	D004, 5, 6, 7, 8, 9, 10, 11 F001, 2, 3, 5	N	N	N	Y	N	N	0

Table III-1 Hazardous Wastes and Management Activities

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Degreasing sludge with metals	1500510H	D006, 7, 8	N	N	N	Y	N	N	0
Drilling mud	1501514H	D006, 7, 8, 9, 18, 35	N	N	N	Y	N	N	0
Plating sludges with cyanide	1502506H	D002, 3, 4, 6, 7, 8, 10, 11 F006, 8, 19	N	N	N	Y	N	N	0
Plating sludges w/out cyanide	1503505H	D002, 4, 5, 6, 7, 8, 9, 10, 11 F006, 19	N	N	N	Y	N	N	0
Scrubber sludges	1504511H	D006, 7, 8	N	N	N	Y	N	N	0
Waste water treatment sludges, de-gritter	1505504H	D006, 7, 8	N	N	N	Y	N	N	0
Pretreatment plant sand filter	1506519H	D007, F007	N	N	N	Y	N	N	0
Abrasive sludge, metal spray and wet sanding (corrosion prevention)	1507519H	D007, 8	N	N	N	Y	N	N	0
Biological sludge -treated, dry bed cleaning	1600607H	D006, 7, 8	N	N	N	Y	N	N	0
Grease	1601696H	D001, 5, 6, 7, 8, 10	N	N	N	Y	N	N	0
Oily sludge	1602603H	D001, 4, 5, 6, 7, 8, 9, 10, 11 F001, 3, 5	N	N	N	Y	N	N	0

Table III-1 Hazardous Wastes and Management Activities

Verbal Description of Waste	TCEQ Waste for Code and Classification Code	EPA Hazardous Waste Number	Storage[1] of Wastes Received from Off-Site	Processing[2] of Wastes Received from Off-Site	Disposal of Wastes Received from Off-Site	Storage[1] of Wastes Generated On-Site	Processing[2] of Wastes Generated On-Site	Disposal of Wastes Generated On-Site	Annual Quantity Generated and/or Received
Paint/ink sludge	1603604H	D001, 6, 7, 8, 10, 35 F002, 3, 5	N	N	N	Y	N	N	0
Sewage sludge - untreated	1604608H	D005, 6, 7, 8	N	N	N	Y	N	N	0
Tar/asphalt	1605606H	D001, 18	N	N	N	Y	N	N	0
Biological sludge - treated, pumpable	1606607H	D006, 7, 8	N	N	N	Y	N	N	0
Solvent still bottoms, non-halogenated solvent recovery distillation unit	1607602H	D005, 6, 7, 8 F001, 2, 3, 5	N	N	N	Y	N	N	0
Water/paint overspray from paint booth operation - solvents, painting of aircraft	1608519H	D007, 8, 35	N	N	N	Y	N	N	0
Scintillation fluid contaminated with carbon-14 and tritium-3	1702219H	D006,7	N	N	N	Y	N	N	0
All Universal waste	UW		N	N	N	Y	N	N	72,903 lbs

[1]"Storage" means the holding of solid waste for a temporary period, at the end of which the waste is processed, disposed of, or stored elsewhere.

[2]"Processing" means the extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of hazardous waste, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material from the waste or so as to render such waste

non-hazardous or less hazardous; safer for transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume. The "transfer" of solid waste for reuse or disposal as used above, does not include the actions of a transporter in conveying or transporting solid waste by truck, ship, pipeline, or other means. Unless the Executive Director determines that regulation of such activity is necessary to protect human health or the environment, the definition of "processing" does not include activities relating to those materials exempted by the Resource Conservation and Recovery Act, 42 U.S.C. 6901 **et seq.**, as amended.

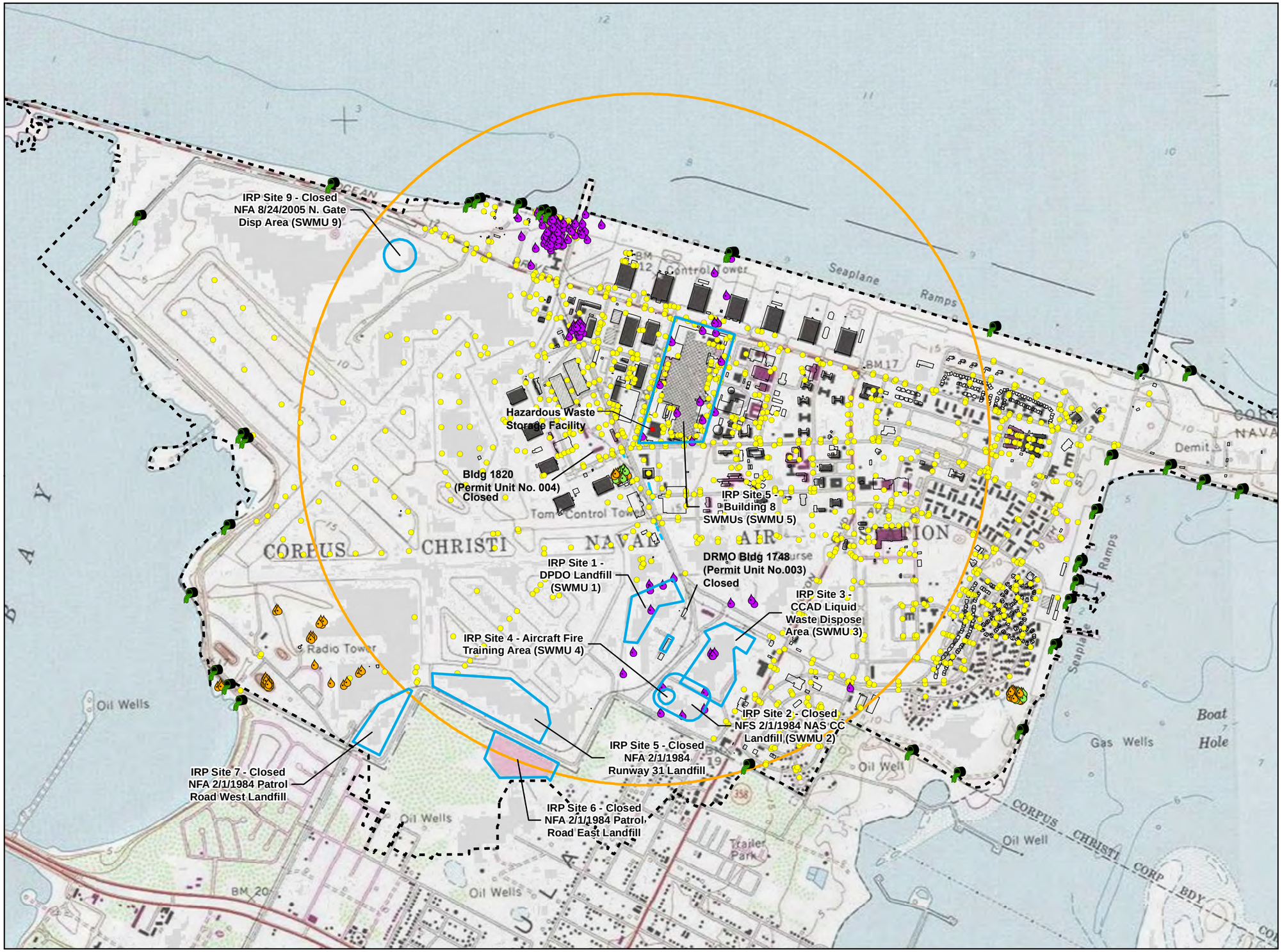
Table III-2 – Hazardous Waste Management Unit Checklist

Waste Management Unit	TCEQ N.O.R. Unit #	Status[1]	Design Capacity[2]	Number of Years Utilized	Date in Service
Building 257 Container Storage Area	020	Closed	17,200 gallons	37	6/2/82
DRMO Conforming Storage Building CLOSED – NOT BUILT	028	Closed	46,200	0	Never Built
Building 1820 CLOSED - NOT USED	034	Closed	74,500	0	Never used
Building 258	Not yet issued	Proposed	21,120 gallons	Not applicable	Under construction

*Table revised per April 14, 2005 Class 1 Permit Modification and TCEQ approval letters of July 12, 2005 and November 7, 2019.

[1] Indicate only one of the following: Active, Inactive, Closed, or Proposed
[2] Cubic yards, gallons, pounds, gallons/minute, pounds/hour, BTUs/hour, etc.

Part A
Attachment C
Topographic Map



VICINITY MAP

LEGEND

Environmental Sample Location

- Borehole/Soil boring
- Monitoring well
- Temporary well point
- Discharge Point
- Stormwater Inlet
- Open Drainage
- Hazardous Waste Storage Facility
- One Mile Radius from Hazardous Waste Storage Facility
- Buildings
- Installation Boundary
- IRP Site

Notes:

1. Imagery Source: USGS 7.5 minute topographic quadrangles:
Oso Creek NE, TX (published 1977)
Crane Islands NW, TX (published 1977)

N

0 750 1,500 3,000 Feet

Part A, Attachment C
Topographic Map
NAS Corpus Christi
Corpus Christi, Texas

Part A
Attachment D
Photos

Hazardous waste storage bay with final floor finish

Hazardous waste storage bay and secondary containment and grating.

Hazardous waste storage bay fire foam system.

Equipment and materials storage bay.

Wind sock on building exterior.

Exterior view of hazardous waste storage bay

Exterior area around hazardous waste storage bays

Part A
Attachment E
Process Flow Descriptions/Diagrams

PROCESS FLOW DESCRIPTION

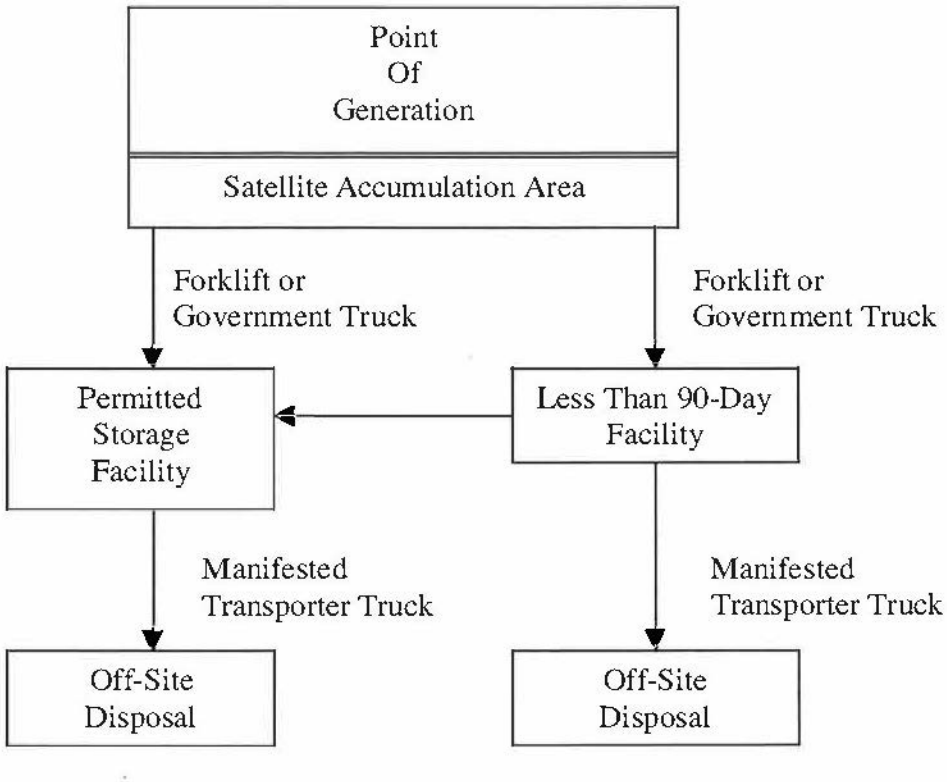
Numerous waste streams both hazardous and non-hazardous are generated as a result of various maintenance, repair, and training operations at NAS Corpus Christi. Individual work centers or generating tenants are responsible for initiating disposal. The generating work center or tenant places waste in an appropriate container at a Satellite Accumulation Area. Container sizes vary from 1-gallon to 550-gallon in size. When 55-gallon containers are full they are moved to a Less Than 90-Day Accumulation Area or to the Hazardous Waste Storage Facility. Intermediate bulk containers are used when a work center will be generating a large volume of waste in a short period of time such as one or two days. These containers hold 705 liters (approximately 186 gallons) and are moved via forklift or truck to a Less Than 90-Day Accumulation Area or the Hazardous Waste Storage Facility within the 3-day time limit and when the contents exceed the 55-gallon limit. Once disposal can be arranged, the waste is manifested and shipped off-site for disposal at a permitted disposal facility.

Several work centers that process metal parts using Acids, Bases, and other metal clean fluids may generate a large amount of waste when process tanks are cleaned or the process fluids are no longer effective for their intended service. These work centers will transfer these wastes into 550-gallon tote tanks for disposal. Tote tanks are usually filled in one day and immediately moved via a forklift to a Less Than 90-Day Accumulation Area. A vacuum truck will pump out the tote tank, manifest the waste, and transport off-site to an appropriate disposal site.

Contractor generated waste such as remediation waste, sample derived wastes/monitoring well development waste, and demolition/construction debris is accumulated in dump trucks, roll offs, and tank trucks. These types of waste are manifested and moved directly off-site for disposal.

PROCESS FLOW DIAGRAM # 1

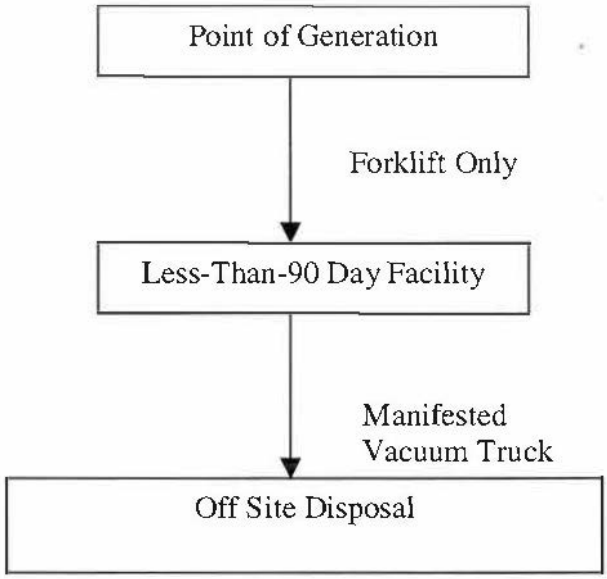
For 55-Gallon Drums and Intermediate Bulk Containers



1. Various wastes such as Adhesives, Antifreeze, Oil waste, Paint, and Solvents that are generated in the installation's work centers are accumulated in various size containers in Satellite Accumulation Areas. When the accumulation of waste approaches the 55-gallon limit or when the 3-day time limit is approaching, the waste is moved with a forklift or government truck to the Hazardous Waste Storage Facility or to a Less Than 90-Day Accumulation Area.
2. Waste may be picked up from the Less Than 90-Day Accumulation Area or from the Hazardous Waste Permitted Storage Facility. If the waste has been in the Less Than 90-Day Accumulation Area for close to the 90-day time limit, it is moved to the Hazardous Waste Storage Facility.
3. Transportation vehicles will remove the waste to a permitted off-site location.

PROCESS FLOW DIAGRAM # 2

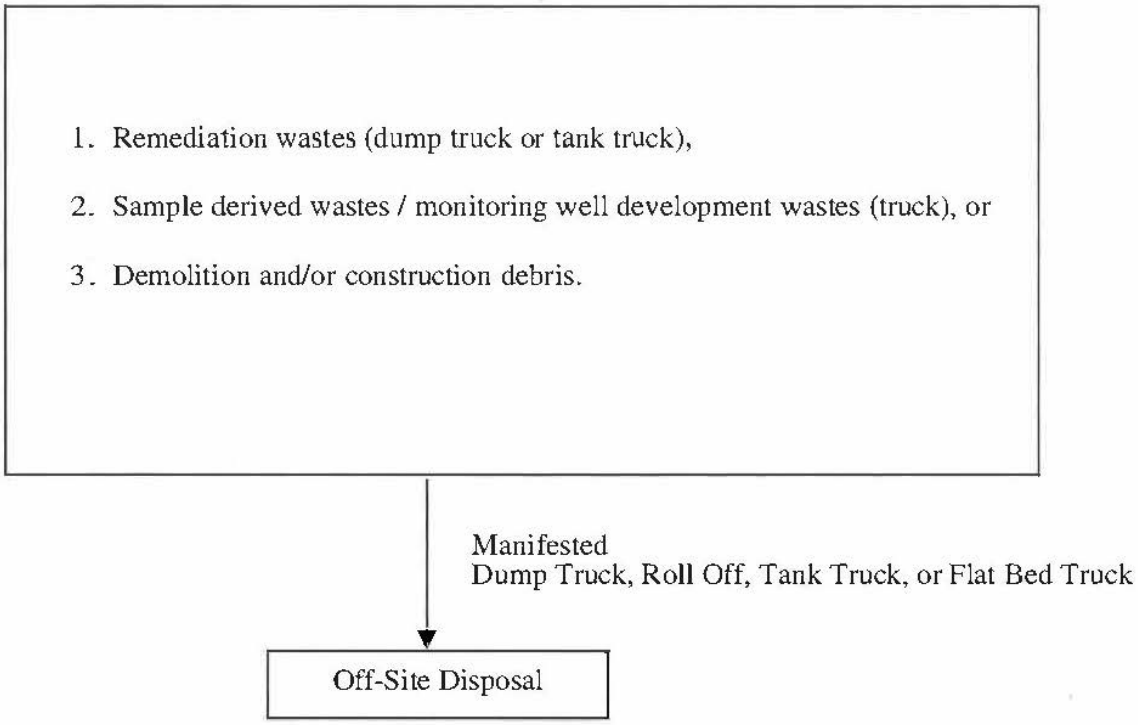
FOR 550-GALLON TOTE TANKS



1. When large quantities of various liquid wastes such as Acids, Alkalines, and Rinse Waters, are being generated at a work site, the waste is accumulated in 550-gallon tote tanks. The tote tanks are moved to the Less Than 90-Day Accumulation Area using a forklift when the tote tanks are full or the process is complete such as cleaning out a tank.
2. The transporter is notified to come and pick up the waste collected in the 550-gallon tote tanks with a vacuum truck. The transporter moves the waste to an off-site disposal facility using an over the road truck.

PROCESS FLOW DIAGRAM # 3

FOR CONTRACTOR-GENERATED WASTE



1. Remediation waste (liquid or media) is generated as a result of a spill or clean-up action. This waste is loaded on a dump truck or a tank truck and transported off-site to an off-site disposal facility using the same truck it was originally loaded on.
2. Sampling-derived and monitoring well development waste is placed in containers and then loaded directly onto a truck to be transported to an off-site disposal facility.
3. Demolition and construction debris are loaded directly on the transporter truck and moved off-site to an off-site disposal facility.

Texas Commission on Environmental Quality
Permit Application for
Industrial and Hazardous Waste
Storage/Processing/Disposal Facility
with Compliance Plan

Part B

Form Availability:

This form, as well as other Industrial and Hazardous Waste documents, Part B electronic checklist, and pertinent rules, is available on the Internet. The TCEQ Home Page is at: http://www.tceq.texas.gov. Once you have accessed the home page, select "Forms and Publications" and follow the system prompts. The number for this form is 00376. Questions may be e-mailed to ihwper@tceq.texas.gov.

Introduction:

This permit application is generally a reorganized summary of the Part B information requirements of 40 CFR Part 270 and 30 Texas Administrative Code (TAC) Chapter 305 Subchapters C and D and Chapter 335. The TCEQ may request additional information before a permit is issued, if regulatory requirements change.

The original application plus all copies for New, Renewals, Major Amendments and Class 3 Modifications should be submitted to:

Texas Commission on Environmental Quality
Attention: Waste Permits Division, MC 126
P. O. Box 13087
Austin, Texas 78711-3087

The original application plus all copies for Class 1, Class 1[1], Class 2 Modifications and Minor Amendments should be submitted to:

Texas Commission on Environmental Quality
Attention: Industrial and Hazardous Waste Permits Section, MC 130
Waste Permits Division
P. O. Box 13087
Austin, Texas 78711-3087

Telephone Inquiries:

(512) 239 - 2335 (For RCRA permit application) - Industrial & Hazardous Waste Permits

Section, Waste Permits Division

(512) 239 - 6412 (For industrial and hazardous waste classification) - Technical Analysis Team, Industrial & Hazardous Waste Permits Section, Waste Permits Division

(512) 239 - 6413 (For solid waste registration number, EPA identification number, and notice of registration) - Registration and Reporting Section, Permitting and Registration Support Division

(512) 239 - 0272 (For non-combustion units) - Chemical New Source Review Permits Section, Air Permits Division

(512) 239 - 1583 (For combustion units) - Energy/Combustion New Sources Review Permits Section, Air Permits Division

(512) 239 - 0600 (For legal) - Environmental Law Division

(512) 239 - 6150 (For financial assurance) - Financial Assurance Unit, Revenue Operations Section, Financial Administration Division

(512) 239 - 0300 (For payment of permit application fees) - Cashier's Office, Revenue Operations Section, Financial Administration Division

(512) 239 - 2201 (For compliance plan or corrective action) - Voluntary Cleanup Program/Corrective Action Section, Remediation Division

Application Review Prohibition:

The Texas Commission on Environmental Quality (TCEQ) shall not review an application for a new commercial hazardous waste facility, and the application shall be deemed not to have been received, until the emergency response information required by Section III.F. of the application has been reviewed and declared by TCEQ staff to be complete and satisfactory. [30 TAC 281.26, 30 TAC 305.50(a)(12)(C) and (D)]

Permit Issuance Prohibited [30 TAC 335.205]:

The TCEQ shall not issue a permit for:

1. a new hazardous waste management facility or an areal expansion of an existing facility if the facility or expansion does not meet the requirements of 30 TAC 335.204 (relating to Unsuitable Site Characteristics);
2. a new hazardous waste landfill or the areal expansion of an existing hazardous waste landfill if there is a practical, economic, and feasible alternative to such a landfill that is reasonably available to manage the types and classes of hazardous waste which might be disposed of at the landfill;
3. a new commercial hazardous waste management facility as defined in 30 TAC 335.202 (relating to Definitions) or the subsequent areal expansion of such a facility or unit of that facility if the owner/operator proposes to locate the boundary of the unit within 0.5 of a mile (2,640 feet) of an established residence, church, school, day care center, surface water body used for a public drinking water supply, or dedicated public park;
4. a new commercial hazardous waste management facility that is proposed to be located at a distance greater than 0.5 mile (2,640 feet) from an established residence, church, school, day care center, surface water body used for a public drinking water supply, or dedicated public park unless the applicant demonstrates to the satisfaction of the commission that the facility will be

operated so as to safeguard public health and welfare and protect physical property and the environment, at any distance beyond the facility's property boundaries;

5. a proposed hazardous waste management facility, or a capacity expansion of an existing hazardous waste management facility if a fault exists within 3,000 feet of the proposed hazardous waste management facility or of the capacity expansion of an existing hazardous waste management facility unless the applicant performs the demonstration found in 30 TAC 305.50(a)(4)(D) and 305.50(a)(10)(E) ; and

6. A proposed solid waste facility for the processing or disposal of municipal hazardous waste or industrial solid waste which is located within an area of a municipality or county in which the processing or disposal of municipal hazardous waste or industrial solid waste is prohibited by an ordinance or order. [Texas Health and Safety Code Section 363.112]

See 30 TAC 335 Subchapter G: Location Standards for Hazardous Waste Storage, Processing, or Disposal for additional details and information regarding items 1 through 5 above.

Completing The Application and Electronic Checklist:

Prior to submitting a new permit application, please contact the TCEQ Permitting and Registration Support Division to obtain a Solid Waste Registration Number and an EPA Identification Number for inclusion in Section I.A. of this application. The facility's Solid Waste Registration Number may be proposed in Section I.A. as the Permit Number

This permit application form has been designed to solicit specific information, with reports to be attached or inserted. A response must be made for each informational request in the application form. If an item is not applicable please state "not applicable" and explain. All information included in the application must be listed by the format of the application. For example, if an engineering report is attached to the application to fulfill the requirements of Section V, then each subsection of the engineering report must correlate with the corresponding subsection in the application form (e.g., Subsection V.A.3. of the report would be proposed construction schedules). If information is provided which does not correspond with the application form, the specific rule or regulation which requires submittal of the information must be cited. Each report should be attached behind the summary form or table for the report and submitted as one document with the pages sequentially numbered at the bottom. Maps, bluelines, and drawings that cannot be folded to 8-1/2" x 11" may be submitted as separate documents. Engineering plans and specifications submitted with an application must be approved and sealed by a licensed Professional Engineer, with current license and designating the Registered Engineering Firm's name and Registration Number as required by the Texas Engineering Practice Act. Geology reports, geologic maps, and geologic cross-sections submitted with an application must be approved and sealed by a licensed Professional Geologist, with current license required by the Texas Geoscience Practice Act. Complete the tables in this application rather than substituting.

Facilities which will receive industrial and hazardous wastes from off-site sources must also provide information on these wastes and associated waste management units in accordance with 30 TAC 335.2.

In addition, the electronic checklist has been designed to facilitate the application preparation and review process, and should be completed and submitted along with applicable applications (see "Submittal" below).

For those who pre-filed a Part A application, certain items may have been omitted. These

omissions must be addressed at this time. Additionally, if hazardous waste management methods have changed since the filing of the Part A, please provide an updated Part A.

Pursuant to Section 361.067 of the Texas Health and Safety Code, the TCEQ is required to mail a copy of this application or a summary of its contents to other regulatory agencies. Section I may be considered a summary of the entire application provided that all questions are completely answered. Therefore, Section I responses must not rely solely on cross-references to other sections of the application.

Groundwater Contamination:

If groundwater monitoring has detected the presence of hazardous constituents in the facility groundwater, the owner or operator must submit a Compliance Plan Application that is included as Section XI of this application. For more detailed instructions concerning a Compliance Plan, please see Section XI.

Submittal:

The complete application should be prepared using word processing. The third copy in the submittal package should consist of paper copies or PDF files of all surveys, reports, plot plans, diagrams, P&IDs, maps, etc., and a Compact Disk (CD) of the completed application form document and tables formatted in MS Word. Files may be compressed using PKZIP Ver. 2 or a 100% compatible program. For Renewal, Amendment, and Modification applications, the MS Word files should include both a finalized version and, where available, a redline/strikeout version clearly identifying all proposed changes from the existing permit. For revised application sections and incorporated documents where redline/strikeout versions are not available, submit a detailed listing of all proposed changes to the existing permit. In addition, the submitted electronic version of the application should be easily searchable during the review process by TCEQ staff.

For a new permit application or renewal, submit:

1. an original updated Part A permit application plus three (3) full copies;
2. the original Part B application plus three (3) full copies (including the electronic third copy);
3. a check for payment of permit application fees transmitted directly to the TCEQ Financial Administration Division;
4. Pre-printed mailing labels of the adjacent landowners or an electronic mailing list on Compact Disk (CD) in MS Word format; and
5. Completed RCRA Part B Administrative and Technical Evaluation Electronic Checklist (Form #00136) on CD, DVD, or USB drive.

For a new compliance plan or renewal of an existing compliance plan, please submit the following in addition to the above:

1. Sections I and XI.A. through XI.E., as applicable;
2. Tables XI.A.I., XI.E.I. through XI.E.III., and CP Tables I, II, V, VI through VIII, are required; and CP Tables III, IIIA, IV, and IVA as applicable; and
3. a Sampling and Analysis Plan (SAP) compliant with "Attachment A" requirements and evaluation of monitoring wells compliant with "Attachment B" well specification requirements.

For a post-closure care permit submit:

1. an original updated Part A permit application plus three (3) full copies;
2. the original Part B application (excluding Sections III B and F; IV A, C and D; VII A and B; VIII.B and C; and X) plus three (3) full copies;
3. a check for payment of permit application fees transmitted directly to the TCEQ Financial Administration Division;
4. pre-printed mailing labels of the adjacent landowners or an electronic mailing list on Compact Disk (CD) in MS Word format; and
5. Completed RCRA Part B Administrative and Technical Evaluation Electronic Checklist (Form #00136) on CD, DVD, or USB drive.

For major amendments to an issued hazardous waste permit, submit:

1. (if appropriate) an original updated Part A permit application plus three (3) full copies;
2. an original Part B application plus three (3) full copies, consisting of, at a minimum, Section I of the Part B plus replacement pages for the changed portions of the application that change as a result of the amendment;
3. an explanation of why the major amendment is needed;
4. a check for payment of permit application fees transmitted directly to the TCEQ Financial Administration Division;
5. pre-printed mailing labels of the adjacent landowners or an electronic mailing list on Compact Disk (CD) in MS Word format; and
6. Completed RCRA Part B Administrative and Technical Evaluation Electronic Checklist (Form #00136) on CD, DVD, or USB drive.

For minor amendments to an issued hazardous waste permit, submit:

1. (if appropriate) an original updated Part A permit application plus three (3) full copies;
2. an original Part B application plus three (3) full copies, consisting of, at a minimum, Section I of the Part B plus replacement pages for the changed portions of the application that change as a result of the amendment;
3. an explanation of why the minor amendment is needed;
4. a check for payment of permit application fees transmitted directly to the TCEQ Financial Administration Division; and
5. pre-printed mailing labels of the adjacent landowners or an electronic mailing list on diskette on Compact Disk (CD) in MS Word format.

For Class 3 modifications (including adding or revising a Compliance Plan) to an issued hazardous waste permit, submit:

1. (if appropriate) an original updated Part A permit application plus three (3) full copies;
2. an original Part B application plus three (3) full copies, consisting of, at a

minimum, Section I of the Part B plus replacement pages for the changed portions of the application that change as a result of the modification;

3. a description of the exact changes to be made to the permit conditions and supporting documents referenced by the permit;
4. an explanation of why the Class 3 modification is needed;
5. evidence of the public notice mailing and publication (after the public meeting, please submit a statement that the public meeting was held within the required timeframes);
6. a check for payment of permit application fees transmitted directly to the TCEQ Financial Administration Division;
7. pre-printed mailing labels of the adjacent landowners or an electronic mailing list on Compact Disk (CD) in MS Word format; and
8. Completed RCRA Part B Administrative and Technical Evaluation Electronic Checklist (Form #00136) on CD, DVD, or USB drive.

For Class 2 modifications to an issued hazardous waste permit, submit:

1. (if appropriate) an original updated Part A permit application plus three (3) full copies;
2. an original Part B application plus three (3) full copies, consisting of, at a minimum, Section I of the Part B plus replacement pages for the changed portions of the application that change as a result of the modification;
3. a description of the exact changes to be made to the permit conditions and supporting documents referenced by the permit;
4. an explanation of why the Class 2 modification is needed;
5. evidence of the public notice mailing and publication (after the public meeting, please submit a statement that the public meeting was held within the required timeframes);
6. a check for payment of permit application fees transmitted directly to the TCEQ Financial Administration Division; and
7. pre-printed mailing labels of the adjacent landowners or an electronic mailing list on diskette on Compact Disk (CD) in MS Word format.

For Class 1[1] modifications to an issued hazardous waste permit, submit:

1. (if appropriate) an original updated Part A permit application plus three (3) full copies;
2. an original Part B application plus three (3) full copies, consisting of, at a minimum, Section I of the Part B plus replacement pages for the changed portions of the application that change as a result of the modification;
3. a description of the exact changes to be made to the permit conditions and supporting documents referenced by the permit;
4. an explanation of why the Class 1[1] modification is needed;
5. a check for payment of permit application fees transmitted directly to the TCEQ Financial Administration Division; and

6. Completed RCRA Part B Administrative and Technical Evaluation Electronic Checklist (Form #00136) on CD, DVD, or USB drive, for applications involving the partial transfer of some permitted waste management units.

For Class 1 modifications to an issued hazardous waste permit, submit:

1. (if appropriate) an original updated Part A permit application plus three (3) full copies;
2. an original Part B application plus three (3) full copies, consisting of, at a minimum, Section I of the Part B plus replacement pages for the changed portions of the application that change as a result of the modification;
3. a description of the exact changes to be made to the permit conditions and supporting documents referenced by the permit;
4. an explanation of why the Class 1 modification is needed; and
5. a check for payment of permit application fees transmitted directly to the TCEQ Financial Administration Division.

If several modifications are submitted as one application, the application review will proceed at rate of the amendment or modification which has the longest timeframe.

Application Revisions:

Please submit any application revisions with a revised date and page numbers at the bottom of the page(s).

Waivers:

Any request for waiver of any of the applicable requirements of this permit application must be fully documented.

Designation of Material as Confidential:

The designation of material as confidential is frequently carried to excess. The Commission has a responsibility to provide a copy of each application to other review agencies and to interested persons upon request and to safeguard confidential material from becoming public knowledge. Thus, the Commission requests that the applicant (1) be prudent in the designation of material as confidential and (2) submit such material only when it might be essential to the staff in their development of a recommendation.

The Commission suggests that the applicant not submit confidential information as part of the permit application. However, if this cannot be avoided, the confidential information should be described in non-confidential terms throughout the application, cross-referenced to Section XIII: Confidential Material, and submitted as a separate Section XIII document or binder, and conspicuously marked "CONFIDENTIAL."

Reasons of confidentiality include the concept of trade secrecy and other related legal concepts which give a business the right to preserve confidentiality of business information to obtain or retain advantages from its right in the information. This includes authorizations under, 18 U.S.C. 1905 and special rules cited in 40 CFR Chapter I, Part 2, Subpart B. Section 361.037 of the Texas Health and Safety Code does not allow an applicant for an industrial solid waste permit to claim as confidential any record pertaining to the characteristics of the industrial solid waste.

The applicant may elect to withdraw any confidential material submitted with the application.

However, the permit cannot be issued, amended, or modified if the application is incomplete.

Exposure Assessment:

In accordance with 30 TAC 305.50(a)(8) and 40 CFR 270.10(j), any Part B application submitted for a facility that stores, processes, or disposes of hazardous waste in a surface impoundment or a landfill (including post-closure) must be accompanied by exposure information of the potential for the public to be exposed to hazardous wastes or hazardous constituents through releases related to the unit. This exposure information is considered separate from the permit application, as stated in 40 CFR 270.10(c).

Pre-Application Meeting/Public Participation Activities [30 TAC 335.391 and 30 TAC 39.503]:

The TCEQ encourages applicants to conduct an applicant held public meeting prior to submittal of an application to allow the applicant and the public to identify potential issues. A pre-application public meeting is required prior to submittal of an application for an initial permit for hazardous waste management units, an application for hazardous waste part B applications for renewal of permits which propose a significant change in facility operations that would classify as a Class 3 Modification and an application for a major amendment. The pre-application public meeting requirements are described under 40 CFR Part 124.31(b)-(d).

Applicants are encouraged to request a pre-application meeting with TCEQ Permits Section staff and to notify the Industrial and Hazardous Waste Permits Section, Waste Permits Division of intent to file a permit application.

If a local review committee has been established to facilitate communication between the applicant and the local host community, the applicant should summarize the activities of the committee and submit this summary with the application. Any report completed by a review committee must be submitted.

Bilingual Notice Instructions:

For certain permit applications, public notice in an alternate language is required. If an elementary school or middle school nearest to the facility offers a bilingual program, notice may be required to be published in an alternative language. The Texas Education Code, upon which the TCEQ alternative language notice requirements are based, requires a bilingual education program for an entire school district should the requisite alternative language speaking student population exist. However, there may not be any bilingual-speaking students at a particular school within a district which is required to offer the bilingual education program. For this reason, the requirement to publish notice in an alternative language is triggered if the nearest elementary or middle school, as part of a larger school district, is required to make a bilingual education program available to qualifying students and either the school has students enrolled at such a program on-site, or has students who attend such a program at another location to satisfy the school's obligation to provide such a program.

If it is determined that a bilingual notice is required, the applicant is responsible for ensuring that the publication in the alternate language is complete and accurate in that language. Electronic versions of the Spanish template examples are available from the TCEQ to help the applicant complete the publication in the alternative language.

Bilingual notice confirmation for this application:

1. Is the school district of the elementary or middle school nearest to the facility required by the Texas Education Code to have a bilingual program?

☐ Yes ☒ No

(**If No**, alternative language notice publication not required)

2. **If Yes** to question 1, are students enrolled in a bilingual education program at either the elementary school or the middle school nearest to the facility?

   ☐ Yes ☐ No

   (**IF Yes** to questions 1 and 2, alternative language publication is required; **If No** to question 2, then consider the next question)

3. **If Yes** to question 1, are there students enrolled at either the elementary school or the middle school nearest to the facility who attend a bilingual education program at another location? ☐ Yes ☐ No

   (**If Yes** to questions 1 and 3, alternative language publication is required; **If No** to question 3, then consider the next question)

4. **If Yes** to question 1, would either the elementary school or the middle school nearest to the facility be required to provide a bilingual education program but for the fact that it secured a waiver from this requirement, as available under 19 TAC 89.1205(g)?

   ☐ Yes ☐ No

   (**If Yes** to questions 1 and 4, alternative language publication is required; **If No** to question 4, alternative language notice publication not required)

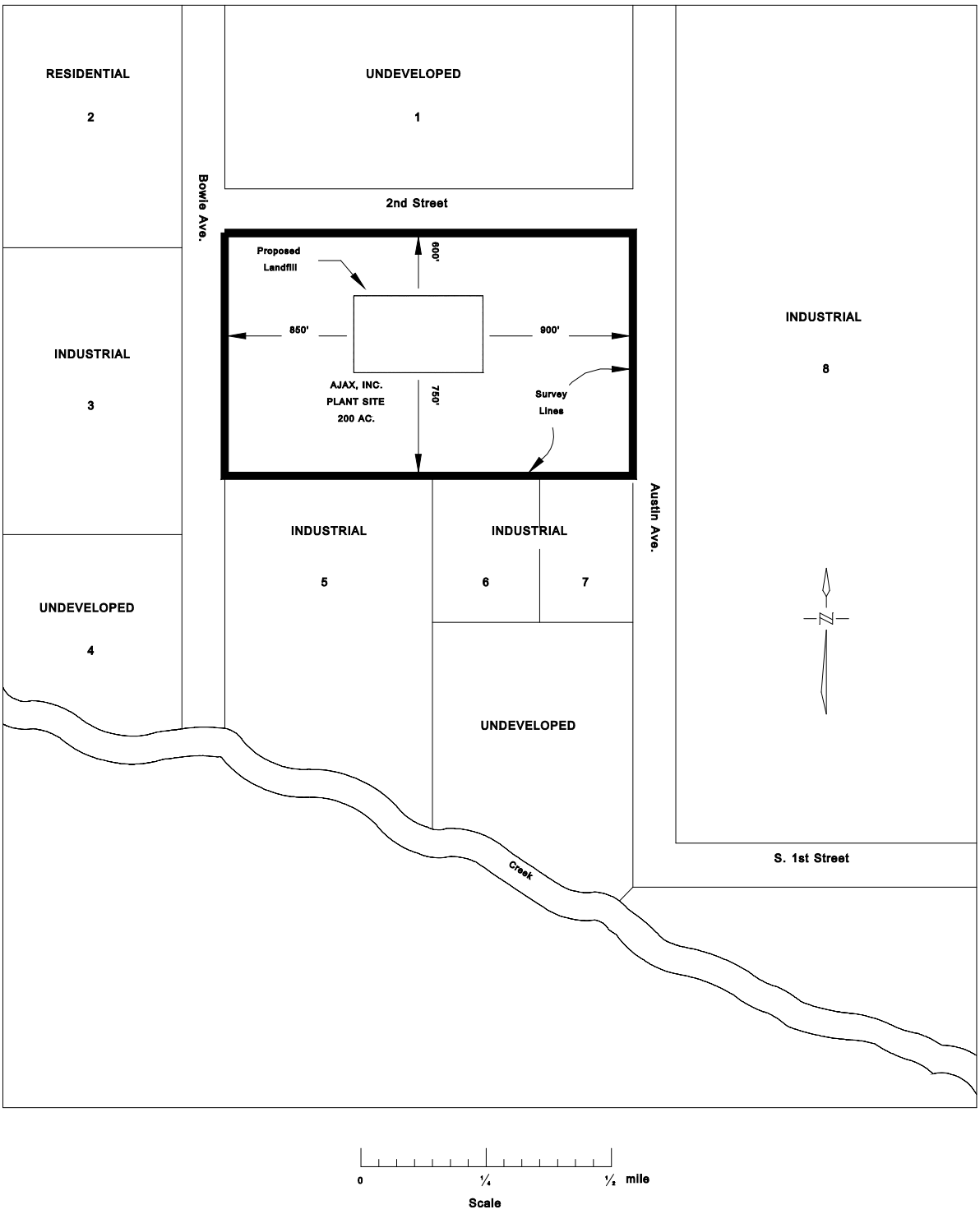
If a bilingual education program(s) is provided by either the elementary school or the middle school nearest to the facility, which language(s) is required by the bilingual program?

_____

Landowners Cross-Referenced To Application Map

SAMPLE APPLICATION MAP

ALL ADJACENT LANDOWNERS SHALL BE IDENTIFIED



The persons identified below would be considered as affected persons.

1. MR & MRS SAMUEL L TEXANS
11901 STARTLE BLVD
ATOWN TX 78759

2. MR & MRS EDWARD CITIZENS
1405 LINEAR ROAD
LITTLE TOWN TX 76710

3. TEXAS LINKED CORP
8411 NNW HWY
BIG PLACE TX 77590

4. MR & MRS TED GOLDEN
MUSTARD
3210 AVENUE BLVD
FISHINSPOT TX 76724

5. GENERIC BREWING CO
4240 KNIGHTS BRIDGE
OUTBACK TX 77640

6. PLAIN COMPANY
6647 CRAIGMOUT LANE
BIG PLACE TX 77590

7. ABC CHEMICALS INC
1212 ZIP STREET
BROADBANKS TX 77640

8. BIG LOCAL BOTTLE CO
10024 LOCAL BLVD
URSINUS TX 79402

In accordance with 30 TAC 39.5(b), please also submit this list electronically, for mailing labels, in MS Word. The electronic mailing list must contain only the name, mailing address, city, state, and zip code with no reference to the lot number or lot location. The list should contain 30 names, addresses, etc. (3 columns with 10 per column) per page (MS WORD Avery Standard 5160 – ADDRESS template).

Alternatively, the applicant may elect to submit pre-printed mailing labels of this mailing list with the application. If you wish to provide the list on printed labels, please use sheets of labels that have 30 labels (10 labels per column) to a page (for example: Avery® Easy Peel® White Address Labels for Laser Printers 5160). Please provide four complete sets of labels of the adjacent landowners list.

Table of Contents

Texas Commission on Environmental Quality
Industrial & Hazardous Waste Part B Permit Application

I. General Information

A. Applicant Name: [Facility Operator (or Facility Owner & Operator, if same)]

Naval Air Station Corpus Christi

(Individual, Corporation, or Other Legal Entity Name – must match the Secretary of State's database records for the Facility)

Previous or former names of the facility, if applicable: **N/A**

Address: **11001 D Street. Suite 143**

City: **Corpus Christi** State: **TX** Zip Code: **78419**

Telephone Number: **361-961-2331**

TCEQ Solid Waste Registration No.: **30479** EPA I.D. No.: **TX7170022787**

Permit No.: **50038** County: **Nueces**

Regulated Entity Name: **Naval Air Station Corpus Christi**

Regulated Entity Reference Number: **RN101131332**

Customer Name: **Naval Air Station Corpus Christi**

Customer Reference Number: **CN602997363**

If the application is submitted on behalf of a corporation, please identify the Charter Number as recorded with the Office of the Secretary of State for Texas.

N/A – Federal Facility
(Charter Number)

B. Facility Owner : Identify the Facility Owner if different than the Facility Operator

Same as operator

Address: _____

City: _____, Texas, Zip Code: _____

Telephone Number: _____

The operator has the duty to submit an application if the facility is owned by one person and operated by another [30 TAC 305.43(b)]. The permit will specify the operator and the owner who is listed on Part A of this application [Section 361.087, Texas Health and Safety Code].

C. Facility Contact

1. List those persons or firms, including a complete mailing address and telephone number, who will act as primary contact for the applicant during the processing of the permit application.
2. If the application is submitted by a corporation or by a person residing out of state, the applicant must register an Agent in Service or Agent of Service with the Texas Secretary of State's office and provide a complete mailing address for the agent. The agent must be a Texas resident.
3. List the individual who will be responsible for causing notice to be published in the newspaper and his/her mailing address, telephone number and fax number. If e-mail is available please provide an e-mail address.
   Mr. John Phillips
   Environmental Protection Specialist, Naval Air Station Corpus Christi
   8851 Ocean Drive
   Corpus Christi, TX 78419
   361.961.2170; john.phillips7@navy.mil
4. For applications for new permits, renewals, major amendments and Class 3 modifications a copy of the administratively complete application must be made available at a public place in the county where the facility is, or will be, located for review and copying by the public. Identify the public place in the county (e.g., public library, county court house, city hall), including the address, where the application will be made available for review and copying by the public.
   Janet F. Harte Public Library
   2629 Waldon Road
   Corpus Christi, TX 78418
   361 826-2310
5. If an applicant proposes a new industrial or hazardous waste facility that would accept municipal solid waste, the applicant shall hold a public meeting in the county in which the facility is proposed to be located. This meeting must be held before the 45th day after the date the application is filed. In addition, the applicant shall publish notice of the public meeting in accordance with 30 TAC 39.503(e)(5).

Contact: **Mr. John Phillips** Title: **Environmental Protection Specialist**

Address: **8851 Ocean Dr.**

City: **Corpus Christi** State: **TX** Zip Code: **78419**

Telephone Number(s): Office **361.961.2170** Other _____

E-mail: **john.phillips7@navy.mil** FAX _____

D. Application Type and Facility Status

1.

☒permit	☐amendment	☒modification
☐new	☐major	☒Class 3
☐ interim status	☐minor	☐Class 2
☐renewal		☐Class 1[1]
☐RD&D		☐Class 1
☐Compliance Plan		

2. Is this submittal part of a Consolidated Permit Processing request, in accordance with 30 TAC Chapter 33?
   ☐Yes ☒No

   If Yes, state the other TCEQ program authorizations requested.

3. Does the application contain confidential material? ☒ Yes ☐ No

If Yes, cross-reference the confidential material throughout the application to Section XIII: Confidential Material, and submit as a separate Section XIII document or binder conspicuously marked "CONFIDENTIAL".

4. In either column, check all that apply.

☒Proposed hazardous waste management facility	☐Existing hazardous waste management facility
☐On-site	☒On-site
☐Off-site	☐Off-site
☐Commercial	☐Commercial
☐Recycle	☐Recycle
☐Land Disposal	☐Land Disposal
	☐Areal or capacity expansion
	☐Compliance plan

5. Is the facility within the Coastal Management Program boundary (for Class 3 Modifications, Permit Renewals, and New Permit applications only)?

   ☒ Yes ☐ No

6. Provide a brief description of the portion of the facility covered by this application in the table below, including the changes for which an amendment or modification is requested: *[**Note:** List all changes requested in the table below. Unlisted requests risk remaining unaddressed or possibly denied if brought to the permit application reviewer's attention at a later time.]*

Permit/Compliance Plan Application Section	Brief Description of Proposed Change	Modification or Amendment Type	Supporting Regulatory Citation
Throughout application and attachments	Added information for proposed waste storage facility	Class 3	30 TAC 305.65
Attachment C, G	New Training Plan, Engineering Report, and Geology Report	Class 3	30 TAC 305.65
Attachments B, D, E, F, H, I, J, and L	References to changed to waste storage facility	Class 3	30 TAC 305.65
Attachment E	Updated Emergency Coordinator list	Class 3	30 TAC 305.65

7. Total acreage of the facility being permitted: **0.073 acres**

8. Identify the name of the drainage basin and segment where the facility is located: **Segments 2481 and 2485 in the Nueces-Rio Grande Coastal Basin**

E. Facility Siting Summary

Is the facility located or proposed to be located:

1. within a 100-year floodplain?
☐Yes ☒ No

2. in wetlands?
☐Yes ☒No

3. in the critical habitat of an endangered species of plant or animal?
☐Yes ☒No

4. on the recharge zone of a sole-source aquifer?
☐Yes ☒ No

5. in an area overlying a regional aquifer?
☐Yes ☒ No

6. Within 0.5 mile (2,640 feet) of an established residence, church, school, day care center, surface water body used for a public drinking water supply, or dedicated public park? (Use only for a new commercial hazardous waste management facility or areal expansion of an existing commercial hazardous waste management facility or unit of that facility as defined in 30 TAC 335.202)
☐Yes ☐No ☒Not Applicable

If Yes: the TCEQ shall not issue a permit for this facility.

7. In an area in which the governing body of the county or municipality has prohibited the processing or disposal of municipal hazardous waste or industrial solid waste?
☐Yes ☒No

If Yes: provide a copy of the ordinance or order.

F. Wastewater and Stormwater Disposition

1. Is the disposal of any waste to be accomplished by a waste disposal well at this facility?
☒ No ☐Yes (**If Yes**: List WDW Permit No(s):_____).

2. Will any point source discharge of effluent or rainfall runoff occur as a result of the proposed activities?
☒ Yes ☐No

3. If Yes, is this discharge regulated by a TPDES or TCEQ permit?
☒ Yes Permit No.**WQ0002317000**____(TCEQ)

Permit No.___**TXR040329, TXR05P596** (TPDES)

4. ☐No Date TCEQ discharge permit application filed: _____

Date TPDES discharge permit application filed:_____

G. Information Required to Provide Notice

State Officials List

Provide the name and mailing address for the State Senator and State Representative in the district in which the facility is or will be located. Either local district addresses or capitol addresses are acceptable. This list should not be included in the Adjacent Landowners List required below. [30 TAC 39.103(b)]

TEXAS STATE SENATE DISTRICT 20
THE HONORABLE JUAN HINOJOSA
1508-STAR WAY, STE 6A
EDINBURG TX 78539

TEXAS STATE HOUSE DISTRICT 32
TEXAS STATE REPRESENTATIVE TODD A HUNTER
15217 SOUTH PADRE ISLAND DRIVE SUITE 205
CORPUS CHRISTI TX 78418

Local Officials List

Provide the name and mailing address of the mayor and health authority of the municipality in whose territorial limits or extraterritorial jurisdiction the facility is or will be located. In addition, please provide the county judge and health authority of the county in which the facility is located. This list should not be included in the Adjacent Landowners List required below. [30 TAC 39.103(c)]

MAYOR OF CORPUS CHRISTI
MAYOR JOE MCCOMB
PO BOX 9277
CORPUS CHRISTI TX 78469

CITY OF CORPUS CHRISTI HEALTH DEPARTMENT
ANNETTE RODRIGUEZ DIRECTOR
1702 HORNE ROAD CORPUS
CHRISTI TX 78416

NUECES COUNTY JUDGE
THE HONORABLE BARBARA CANALES
901 LEOPARD STREET
ROOM 303
CORPUS CHRISTI TX 78401

CORPUS CHRISTI-NUECES COUNTY PUBLIC HEALTH DISTRICT
ANNETTE RODRIGUEZ DIRECTOR

1702 HORNE ROAD
CORPUS CHRISTI TX 78416

Adjacent Landowners List

Submit a map indicating the boundaries of all adjacent parcels of land, and a list (see samples in the instructions) of the names and mailing addresses of all adjacent landowners and other nearby landowners who might consider themselves affected by the activities described by this application. Cross-reference this list to the map through the use of appropriate keying techniques. The map should be a USGS map, a city or county plat, or another map, sketch, or drawing with a scale adequate enough to show the cross-referenced affected landowners. The list should be updated prior to any required public notice. It is the applicant's responsibility to ensure that the list is up-to-date for any required public notice. For all applications (with the exception of Class 1 and Class 1[1] modifications) this mailing list should be submitted on:

1. a Compact Disk (CD) using software compatible with MS Word [30 TAC 39.5(b)]; or
2. four sets of printed labels.

If the adjacent landowners list is submitted on a compact disk (CD), please label the disk with the applicant's name and permit number. Within the file stored on the disk, type the permit number and applicant's name on the top line before typing the addresses. Names and addresses must be typed in the format indicated below. This is the format required by the U.S. Postal Service for machine readability. Each letter in the name and address must be capitalized, contain no punctuation, and the appropriate two-character abbreviation must be used for the state. Each entity listed must be blocked and spaced consecutively as shown below. The list is to be 30 names, addresses, etc. (10 per column) per page (MS WORD Avery Standard 5160 – ADDRESS template).

See Attachment A.

Example:

Industrial Hazardous Waste Permit No. 50000, Texas Chemical Plant

HEAVY METALS LP
PO BOX 85624
PUMPKIN PARK TX 79998-5624

MR AND MRS W R NEIGHBOURLY
1405 ACROSSTHE WAY
GREATER METRO CITY TX 79199

A list submitted on compact disk (CD) should be the only item on that disk. Please do not submit a list on a disk that includes maps or other materials submitted with your application.

If you wish to provide the list on printed labels, please use sheets of labels that have 30 labels to a page (10 labels per column) (for example: Avery® Easy Peel® White Address Labels for Laser Printers 5160). Please provide four complete sets of labels of the adjacent landowners list.

Based on the questions in the Bilingual Notice Instructions for this form, are you required to make alternate (Bilingual) notice for this application?

☐Yes ☒No

Bilingual Language(s):_____

H. TCEQ Core Data Form

The TCEQ requires that a Core Data Form CDF (Form 10400) be submitted on all incoming applications. Please ensure that the submitted CDF does not show a change for any information that will remain the same as previously submitted. For more information regarding the Core Data Form, call (512) 239 1575 or go to the TCEQ Web site at http://www.tceq.texas.gov/permitting/central_registry/guidance.html

I. Signature on Application

It is the duty of the operator to submit an application for a permit. The person who signs the application form will often be the operator himself; when another person signs on behalf of the applicant, his title or relationship to the applicant will be shown. In all cases, the person signing the form must be authorized to do so by the applicant. An application submitted by a corporation must be signed by a responsible corporate officer such as a president, secretary, treasurer, vice president, or by his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the activity described in the form originates. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or the proprietor, respectively. In the case of a municipal, state, federal, or other public facility, the application must be signed by a principal executive officer, a ranking elected official, or another duly authorized employee. A person signing an application on behalf of an applicant must provide notarized proof of authorization.

Signature Page

I, C. C. Jason, Commanding Officer,
(Operator) *(Title)*

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____ Date: 24 SEP 2020

To be completed by the Operator if the application is signed by an Authorized Representative for the Operator

I, _____, hereby designate _____
[Print or Type Name] *[Print or Type Name]*

as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

_____
Printed or Typed Name of Operator or Principal Executive Officer

_____
Signature

SUBSCRIBED AND SWORN to before me by the said

On this 24th day of Sept, 2020

My commission expires on the 06 day of 13, 2021

Notary Public in and for NUECES County, Texas
[Note: *Application Must Bear Signature & Seal of Notary Public]*

PATRICIA A. AMADOR
My Notary ID # 3536294
Expires June 13, 2021

Interim Status Land Disposal Unit(s) Certification

For all land disposal units managing wastes which are newly listed or identified as hazardous wastes, the following certification must be executed by or on the date 12 months after the effective date of the rule identifying or listing the waste as hazardous. If the operator fails to certify compliance with these requirements, the operator shall lose authority to operate under interim status. [40 CFR 270.73(d)]

I,_____, _____

(operator) *(title)*

certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete.

I further certify that in accordance with Section 3005(e)(3) of the Resource Conservation and Recovery Act, as amended, the subject land disposal unit(s) are in compliance with all applicable groundwater monitoring and financial responsibility requirements of 30 TAC Sections 335.112, 335.116, and 335.117. I am aware there are significant penalties for submitting false information, including the possibility of civil penalty, criminal fines, and imprisonment.

Signature:_____ Date: _____

II. Facility Siting Criteria

For all new hazardous waste management facilities or areal expansions of existing hazardous waste management facilities provide a report which includes all applicable information regarding Unsuitable Site Characteristics found in 30 TAC Chapter 335, Subchapter G. The report must address each requirement applicable to the type of activity submitted in the application. Reference specific rule numbers whenever possible. Supporting information may be cross-referenced to other parts of this application such as Section V - Engineering Report or Section VI - Geology Report, but information submitted in previous applications must be fully reproduced herein. In addition, provide the information in Sections II.A. through II.G. below as applicable.

For permit renewals provide a report which includes all applicable information regarding Unsuitable Site Characteristics found in 30 TAC Chapter 335, Subchapter G. In addition, provide the information in Sections II.A through II.G below, as applicable. The applicant may resubmit the information submitted with the original permit application provided this information has not changed. For a renewal this information is necessary to ensure a complete application is received.

For capacity expansions of existing facilities, please provide information in Sections II.A through II.G, as applicable. Please note however, that additional technical information may be requested to address any facility siting characteristics noted in Section I.E.

> **NOTE:** The standards contained in §335.204(a)(6) - (9), (b)(7) - (12), (c)(6) - (11), (d)(6) - (11), and (e) (8) - (13) are not applicable to facilities that have submitted a notice of intent to file a permit application pursuant to §335.391 of this title (relating to Pre-Application Review) prior to May 3, 1988, or to facilities that have filed permit applications pursuant to §335.2(a) of this title which were submitted in accordance with Chapter 305 of this title and that were declared to be administratively complete pursuant to §281.3 of this title (relating to Initial Review) prior to May 3, 1988.[30 TAC 335.201(b)]

A. Requirements for Storage or Processing Facilities, Land Treatment Facilities, Waste Piles, Storage Surface Impoundments, and Landfills.

Is the facility located or proposed to be located:

1. in wetlands? [as applicable: 30 TAC 335.204(a)(2), (b)(2), (c)(2), (d)(2), and/or (e)(2)]

   ☐ Yes ☒ No

   Provide the source of information. **Integrated Natural Resources Management Plan 2019 Update, Section 2 for NAS Corpus Christi, dated 10 Sept 2019**

   If Yes: the TCEQ shall not issue a permit for a new hazardous waste management facility or areal expansion of an existing facility into wetlands, pursuant to 30 TAC 335.205(a)(1).

2. in the critical habitat of an endangered species of plant or animal? [as applicable: 30 TAC 335.204(a)(8), (b)(10), (c)(9), (d)(9), and/or (e)(11)]

   ☐Yes ☒No ☐ Not Applicable

   Provide the source of information. **Integrated Natural Resources Management Plan 2019 Update, Section 2 for NAS Corpus Christi, dated 10 Sept 2019**

If Yes: submit in Section V information demonstrating that design, construction, and operational features will prevent adverse effects on such critical habitat.

3. on the recharge zone of a sole-source aquifer? [30 TAC 335.204(a)(3), (b)(3), (c)(3), (d)(3), and/or (e)(3)]

☒ Yes ☐ No

Provide the source of the information. **Final Preliminary Assessment, NAS Corpus Christi Texas, April 2005. Malcom Pirnie, Inc., Pages 3-4, Section 3.6, Hydrogeology.**

The depth to groundwater at NAS Corpus Christi ranges between 4 and 16 feet bgs. This shallow groundwater zone is subject to salt-water intrusion due to the three bays surrounding the activity. The water table aquifer (to approximately 200 feet bgs) is predominantly sand material overlying a clay zone with low permeability. Shallow groundwater that has total dissolved concentrations has been found at locations on the activity between 300 and 11,000 milligrams per liter; however, there are no identified users of this groundwater zone. Artesian aquifers underlying NAS Corpus Christi (250 to 2,800 feet bgs) are moderately to highly saline and, therefore, have limited potential use. Potable water for the activity is supplied from Lake Corpus Christi, 40 miles to the northwest.

If Yes, then for storage and processing facilities (excluding storage surface impoundments), submit in Section V information demonstrating that secondary containment is provided to preclude migration to groundwater from spills, leaks, or discharges.

Note: Land treatment facilities, waste piles, storage surface impoundments, and landfills may not be located on the recharge zone of a sole-source aquifer.

4. in an area overlying a regional aquifer? [as applicable: 30 TAC 335.204(a)(4), (b)(4), (c)(4), (d)(4), and/or (e)(4)]

☐ Yes ☒ No

Provide the source of information. **See Appendix B of the 2007 Compliance Plan, for Geology and Hydrogeology information. Also, see Engineering Report, Attachment G, for secondary containment that precludes mitigation to groundwater from spills, leaks, and discharges.**

If Yes: submit site-specific information in Section V and/or Section VI demonstrating compliance with 30 TAC 335.205(a)(1).

5. in areas where soil unit(s) are within five feet of the containment structure, or treatment zone, as applicable, that have a Unified Soil Classification of GW, GP, GM, GC, SW, SP, or SM, or a hydraulic conductivity greater than 10-5 cm/sec? [as applicable: 30 TAC 335.204(a)(5), (b)(5), (c)(5), (d)(5), and/or (e)(5)]

☐ Yes ☒ No

Provide information to verify the above. **See Engineering Report, Attachment G, for secondary containment that precludes mitigation to groundwater from spills, leaks, and discharges.**

If Yes: provide additional information in Sections V and/or Section VI demonstrating compliance with 30 TAC 335.205(a)(1)

6. in areas of direct drainage within one mile of a lake at its maximum conservation pool level, if the lake is used to supply public drinking water through a public water system? [as applicable: 30 TAC 335.204 (a)(6), (b)(7), (c)(6), and/or (e)(8)].

☐ Yes ☒ No ☐ Not Applicable

Provide information to verify the above. **See Attachment B, Plain View Map of NAS Corpus Christi.**

If Yes: provide information in Section V demonstrating compliance with 30 TAC 335.205(a)(1).

7. in areas of active geologic processes, including but not limited to erosion, submergence, subsidence, faulting, karst formation, flooding in alluvial flood wash zones, meandering river bank cuttings, or earthquakes? [as applicable: 30 TAC 335.204(a)(7), (b)(8) ,(c)(7), (d)(7), and/or (e)(9)]

☐ Yes ☒ No ☐ Not Applicable

Provide the source of the information. **NAS Corpus Christi is on the Gulf Coast, which is subject to hurricanes and associated wind and water. USGS Earthquake Hazardous Program-EHP Quaternary Faults and Folds Map Service, 2005, indicates the activity is not in an active earthquake area.**

If Yes: specify in Section V the design, construction, and operational features of the facility that will prevent adverse effects resulting from the geologic processes.

8. within 30 feet of the upthrown side or 50 feet of the downthrown side of the actual or inferred surface expression of a fault that has reasonably been shown to have caused displacement of shallow Quaternary sediments or of man-made structures? [as applicable: 30 TAC 335.204(a)(9), (b)(12) ,(c)(11), (d)(11), and/or (e)(13)]

☐ Yes ☒ No ☐ Not Applicable

Provide the source of information. **USGS National Seismic Hazard Maps, 2014**

If Yes: specify in Section V the design, construction, and operational features that will prevent adverse effects resulting from any fault movement.

If a fault is found to be present, the width and location of the actual or inferred surface expression of the fault, including both the identified zone of deformation and the combined uncertainties in locating a fault trace, must be determined by a qualified geologist or geotechnical engineer and reported in Section VI.

B. Additional Requirements for Land Treatment Facilities [30 TAC 335.204(b)]

There is no land treatment facility associated with the permit application for the waste storage facility.

Is the land treatment facility located or proposed to be located:

1. within 1000 feet of an established residence, church, school, day care center, surface water body used for a public drinking water supply, or dedicated public park which is in use at the time the notice of intent to file a permit application is filed with the commission, or which is in use at the time the permit application is filed with the commission?

☐ Yes ☐ No

If Yes, the TCEQ shall not issue a permit for a new hazardous waste land treatment unit or an areal expansion of an existing land treatment unit, pursuant to 30 TAC 335.204(b)(6) and 335.205(a).

2. either

   a. within 1000 feet of an area subject to active coastal shoreline erosion even though the area is protected by a barrier island or peninsula?

   ☐ Yes ☐ No

   If Yes: submit in Section V.F design, construction, and operational features which will prevent adverse effects resulting from storm surge and erosion or scouring by water.

   b. within 5000 feet of a coastal shoreline subject to active shoreline erosion and which is unprotected by a barrier island or peninsula.

   ☐ Yes ☐ No

   If Yes: submit Section V.F design, construction and operational features, which will prevent adverse effects resulting from storm surge and erosion or scouring by water.

3. on a barrier island or peninsula?

   ☐ Yes ☐ No ☐ Not Applicable

   If Yes: the TCEQ shall not issue a permit for a new hazardous waste land treatment unit or an areal expansion of an existing land treatment unit, pursuant to 30 TAC 335.204(b)(11) and 335.205(a)(1).

C. Additional Requirements for Waste Piles [30 TAC 335.204(c)]

There are no waste piles associated with the permit application for the waste storage facility.

Is the waste pile located or proposed to be located:

1. either

   a. within 1000 feet of an area subject to active coastal shoreline erosion even though the area is protected by a barrier island or peninsula?

   ☐ Yes ☐ No

   If Yes: submit in Section V.E design, construction, and operational features on the facility which will prevent adverse effects resulting from storm surge and erosion or scouring by water.

   b. within 5000 feet of a coastal shoreline subject to active shoreline erosion and which is unprotected by a barrier island or peninsula.

   ☐ Yes ☐ No

   If Yes: submit Section V.E design, construction, and operational features which will prevent adverse effects resulting from storm surge and erosion or scouring by water.

2. on a barrier island or peninsula?

   ☐ Yes ☐ No ☐ Not Applicable

If Yes: the TCEQ shall not issue a permit for a new hazardous waste pile or an areal expansion of an existing waste pile, pursuant to 30 TAC 335.204(c)(10) and 335.205(a)(1).

D. Additional Requirements for Storage Surface Impoundments [30 TAC 335.204(d)]

There are no storage surface impoundments associated with the permit application for the waste storage facility.

Is the storage surface impoundment located or proposed to be located:

1. either
   a. within 1000 feet of an area of active coastal shoreline erosion even though the area is protected by a barrier island or peninsula?

   ☐ Yes ☐ No

   If Yes: submit in Section V.D design, construction and operational features of the facility which will prevent adverse effects resulting from storm surge and erosion or scouring by water.

   b. within 5000 feet of a coastal shoreline subject to active shoreline erosion and which is unprotected by a barrier island or peninsula?

   ☐ Yes ☐ No

   If Yes: then submit in Section V.D design, construction and operational features which will prevent adverse effects resulting from storm surge and erosion or scouring by water.

2. on a barrier island or peninsula?

   ☐ Yes ☐ No ☐ Not Applicable

   If Yes: the TCEQ shall not issue a permit for a new hazardous waste storage surface impoundment or an areal expansion of an existing storage surface impoundment, pursuant to 30 TAC 335.204(d)(10) and 335.205(a)(1).

E. Additional Requirements for Landfills (and Surface Impoundments Closed as Landfills with wastes in place)

There are no landfills associated with the permit application for the waste storage facility.

Is the landfill located or proposed to the located:

1. within 1000 feet of an established residence, church, school, day care center, surface water body used for a public drinking water supply, or dedicated public park which is in use at the time the notice of intent to file a permit application is filed with the commission, or which is in use at the time the permit application is filed with the commission?

   ☐ Yes ☐ No

   If Yes: the TCEQ shall not issue a permit for a new hazardous waste landfill or an areal expansion of an existing landfill, pursuant to 30 TAC 335.204(e)(6) and 335.205(a)(1).

2. (for commercial hazardous waste landfills) in the 100-year flood plain of a

perennial stream that is delineated on a flood map adopted by the Federal Emergency Management Agency after September 1, 1985, as zone A1-99, VO, or V1-30?

☐ Yes ☐ No

If Yes: the TCEQ shall not issue a permit for a new hazardous waste landfill or an areal expansion of an existing landfill, pursuant to 30 TAC 335.204(e)(7) and 335.205(a)(1).

3. either:

   a. within 1000 feet of an area subject to active coastal shoreline erosion even though the area is protected by a barrier island or peninsula?

   ☐ Yes ☐ No

   If Yes: then submit in Section V.G design, construction, and operational features which will prevent adverse effects resulting from storm surge and erosion or scouring by water.

   b. within 5000 feet of a coastal shoreline subject to active shoreline erosion and which is unprotected by a barriers island or peninsula.

   ☐ Yes ☐ No

   If Yes: then submit in Section V.G design, construction, and operational features which will prevent adverse effects resulting from storm surge and erosion or scouring by water.

4. on a barrier island or peninsula?

   ☐ Yes ☐ No ☐ Not Applicable

   If Yes: the TCEQ shall not issue a permit for a new hazardous waste landfill or an areal expansion of an existing landfill, pursuant to 30 TAC 335.204(e)(12) and 335.205(a)(1).

F. Flooding

1. Identify whether the facility is located within a 100-year flood plain [40 CFR 270.14(b)(11)(iii)]. This identification must indicate the source of data for such determination and include a copy of relevant documentation (e.g., flood maps, if used and/or calculations). The boundaries of the hazardous waste management facility must be shown on the flood plain map. If the facility is not subject to inundation as a result of a 100-year flood event, do not complete Sections II.F.2. through II.F.4. below. An applicant for a proposed hazardous waste landfill, areal expansion of a hazardous waste landfill, or a commercial hazardous waste land disposal unit may not rely solely on flood plain maps prepared by the Federal Emergency Management Agency (FEMA) or a successor agency for this determination.

   Although parts of NAS Corpus Christi reside within the 100-year floodplain, the hazardous waste storage facility does not. See Attachment B of this application for the Topographic Map, which also shows the boundary of the 100-year floodplain. The boundary of the 100-year floodplain was derived from the FEMA Map dated March 2004 for Corpus Christi.

2. If the facility is located within the 100-year flood plain the applicant must provide information detailing the specific flooding levels and other events (e.g., Design Hurricane projected by Corps of Engineers) which impact the flood protection of the facility. Information shall also be provided identifying the 100-year flood level and any other special flooding factors (e.g., wave action) which must be considered in designing, construction, operating, or maintaining the facility to withstand washout from a 100-year flood.

NA – the permitted facility does not reside within the 100-year floodplain.

3. State whether any flood protection devices exist at the facility (e.g., flood walls, dikes, etc.), designed to prevent washout from the 100-year flood.

NA – the permitted facility does not reside within the 100-year floodplain.

a. **If Yes**: provide in Section V an engineering analysis to indicate the various hydrodynamic and hydrostatic forces expected to result at the facility as a consequence of a 100-year flood. [40 CFR 270.14(b)(11)(iv)(A)]

Include structural or other engineering studies showing the design of operational units (e.g., tanks, incinerators) and flood protection devices (e.g., flood walls, dikes) at the facility and how these will prevent washout. [40 CFR 270.14(b)(11)(iv)(B)]

b. **If No**: the applicant shall provide in Section V a plan for constructing flood protection devices and a schedule including specific time frames for completion. Provide engineering analyses to indicate the various hydrodynamic and hydrostatic forces expected to result at the facility as a consequence of a 100-year flood. [40 CFR 270.14(b)(11)(iv)(A)]

Include structural or other engineering studies showing the design of operational units (e.g., tanks, incinerators) and flood protection devices (e.g., flood walls, dikes) at the facility and how these will prevent washout. [40 CFR 270.14(b)(11)(iv)(B)]

4. If applicable, and in lieu of the flood protection devices from above, provide a detailed description of the procedures to be followed to remove hazardous waste to safety before the facility is flooded. [40 CFR 270.14(b)(11)(iv)(c)] The procedures should include:

NA – the permitted facility does not reside within the 100-year floodplain.

a. Timing of such movement relative of flood levels, including estimated time to move the waste, to show that such movement can be completed before flood waters reach the facility. Indicate which specific events shall be use to begin waste movement (e.g., Hurricane warning, Flash Flood watch, etc.);

b. A description of the location(s) to which the waste will be moved and a demonstration that these facilities will be eligible to receive hazardous waste in accordance with appropriate regulations (i.e., a permitted facility);

c. The planned procedures, equipment, and personnel to be used and the means to ensure that such resources will be available in time for use; and

d. The potential for accidental discharges of the waste during movement and

precautions taken to preclude accidental discharges.

G. Additional Information Requirements

1. For a new hazardous waste management facility, include a map of relevant local land-use plans and descriptions of the major routes of travel in the vicinity of the facility to be used for the transportation of hazardous waste to and from the facility covering at least a five (5)-mile radius from the boundaries of the facility. [30 TAC 305.50(a)(10)(A)&(D)]

   NA – proposed hazardous waste storage facility is at the same location as the previous facility.

2. For a new commercial hazardous waste management facility as defined in 30 TAC 335.202 or the subsequent areal expansion of such a facility or unit of that facility, indicate on the map the nearest established residence, church, school, day care center, surface water body used for a public drinking water supply, and dedicated public park.

   NA – the application is not for a new commercial facility.

3. For new commercial hazardous waste management facilities, submit the following: [30 TAC 305.50(a)(12)(A)]

   NA – the application is not for a new commercial facility.

   a. the average number, gross weight, type, and size of vehicles used to transport hazardous waste;
   b. the major highways nearest the facility irrespective of distance; and
   c. the public roadways used by vehicles traveling to and from the facility within a minimum radius of 2.5 miles from the facility.

4. Include the names and locations of industrial and other waste-generating facilities within 0.5 miles for a new on-site hazardous waste management facility and the approximate quantity of hazardous waste generated or received annually at those facilities. [30 TAC 305.50(a)(10)(B)&(C)]

   NA – the application is not for a new commercial facility.

5. Include the names and locations of industrial and other waste-generating facilities within 1.0 miles for a new commercial hazardous waste management facility and the approximate quantity of hazardous waste generated or received annually at those facilities. [30 TAC 305.50(a)(10)(B)&(C)]

   NA – the application is not for a new commercial facility.

6. For existing land disposal facility units provide documentation that the information required by 30 TAC 335.5 has been placed in the county deed records. If previously submitted, please reference the submittal by date and registration number.

NA – There is no land disposal facility associated with the building.

7. If a surface impoundment or landfill (including post-closure) is to be permitted, provide exposure information to accompany this application and in accordance with 30 TAC 305.50(a)(8) and 40 CFR 270.10(j). This information will be considered separately from the TCEQ application completeness determination.

NA – There is no surface impoundment or landfill associated with the building.

8. For a hazardous waste management facility requesting a capacity expansion of an existing hazardous waste management facility, please provide in Section VI.A.1.a the requested fault delineation information. [30 TAC 305.50(a)(4)(D)]

NA – There is no capacity expansion associated with the building.

III. Facility Management

A. Compliance History and Applicant Experience

1. Provide listings of all solid waste management sites in Texas owned, operated, or controlled by the applicant as required by 30 TAC 305.50(a)(2).

   Permit No. 50038 (active) for Hazardous Waste Storage Facility
   Permit No. 34236 (inactive) for Defense Reutilization & Marketing Office Site

2. For a new commercial hazardous waste management facility, provide a summary of the applicant's experience in hazardous waste management as required by 30 TAC 305.50(a)(12)(F).

   NA – the application is not for a new commercial facility.

B. Personnel Training Plan

Provide an outline of the facility training plan which includes all the information required by 40 CFR 264.16. Indicate which training will be repeated annually.

The Facility Training Plan is in Attachment C.

C. Security

Describe how the facility complies with the security requirements of 40 CFR 264.14 or submit a justification demonstrating the reasons for requesting a waiver of these requirements.

NAS Corpus Christi is surrounded by a security fence. All entrance gates are guarded or locked 24/7. In addition to the Station's perimeter fence, the waste storage facility is surrounded by a separate fence or building wall with locked gates. Only authorized personnel have access to the storage facility. Unauthorized persons may not enter the Naval Air Station or the waste storage facility. This minimizes the possibility of vandalism to a storage container that might result in a release. Security personnel check the perimeter fence periodically.

Signs with the legend, "Danger – Unauthorized Personnel Keep Out" are posted at each entrance. Signs are in English and Spanish.

General outdoor facility lighting is provided by building or pole mounted lights throughout the Station as well as at the respective storage facility to discourage vandalism and to enable operation and facility personnel to detect potential releases during hours of darkness.

D. Inspection Schedule

Provide an inspection schedule summary for the facility which reflects the requirements of 40 CFR 264.15(b), 264.33 and, where applicable, the specific requirements in 40 CFR

264.174, 264.193(i), 264.195, 264.226, 264.254, 264.273, 264.303, 264.347, 264.552, 264.574, 264.602, 264.1033(f), 264.1034, 264.1052, 264.1053(e), 264.1057, 264.1058, 264.1063, 264.1084, 264.1085, 264.1086, 264.1088, 264.1101(c)(4) and 270.14(b)(5). The inspection schedule should reflect the requirements described below. The schedule should encompass each type of hazardous waste management (HWM) unit (i.e., facility component) and its inspection requirements. For incorporation into a permit, complete Table III.D. - Inspection Schedule for all units to be permitted.

The inspection schedule (Table III.D) is provided.

The owner or operator must inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing or may lead to the release of hazardous waste constituents to the environment or which may pose a threat to human health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

The owner or operator must develop and follow a written schedule for inspecting other basic elements such as monitoring equipment, safety and emergency equipment, security devices, the presence of liquids in leak detection systems, where installed, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards.

If the owner or operator of a facility which contains a waste pile wishes to pursue an exemption from the groundwater monitoring requirements for that waste management unit, the inspection schedule must include examination of the base for cracking, deterioration, or other conditions that may result in leaks. The frequency of inspection must be based on the potential for the liner (base) to crack or otherwise deteriorate under the conditions of operation (e.g., waste type, rainfall, loading rates, and subsurface stability).

E. Contingency Plan (Not Applicable to Permits for Post-Closure Care Only)

If the owner or operator has already prepared a Spill Prevention, Control, and Countermeasures (SPCC) Plan or some other emergency or contingency plan, he need only amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this section. Provide a Contingency Plan which includes all the information required by 40 CFR Part 264 Subparts C and D, except for 40 CFR 264.56(d)(1) and 30 TAC 335.153(2). This plan must also include a drawing of the facility which shows the location of all emergency equipment. In addition, complete the following tables to summarize information expressed in more detail in the plan.

The facility Contingency Plan is in Attachment E.

1. Arrangements with Local Authorities

   Complete Table III.E.1. - Arrangements With Local Authorities to indicate arrangements (if made) with local authorities to familiarize local fire and police departments, local hospitals, equipment suppliers, and local and State emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and

possible evacuation routes. Provide documentation of the attempts and any arrangements made with local authorities and emergency response teams.

2. Emergency Coordinator's List

   For inclusion into a permit, list in Table III.E.2. - Emergency Coordinators the persons qualified to act as emergency coordinator. List the alternates in the order in which they will assume responsibility.

3. Emergency Equipment List

   For inclusion into a permit, list in Table III.E.3. - Emergency Equipment all types of emergency equipment at the facility [such as fire-extinguishing systems, spill-control equipment, communications and alarm systems (internal and external), and decontamination equipment], if this equipment is required. Briefly outline the equipment capabilities.

4. Waiver from Preparedness and Prevention Requirements

   If the owner or operator wishes to request a waiver from any of the preparedness and prevention requirements, he must submit a justification demonstrating the reasons for requesting the waiver, as discussed below.

F. Emergency Response Plan

For a new commercial hazardous waste management facility, the application shall contain evidence sufficient to demonstrate that emergency response capabilities are available or will be available before the facility first receives waste. An emergency response plan must be provided which satisfies the requirements of 30 TAC 305.50(a)(12)(C) and (D). This plan must show that the proposed facility has sufficient emergency response capabilities for managing a reasonable worst-case emergency condition associated with the operation of the facility. (For financial assurance requirements associated with the emergency response activities, please see Section VIII.C.3.)

NA – the application is not for a new commercial hazardous waste management facility

1. Practice Drills

   In addition to the contingency plan required under 40 Code of Federal Regulations Part 270.14(b)(7), provisions specifying procedures and timing of practice facility evacuation drills are required. Provide a description and a frequency for facility evacuation drills.

2. If a private corporation, municipality or county group will provide emergency response actions at the proposed facility, include a copy of the contract for this type of agreement with this application or state that documentation will be submitted before the facility accepts wastes.

3. Historical weather data for the area should be documented and submitted. Information regarding how emergency response operations may be affected by weather conditions should be included. (Local rainfall extremes, average rainfall amounts, average wind speeds and directions, potential for major weather events such as hurricanes, tornados, icy conditions, flash flooding etc., should be addressed.)

4. A definition of a worst-case emergency for the proposed facility should be described in the application. This worst-case emergency should take into account the possible complications involved with a facility emergency compounded by adverse weather conditions. It should also detail spills, fires, explosions, etc. This worst case scenario should be developed with the help of local governmental entities where possible. Emergency planning should include both unexpected emergencies and emergencies occurring as a result of a predictable event such as a flood or hurricane. For areas which are prone to hurricanes and flash flooding, the worst case which allows for a realistic situation should be used. For example, response teams should be well versed in reacting to events such as a 100-year flood.

5. A training program for personnel who will respond to these types of emergencies must be provided and must include the requirements described in OSHA Federal Register 1910 and EPA Federal Register 311, the Texas Hazard Communication Act, SARA Title III 302, 304, 311, 312, and 313. If emergency response actions are contracted out, the contracted employees must be properly trained and documentation of this training must be maintained on-site. All responders to emergencies at the proposed facility must be involved in training and drills at the facility in order to be thoroughly familiar with the facility and its operations.

6. The application must include a description and identification of first-responders (i.e. all pertinent facility personnel, local responders, and contractors). The duties of the facility employee who is to be the on-scene coordinator (OSC) must be described. Additional information must be provided detailing the OSC's role in the emergency response activities. This person must have the authority to commit the resources needed to carry out the Emergency Response Plan. His duties must be thoroughly described so that it is clear whether he will remain in control once the emergency response team arrives or whether he will relinquish control to another incident commander upon that person's arrival on the scene. Additionally, there must be a qualified OSC on-site or on call 24 hours a day. The name, address and phone numbers (home and work) of the OSC(s) must be listed in the Emergency Response Plan. Where more than one person is listed, one must be named as the primary OSC and others must be listed in the order in which they will assume responsibility as alternates.

7. Local or regional emergency medical services or hospitals which have experience in hazardous materials training must be identified in the application. The names, addresses and phone numbers of the hospitals or medical centers should be listed here and updated as necessary. Additionally, maps showing the quickest routes to the medical services must be provided. A description of decontamination procedures for injured personnel prior to transport to medical services must also be provided. The decontamination and transport of injured people to appropriate medical centers must be included in the emergency evacuation training and drills.

8. A pre-disaster plan which includes training drills must be included in the application. This plan should include a schedule for staging evacuations of the facility and for emergency response training drills. At least two evacuations and two emergency response drills should occur annually. The plan should also include additional drills for responding to "predictable" emergencies such as floods and hurricanes. The plan must include the following (or must reference applicable sections of the Contingency Plan): a description of arrangements

already in place with local authorities; emergency phone numbers; internal communication or alarm systems and proper alarm codes; a list of all types of emergency equipment at the facility, including a physical description and the capabilities of each item on the list, and the location of each item (a map would be useful here); a description of decontamination equipment; an evacuation plan including signals, evacuation routes and alternate evacuation routes; listing of pertinent first responder emergency phone numbers, and codes for other types of communication devices; and a description of actions that will be performed in the event that a "predictable" emergency occurs.

9. Describe the mechanism which will be used to notify first responders and appropriate local governmental entities that an emergency has occurred. Also describe the mechanism which will be used to notify all applicable governmental agencies when an incident occurs (i.e., TCEQ, Texas Parks and Wildlife, General Land Office, TCEQ Office of Air Quality, Texas Department of Health, and the Texas Railroad Commission).

10. Evidence must be provided that shows coordination with the Local Emergency Planning Committee (LEPC) and any local comprehensive emergency management plan. The applicants should be able to show compliance with SARA Title III.

11. Any medical response capabilities proposed for the facility property must be detailed in the application.

Table III.D. – Inspection Schedule

Facility Unit(s) and Basic Elements	Possible Error, Malfunction, or Deterioration	Frequency of Inspection
Safety and Emergency Equipment		
Fire Control Equipment	Empty fire extinguishers, missing blankets and equipment	Monthly
Fire Suppression System	Missing or mis-positioned spray nozzles, damaged or corroded pipes or fittings, problems with control valves or backflow protection	Monthly
Eye Wash and Shower	Leaks, not working, inadequate pressure	Monthly
Cartridge Respirators	Missing, spent cartridge, wrong style, inspection not current	Monthly
Protective Clothing	Missing, damaged, wrong style	Monthly
Spill Control Equipment pumps, “pigs”	Missing, damaged, inoperative	Monthly
Recovery Drums	Missing, insufficient supply	Monthly
Air Horn	Inoperative	Monthly
Wind Sock	Damage and/or deterioration	Monthly
Drum Top Pneumatic Recovery device	Damaged, inoperative	Monthly
Security		
Security	Fence unlocked or opened	Weekly
Signs	Missing, incorrect, not readable	Weekly
Communication, alarm systems	Inoperative	Weekly

Operating and Structural Equipment/Containment		
Loading and Unloading Areas	Leakage of material on deck	Weekly/Daily when in use***
Building Structure	Deterioration of foundation, walls, roof, sumps, berms to control run-on and run-off	Weekly
Storage Bays	Spills/stains/contamination present/slope/cracks, gaps/leaks/precipitation	Weekly/Daily when in use ***
Volume	Contains 10% volume of all containers or volume of largest container	Weekly
Containers		
Containers	Improper or missing container label	Weekly
Containers	Inadequate aisle space	Weekly
Containers	Drums without pallets	Weekly
Containers	Improper segregation of incompatible waste	Weekly
Containers	Drums stacked more than two high	Weekly
Containers	Drums open to atmosphere	Weekly
Containers	Deteriorating, damaged	Weekly
Containers	Missing lid, bolt, or ring	Weekly
Containers	Container outage or overflow	Weekly
Containers	Container liner required if waste is incompatible with container	Weekly
Containers	Improper packaging	Weekly

Containers	Commingling of waste	Weekly
Containers	Absence of recordkeeping	Weekly
Containers	Accumulation time not indicated	Weekly
Plans and Records		
Operating Records and Recordkeeping	Inadequate records indicating quantity of waste received, methods and dates of treatment, storage or disposal, record of waste location and quantity at each location	Monthly
Training Records	Missing, outdated, insufficient training	Monthly
Inspection Plan/Check Sheet	No written inspection plan, log sheets, insufficient data on log sheets	Monthly
Incident Response Plan	No incident response plan, missing spill reports	Monthly

Footnote *** - "Daily when in use" indicates these facility components will be inspected each day that the hazardous waste storage facility is manned by hazardous waste personnel or open for active waste management operations involving the movement, shipping, and receiving of waste containers.

Table III.E.1 – Arrangements with Local Authorities

Police: Naval Air Station Corpus Christi Security
Address 11001 D St #101, Corpus Christi, TX 78419
Person Contacted: Phone: (361) 961-2480
Agreed Arrangements: Security is provided by NAS security personnel.
Fire: NAS Fire Department
Address 11001 D St #101, Corpus Christi, TX 78419
Person Contacted: Phone: (361) 961-3333 (Emergency), (361) 961-3332 (Non-Emergency)
Agreed Arrangements: Fire response is provided by NAS Fire Department personnel.
Hospital: Spohn Hospital
Address 600 Elizabeth, Corpus Christi, TX 78404
Person Contacted: Phone: (361) 881-3811
Agreed Arrangements: In the event of a fire or other incident exceeding on-site capabilities, the NAS Corpus Christi Fire Department will coordinate with external agencies to provide fire and medical emergency assistance. Spohn Hospital may provide treatment of personnel exposed to hazardous waste or injured during an emergency response and has been provided with properties of hazardous waste handled at NAS Corpus Christi.
Hospital: Doctor's Regional
Address: 3315 South Alameda, Corpus Christi, TX 78411
Person Contacted: Phone: (361) 857-1400
Agreed Arrangements: In the event of a fire or other incident exceeding on-site capabilities, the NAS Corpus Christi Fire Department will coordinate with external agencies to provide fire and medical emergency assistance. Doctor's Regional may provide treatment of personnel exposed to hazardous waste or injured during an emergency response and has been provided with properties of hazardous waste handled at NAS Corpus Christi.
Other:
Address
Person Contacted: Phone:
Agreed Arrangements:

Table III.E.2. – Emergency Coordinators

Name	Home Address	Office Phone(s) and/or Pager	Home Phone(s)
Primary			
John Phillips	74 Townhouse Ln. Corpus Christi, TX 78412	(361) 961-3760	Cell: (210)667-0687
Alternates:			
Tracy Faulkner	2170 Mooney Lane Ingleside, TX 78362	361-961-4089	210-409-9935

Table III.E.3. – Emergency Equipment

Equipment	Location	Physical Description	Capabilities
Fire Extinguishers	Inside the building mounted between roll up doors for each bay	Dry Chemical Fire Extinguishers	Extinguish small, localized fires; rated for electrical, wood, grease, flammable liquids
Air Horn	Inside the building at the eye wash stations	Alarm Horn	Sounds alarm for evacuation and/or call for assistance
Wind sock	On the building	Wind sock	Identifies wind direction
General Purpose Spill Response Equipment	Inside the building in the northwest corner and on south side wall near Bay 3A	Squeegee, dust pan, brooms, shop vacuum, shovel	Spill response
Emergency Shower & Eye Wash Stations	Inside the building in the northwest corner and on south side wall near Bay 3A	Combination drench shower and eye/face wash unit with emergency signaling system flow switch, horn, signal light, and shut-off switch	Personnel decontamination
Portable pumps	Inside the building	Marlow Pneumatic Pumps	Spill response; use with 1-1/2" chemical hose with chemlock locking system
Absorbent Pads, Blankets, Socks	Inside the building	2'X2' pads, 3'X10' blanket rolls, 5' and 10' long (4" diameter) absorbent socks,	Spill response; absorb oils, liquids
Protective Clothing	Inside the building	Tyvek coveralls with hood, yellow polyethylene suits; black rubber boots; green/black neoprene gloves; face shield; safety glasses	Personnel protection; dirt, oil, chemical resistant
Purifying Respirators and	Inside the building	Full face and half face negative	Personnel protection

Cartridges		pressure	
Recovery Spare Drums (DOT approved)	Inside the building	85 gal. steel overpack drums	Capable of overpacking drums up to 55 gallons
Spill Absorbents	Inside the building	Safe Step, Sodium bicarbonate	Absorb oils, acid spills
Drum Top Pneumatic Recovery	Inside the building	Unit mounts on top of 55 gallon drum and vacuums liquids or solids into another 55 gallon drum	Vacuums flammable and combustible liquids to reduce the possibility of fire
Knox Box	North wall of the building near equipment room doors	Recessed emergency responder key box	Contains keys to access building in an emergency
Automatic High Expansion Foam System	Installed throughout the building (except where fire sprinkler system is located)	Fire suppression protection system with heat and smoke detection, manual pull stations, manual abort/system release devices	Extinguish fire in hazardous waste storage bays
Fire Sprinkler System	Installed in fire equipment room and electrical/compression room	Wet pipe system for fire protection	Extinguish fire in fire equipment room and/or electrical/compression room
Fire Alarm System	Inside the building	Addressable fire alarm system with transceiver connection to base reporting station	Notify base and emergency responders of trouble or fire, sound alarms and light beacons

IV. Wastes and Waste Analysis

(Sections IV.A, IV.C, and IV.D do not apply to post closure applications.)

A. Waste Management Information

For a new hazardous waste management facility or for a facility hazardous waste management capacity expansion, complete Table IV.A. - Waste Management Information for each waste, source, and volume of waste to be stored, processed, or disposed of in the facility units to be permitted as required by 30 TAC 305.50(a)(9). For on-site facilities, list "on-site" for the waste source. For off-site facilities, list the source of the waste. If unknown, identify potential sources (e.g., industries/processes to be serviced).

B. Waste Managed In Permitted Units

For all hazardous waste management facilities and for inclusion into a permit, complete Table IV.B. - Wastes Managed In Permitted Units for each waste and debris to be managed in a permitted unit. Provide a description, EPA waste codes, and TCEQ waste form codes and classification codes. Guidelines for the Classification & Coding of Industrial Wastes and Hazardous Wastes, TCEQ publication RG-22, contains guidance for how to properly classify and code industrial waste and hazardous waste in accordance with 30 TAC 335.501-335.515 (Subchapter R).

Applicants need not specify the complete 8-digit waste code formulas for their wastes but must include the 3-digit form codes and 1-digit classification codes. This allows the applicant to specify major categories of wastes in an overall manner without having to list all the specific waste streams as generated.

C. Sampling and Analytical Methods

For inclusion into a permit, complete Table IV.C. - Sampling and Analytical Methods for each waste and debris proposed to be sampled and analyzed and include sampling location, sampling method, sample frequency, analytical method, and desired accuracy level for each waste and debris to be managed in a permitted, storage, processing, or disposal unit at the facility.

D. Waste Analysis Plan

The Waste Analysis Plan must address the requirements of 40 CFR §264.13 and §268.7. The Plan should include supplemental and coordinating information on how the facility will analyze wastes and debris (as listed in Table IV.B) to be managed in permitted units. The plan must address the determination of land disposal restrictions. Generators must determine and certify with the manifest the land disposal restriction status of a waste, even if the waste or debris is not intended for land disposal. Land disposal treatment facilities must identify the treatment process and analytical procedures to be used, and include them in the waste analysis plan. Land disposal restriction records must be maintained at the facility until closure of the facility [40 CFR §264.73(b)]. Landfill facilities must determine through the Paint Filter Liquids Test (SW-846 Method 9095) if there is free liquid in a bulk or containerized waste to be landfilled. If so, it must be stabilized; adding adsorbents alone is not acceptable, even for containerized waste.

For off-site facilities the waste analysis plan must specify procedures which will be used to inspect and, if necessary, analyze each movement of industrial and hazardous waste or

hazardous debris received at the facility to ensure it matches the identity of the waste designated on the accompanying shipping ticket. The plan must describe methods which will be used to determine the identity of each movement of waste and debris managed at the facility and sampling method used if the identification method includes sampling in order to store, process, or dispose of the wastes and debris in accordance with 40 CFR Parts 264 and 268 and any abnormal characteristics which may upset further treatment or processing operations. Include rejection criteria for shipments of waste and debris received at the facility

For on-site facilities the waste analysis plan must specify the normal characteristics of the waste (including EPA hazardous waste codes, EPA hazard codes, and 40 CFR Part 261, Appendix VIII Hazardous Constituents) which must be known to store, process, or dispose of the wastes and debris in accordance with 40 CFR Parts 264 and 268 and any abnormal characteristics which may upset further treatment or processing operations.

The methods and equipment used for sampling waste materials will vary with the form and consistency of the waste materials to be sampled. Those sampling methods listed in 40 CFR Part 261 Appendix I, for sampling waste with properties similar to the indicated materials, or equivalent sampling methods approved by EPA under 40 CFR §260.20 and §260.21, will be considered by the TCEQ to be acceptable.

The Waste Analysis Plan is in Attachment F.

Table IV.A. – Waste Management Information

NA – the Class 3 modification does not include any waste changes

Waste Type(s)	Source	Volume (tons/year)

Table IV.B. – Wastes Managed In Permitted Units

No.	Waste	EPA Hazardous Waste Numbers	TCEQ Waste Form Codes and Classification Codes
1	Lab Pack – Old Chemicals	D001, D002, D003, D005-043, U055, U077, U080, U112, U140, U159, U201, U210, U220, U226, U238, U359	001,H
2	Lab Pack – Acute Hazardous Waste	P030, P106	004,H
3	Aqueous waste with low solvents, Rinse Water-Aqueous Liquid, Toxic Characteristic	D002, D006, D007, D008, D009, D010, D011, F002, F003, F005	101,H
4	Aqueous waste with low other toxic organics, Monitoring Well Water	D001, D004, D008, D010, D011, D018, D039, D040	102,H
5	Spent acid with metals	D001, D002, D005, D006, D007, D008, D009, D010, D011, F006, F019	103,H
6	Spent acid without metals	D002	104,H
7	Caustic solution with metals but no cyanides, Alkaline with Metal	D002, D004, D005, D006, D007, D008, D009, D010, D011, F003, F005	106,H
8	Alkaline with Metals and Cyanide	D002,3, D004, D005, D006, D007, D008, D009, D011, D040	107,H
9	Caustic solution with cyanides but no metals, Alkaline with Cyanide, Reagent Containing Cyanides	D002, D003, F006, F007, F008, F009	108,H
10	Spent caustic, Alkaline Solution	D002, D006, D007, D008, D028, D029, D030, D0039, F002	109,H
11	Aqueous waste with reactive sulfides, Aqueous with Reactive Sulfides	D002, D003, D006, D007, D008	111,H

12	Other aqueous waste with high dissolved solids, High Pressure Blast Water-Painted Surfaces	D002, D007, D008, D018, D035,F002, F003, F005	113,H
13	Scrubber Water	D006, D007, D008	115,H
14	Waste Mercury Liquid	D009, U151	117,H
15	Other inorganic liquids, Oxidizer, Liquid, Catalyst, Waste/Shelf Life, Hospital Tissue Preparation Reagent, Corrosion Preventative	D001, D002, D005, D006, D007, D008, D009, D010, D011	119,H
16	Halogenated solvent, Solvent – Halogenated Organic	D001, D006, D007, D008, D010, D019, D026, D027, D028, D029, D035, D037, D039, D040, F002, F003, F005,U226	202,H
17	Non-halogenated solvent, solvent – Non-Halogenated Organic	D001, D005, D006, D007, D008, D009, D010, D011, D018, D022, D027, D028, D029, D030, D035, D039, D040	203,H
18	Halogenated/non-halogenated solvent mixture, Solvent Mixture-Halogenated and Non-Halogenated Organic	D001, D004, D005, D006, D007, D008, D009, D010, D011, D018, D022, D027, D028, D029, D030, D035, D039, D040, F002, F003, F005	204,H
19	Oil-water emulsion or mixture, Oil/Water Mixture	D001, D006, D007, D008, D019, F002, F003, F005	205,H
20	Waste oil, Oil Wastes	D001, D004, D005, D006, D007, D008, D009, D010, D011, D018, D020, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D031, D032, D035, D039, D040, U052, U117, U211	206,H
21	Organic paint, ink, lacquer, or varnish, Paint/Ink/Lacquer/Varnish	D001, D006, D007, D008, D010, D018, D019, D021, D022,	209,H

		D027, D028, D029, D030, D035, D039, D040, F003, F005, U154	
22	Adhesives or epoxies, Adhesives	D001, D002, D003, D004, D005, D007, D011, D018, D023, D035, F003, F005, U122	210,H
23	Paint thinner or petroleum distillates, Paint Thinners	D001, D002, D006, D007, D008, D018, D019, D022, D028, D029, D035, D040, F002, F003, F005, U154	211,H
24	Other organic liquids, Overpacks – Old Organic Liquid Chemical, Fuel, Aerosol Cleaning Mixture/Paint, Aviation Fuel/Oil from Aircraft Testing, Scintillation Fluid Used in Calibrating Scintillation Counter – Contaminated with Carbon-14	D001, D002, D003, D005,D006, D007, D008, D018, D027,D034, D035, D039, D040, F003, F005, U154	219,H
25	Ethylene glycol based antifreeze, Antifreeze	D001, D006, D007, D008, D010	296,H
26	Soil Contaminated with Organics	D004, D005,D006, D007, D008, D009, D010, D011, D018, D019, D021, D027, D028, D035, D040, F002, F003, F005, U080, U220, U359	301,H
27	Soil Contaminated with inorganics only	D002, D004, D005,D006, D007, D008, D009, D010, D011	302,H
28	Metal scale, filings, or scrap, Expended Shell Casings and Projectiles	D006, D007, D008	307,H
29	Batteries or battery parts, casings, cores, Batteries or Battery Parts	D002, D003, D006, D008, D009	309,H
30	Spent solid filters or adsorbents, Oil Filters, Scrubber Cone dust	D001, D006, D007, D008, D011, D018	310,H

31	Asbestos solids and debris, Inorganic Solid Debris Contaminated with Asbestos Fibers and Inorganics	D006, D007, D008	311,H
32	Metal-cyanide salts/chemicals, Inorganic Solids containing Cyanide, Organic Solids with Cyanide- Residue from Vat Cleaning	D001, D002, D003, D005, D006, D011, F008, P030	312,H
33	Other metal salts/chemicals, Inorganic Solids	D001, D002, D006, D007, D008	316,H
34	Other waste inorganic solids, Corrosion Prevention Material, Construction Debris-Inorganic Solids, Filter Press Sludge, Fluorescent Lights containing Hg, Mercury containing Solids, Sampling Debris, Rags, Paper, PPE Contaminated with NDI Chemicals, Inorganic Solids, Aircraft Parts Packing Material, Water Filtering Ion Resin, Old Electric Waste-Computers, Monitors, etc., Aircraft Engine Parts	D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, D040, F006, F008, F009	319,H
35	Catalyst Waste	D001, D003	393,H
36	Solids resins or polymerized organics, Hardened Epoxy/Shelf Life, Contaminated Rubber Scrap Debris	D003, D005,D006, D007, D008, D018, D035, U041, U122	403,H
37	Reactive organic solid, Explosives	D003, D008	405,H
38	Other halogenated organic solids, Filters, Replacement of Screening/Filtering Device	D004, D005,D006, D007, D008, D009, D010, D011, F002, F003, F005	407,H
39	Other non-halogenated organic solids, Overpacks, Old Organic Solid Chemicals, Organic Solids without Cyanide, Fuel Bladder, Damaged, Filters, Paint Debris, Paint Solid, Paint Stripping Plastic Media-Not Pumpable, Organic Debris contaminated with Metals or Inorganics, Anodes Discarded	D001, D002, D003, D004, D005, D006, D007, D008, D010, D011, D018, D021, D026, D027, D028, D029, D034, D035, D039, D040, F002, F003, F005, U080, U226, U359	409,H

	After Use		
40	Wood debris, Wood Debris-Not Pumpable	D006, D007, D008	488,H
41	Petroleum contaminated solids, Rags, Organic Contaminated	D005, D006, D007, D008, D018, D022, D035, D039, D040, F002, F003, F005	489,H
42	Dewatered sewage or other untreated biological sludge, Biological Sludge-Untreated, Dewatered	D006, D007, D008	492,H
43	Other wastewater treatment sludge, Waste Water Treatment Sludges, Degritter	D006, D007, D008	504,H
44	Untreated Plating Sludges without Cyanide	D002, D004, D005, D006, D007, D008, D010, F006, F019	505,H
45	Untreated Plating Sludges with Cyanide	D002, D003, D004, D006, D007, D008, D010, D011, F006, F008, F019	506,H
46	Degreasing sludge with metal scale or filings	D006, D007, D008	510,H
47	Air pollution control device sludge, Scrubber Sludges	D006, D007, D008	511,H
48	Drilling Mud	D006, D007, D008, D018, D035, F002, F005	514,H
49	Other inorganic sludges, Pretreatment Plant Sand Filter, Abrasive Sludge, Metal Spray and Wet Sanding (Corrosion Prevention), Water/Paint Overspray from Paint Boot Operation-Solvents, Painting of Aircraft	D007, D008, D035, F007	519,H
50	Still bottoms on non-halogenated solvents or other organic liquids, Solvent Still Bottoms, Non-Halogenated/Halogenated Solvent Recovery Distillation Unit	D005, D006, D007, D008,F002, F003, F005	602,H
51	Oily Sludge	D001, D004, D005,	603.H

		D006, D007, D008, D009, D011, D018, D019, F002, F003, F005	
52	Organic Paint/Ink Sludge	D001, D006, D007, D008, D010, D035,F002, F003, F005	604,H
53	Biological treatment sludge, Biological Sludge-Treated, Dry Bed Cleaning	D006, D007, D008	607,H
54	Sewage or other untreated biological sludge	D005, D006, D007, D008	608,H
55	Grease	D001, D005, D006, D007, D008, D010	696,H

Table IV.C. – Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method[2]	Frequency	Parameter	Test Method[2]	Desired Accuracy Level[3]
1	Point of Generation	Not applicable	Not Applicable	Not Applicable	Generator Knowledge	NA
2	Point of Generation	Not Applicable	Not Applicable	Not Applicable	Generator Knowledge	NA
3	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals pH TOC TSS DW Steel Corrosion	1311/6010/7470 6010/7470 150.1/9040/9045 9060/SM5310C 160.2 31TAC 335.332 1110	As Defined in Method
4	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals Flash Point TOX Semivolatiles	1311/6010/7470 6010/7470 1010 9020 SW8260	As Defined in Method
5	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals pH TOC TSS DW Steel Corrosion	1311/6010/7470 6010/7470 150.1/9040/9045 9060/SM5310C 160.2 31TAC 335.332 1110	As Defined in Method
6	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals pH TOC TSS	1311/6010/7470 6010/7470 150.1/9040/9045 9060/SM5310C 160.2	As Defined in Method

				DW Steel Corrosion	31TAC 335.332 1110	
7	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals pH TOC TSS DW Steel Corrosion	1311/6010/7470 6010/7470 150.1/9040/9045 9060/SM5310C 160.2 31TAC 335.332 1110	As Defined in Method
8	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals pH TOC TSS DW Steel Corrosion Total & Amenable Cyanide	1311/6010/7470 6010/7470 150.1/9040/9045 9060/SM5310C 160.2 31TAC 335.332 1110 335.1/335.2/9010	As Defined in Method
9	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals pH TOC TSS DW Steel Corrosion Total & Amenable CN	1311/6010/7470 6010/7470 150.1/9040/9045 9060/SM5310C 160.2 31TAC 335.332 1110 335.1/335.2/9010	As Defined in Method

10	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals pH TOC TSS DW Steel Corrosion	1311/6010/7470 6010/7470 150.1/9040/9045 9060/SM5310C 160.2 31TAC 335.332 1110	As Defined in Method
11	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals pH TOC TSS DW Steel Corrosion Reactive Sulfide	1311/6010/7470 6010/7470 150.1/9040/9045 9060/SM5310C 160.2 31TAC 335.332 1110 SW 846-7.3.4.1	As Defined in Method
12	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals pH TOC TSS DW	1311/6010/7470 6010/7470 150.1/9040/9045 9060/SM5310C 160.2 31TAC 335.332	As Defined in Method
13	Point of Generation	Coliwasa Sampling Bomb	Annually or Process Change	TCLP (Metals) Total Metals pH TOC TSS DW Hexavalent Chrome	1311/6010/7470 6010/7470 150.1/9040/9045 9060/SM5310C 160.2 31TAC 335.332 SM 3500.CrD	As Defined in Method

14	Point of Generation	Mercury Recovery Vacuum Syringe, Pipette	As Needed	Not Applicable	Generator Knowledge	NA
15	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals pH TOC	1311/6010/7470 6010/7470 150.1/9040/9045 9060/SM5310C	As Defined in Method
				TSS DW Steel Corrosion	160.2 31TAC 335.332 1110	
16	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) TCLP (Volatiles) TCLP (BNAs) Total Metals TOX Flash Point Boiling Point Semivolatiles	1311/6010/7470 1311/8260 1311/8270 6010/7470 9020 1010 ASTM D-86 SW 8260	As Defined in Method
17	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) TCLP (Volatiles) TCLP (BNAs) Total Metals TOX Flash Point Boiling Point Semivolatiles	1311/6010/7470 1311/8260 1311/8270 6010/7470 9020 1010 ASTM D-86 SW 8260	As Defined in Method

18	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) TCLP (Volatiles) TCLP (BNAs) Total Metals TOX Flash Point Boiling Point Semivolatiles	1311/6010/7470 1311/8260 1311/8270 6010/7470 9020 1010 ASTM D-86 SW 8260	As Defined in Method
19	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals TOX Flash Point Boiling Point Semivolatiles	1311/6010/7470 6010/7470 9020 1010 ASTM D-86 SW 8260	As Defined in Method
20	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals TOX Flash Point Boiling Point Semivolatiles	1311/6010/7470 6010/7470 9020 1010 ASTM D-86 SW 8260	As Defined in Method
21	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) TCLP (Volatiles) TCLP (BNAs) Total Metals TOX Flash Point Boiling Point Semivolatiles	1311/6010/7470 1311/8260 1311/8270 6010/7470 9020 1010 ASTM D-86 SW 8260	As Defined in Method
22	Point of Generation	Cutting and Shearing Tools	Annually or Process Change	TCLP (Metals) Total Metals	1311/6010/7470 6010/7470 Generator Knowledge	As Defined in Method

23	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) TCLP (Volatiles) TCLP (BNAs) Total Metals TOX Flash Point Boiling Point Semivolatiles	1311/6010/7470 1311/8260 1311/8270 6010/7470 9020 1010 ASTM D-86 SW 8260	As Defined in Method
24	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) TCLP (Volatiles) TCLP (BNAs) Total Metals TOX Flash Point Boiling Point Semivolatiles	1311/6010/7470 1311/8260 1311/8270 6010/7470 9020 1010 ASTM D-86 SW 8260	As Defined in Method
25	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) Total Metals TOX Flash Point Boiling Point Semivolatiles	1311/6010/7470 6010/7470 9020 1010 ASTM D-86 SW 8260	As Defined in Method
26	Point of Generation	Soil Sampler Scoop Grain Thief	As Needed	TCLP (Metals) Total Metals BTEX TPH PAH	1311/6010/7470 6010/7470 8021/8015/5030 TCEQ 1005 8270	As Defined in Method
27	Point of Generation	Soil Sampler Scoop Grain Thief	As Needed	TCLP (Metals) Total Metals Corrosivity	1311/6010/7470 6010/7470 9045	As Defined in Method

28	Point of Generation	Grab Sample	As Needed	TCLP (Metals) Total Metals	1311/6010/7470 6010/7470 Generator Knowledge	As Defined in Method
29	Point of Generation	Not Applicable	Not Applicable	Not Applicable	Generator Knowledge	NA
30	Point of Generation	Cutting and Shearing Tools	Annually or Process Change	TCLP (Metals) Total Metals	1311/6010/7470/ 6010/7470	As Defined in Method
31	Point of Generation	Cutting and Shearing Tools	Annually or Process Change	TCLP (Metals) Total Metals Asbestos	1311/6010/7470 6010/7470 EPA 600 PLM	As Defined in Method
32	Point of Generation	Scoop Grain Thief	Annually or Process Change	TCLP (Metals) Total CN	1311/6019/7470 335.1/335.2/9010	As Defined in Method
33	Point of Generation	Scoop Grain Thief	Annually or Process Change	TCLP (Metals)	1311/6010/7470/	As Defined in Method
34	Point of Generation	Coliwasa	Annually or Process Change	TCLP (Metals) TOX Flash Point Boiling Point	1311/6010/7470/ 9020 1010 ASTM D-86	As Defined in Method
35	Point of Generation	Cutting and Shearing Tools	Annually or Process Change	TCLP (Metals)	1311/6010/7470	As Defined in Method
36	Point of Generation	Cutting and Shearing Tools	Annually or Process Change	TCLP (Metals) Total Metals	1311/6010/7470 6010/7470	As Defined in Method
37	Point of Generation	Not Applicable	As Needed	Not Applicable	Generator Knowledge	NA

38	Point of Generation	Cutting and Shearing Tools Scoop Grain Thief	Annually or Process Change	TCLP (Metals) Total Metals	1311/6010/7470 6010/7470	As Defined in Method
39	Point of Generation	Cutting and Shearing Tools Scoop Grain Thief	Annually or Process Change	TCLP (Metals) Total Metals	1311/6010/7470 6010/7470	As Defined in Method
40	Point of Generation	Cutting and Shearing Tools Core Sampler	Annually or Process Change	TCLP (Metals) Total Metals	1311/6010/7470 6010/7470	As Defined in Method
41	Point of Generation	Cutting and Shearing Tools	Annually or Process Change	TCLP (Metals) Total Metals	1311/6010/7470 6010/7470	As Defined in Method
42	Point of Generation	Core Sampler Sludge Sampler	Annually or Process Change	TCLP (Metals) Total Metals Pesticides Herbicides	1311/6010/7470 6010/7470 1311/8081 1311/8150	As Defined in Method
43	Point of Generation	Scoop Core	As Needed	TCLP (Metals) Total Metals	1311/6010/7470 6010/7470	As Defined in Method
		Sample Sludge Sampler		Total CN pH	335.1/335.2/9010 150.1/9040/9045	
44	Point of Generation	Scoop Core Sample Sludge Sampler	As Needed	TCLP (Metals) Total Metals Total CN pH	1311/6010/7470 6010/7470 335.1/335.2/9010 150.1/9040/9045	As Defined in Method
45	Point of Generation	Scoop Core Sampler Sludge Sampler	As Needed	TCLP (Metals) Total Metals Total CN pH	1311/6010/7470 6010/7470 335.1/335.2/9010 150.1/9040/9045	As Defined in Method

46	Point of Generation	Grain Thief Scoops Core Sampler Sludge Sampler	As Needed	TCLP (Metals) Total Metals Total CN Reactivity Corrosivity Ignitability	1311/6010/7470 6010/7470 335.1/335.2/9010 SW 7.7.3 SW 9040 SW1010	As Defined in Method
47	Point of Generation	Scoop Core Sampler Sludge Sampler	As Needed	TCLP (Metals) Total Metals Total CN pH	1311/6010/7470 6010/7470 335.1/335.2/90 10 150.1/9040/9045	As Defined in Method
48	Point of Generation	Scoop Core Sampler Sludge Sampler	As Needed	TCLP (Metals) Total Metals TPH PAH	1311/6010/7470 6010/7470 TCEQ 1005 8270	As Defined in Method
49	Point of Generation	Scoop Core Sampler Sludge Sampler	As Needed	TCLP (Metals) Total Metals Total CN pH	1311/6010/7470 6010/7470 335.1/335.2/9010 150.1/9040/9045	As Defined in Method
50	Point of Generation	Coliwasa Sludge Sampler	Annually or Process Change	TCLP (Metals) Total Metals Flash Point	1311/6010/7470 6010/7470 1010	As Defined in Method
51	Point of Generation	Core Sampler Sludge Sampler Scoop	Annually or Process Change	TCLP (Metals) Total Metals TCLP (Volatiles) TCLP (Semivolatiles) Ignitability	1311/6010/7470 6010/7470 1311/8260 1311/8270 SW 1020	As Defined in Method

52	Point of Generation	Coliwasa Sludge Sampler	Annually or Process Change	TCLP (Metals) Total Metals Flash Point	1311/6010/7470 6010/7470 1010	As Defined in Method
53	Point of Generation	Core Sampler Sludge Sampler Scoop	Annually or Process Change	TCLP (Metals) Total Metals Pesticides Herbicides	1311/6010/7470 6010/7470 1311/8081 1311/8150	As Defined in Method
54	Point of Generation	Core Sampler Sludge Sampler Scoop	Annually or Process Change	TCLP (Metals) Total Metals Pesticides Herbicides	1311/6010/7470 6010/7470 1311/8081 1311/8150	As Defined in Method
55	Point of Generation	Scoop	Annually or Process Change	TCLP (Metals) Total Metals	1311/6010/7470 6010/7470	As Defined in Method

1 from Table IV.B, first column

2 Sampling and Test/Analysis methods should be specified in enough detail to allow determination of whether they are suitable and correct for the purpose indicated while allowing flexibility in selection and future updates to the specified method. Standard methods, such as those from SW-846, will generally require no further submittal. Non-standard and proprietary methods may require additional information to determine suitability. ASTM methods may require submittal of a copy of the specified method.

3 Desired Accuracy Level should provide a specified numeric minimum performance level (maximum acceptable reporting limit) for method detection and quantitation limits that will be accepted from the laboratory performing the analysis and must ensure that reported data will allow determinations of compliance with regulatory limits for the parameter tested.

*Metal analysis vary based on user knowledge and previous analytical results. Typical TCLP and/or Total metal analysis will test for Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver. Additional parameters may be requested for Antimony, Beryllium, Nickel, and Thallium to identify hazardous constituents. The NASCC Waste Analysis Plan will be followed for sampling and analytical procedures

V. Engineering Reports

The engineering report represents the conceptual basis for the storage, processing, or disposal units at the hazardous waste management (HWM) facility. It should include calculations and other such engineering information as may be necessary to follow the logical development of the facility design. Plans and specifications are an integral part of the report. They should include construction procedures, materials specifications, dimensions, design capacities relative to the volume of wastes (as appropriate), and the information required by 40 CFR 270.14(b)(8), 270.14(b)(10). Since these reports may be incorporated into any issued permit, the report should not include trade names, manufacturers, or vendors of specific materials, equipment, or services unless such information is critical to the technical adequacy of the material. Technical specifications and required performance standards are sufficient to conduct a technical review. For landfills, surface impoundments, and waste piles, a Construction Quality Assurance Plan, which considers the guidance in EPA publication 530-SW-85-014, Minimum Technology Guidance on Double Liner Systems for Landfills and Surface Impoundments; Design, Construction, and Operation, and/or EPA/600/R-93/182, Quality Assurance And Quality Control For Waste Containment Facilities, should be submitted.

For facilities which will receive wastes from off-site sources, the engineering report must also contain information on the units which will manage these off-site wastes in accordance with 30 TAC 335.45(a).

Certain ancillary components or appurtenant devices must be addressed in the Part B application. These include but are not limited to sumps, pipelines, ditches, and canals. The technical information and the level of detail required will vary with the nature, scope, and location of the ancillary component. At a minimum they should be included in descriptions of piping and process flow. More information may be required. A single area containing a large number of ancillary components or a remote appurtenant device in an unusually sensitive location may warrant some specific permit requirements. All ancillary components must be included in calculating closure cost estimates.

In each of the unit-specific sections, describe precautions taken to prevent accidental commingling of incompatible wastes. If reactive or ignitable wastes are to be managed, or if incompatible wastes are deliberately commingled, provide information to ensure that precautions are taken to avoid danger due to:

- generation of extreme heat or pressure, fire, explosion, or violent reaction;
- production of uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;
- production of uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion;
- damaging the structural integrity of the device or facility containing the waste; or
- threatening human health or the environment by any other means.

Comprehensive consideration should be given to ensure that the facility is designed in accordance with good public health and hazardous waste management practices. The application will be evaluated primarily for the aspects of design covered by the regulations. Nothing in any approval is intended to relieve the facility owner or operator of any liabilities or responsibilities with respect to the design, construction, or operation of the project.

The Engineering Report is in Attachment G.

Engineering Report for Combustion Units

For hazardous waste combustion unit which are subject to regulation by 40 CFR Part 63, Subpart EEE, the requirements 30 TAC Chapter 305 and Subchapters I and Q do not apply when the unit becomes subject to Resource Conservation and Recovery Act (RCRA) permit requirements after October 12, 2005 (i.e., new unit), or no longer apply when an owner or operator of an existing hazardous waste management unit demonstrates compliance with the air emission standards and limitations in 40 Code of Federal Regulations (CFR) Part 63, Subpart EEE, except for the following:

1. Those provisions the Executive Director determines are necessary to comply with 40 CFR §264.345(a) and 40 CFR §264.345(c) for Phase I sources or 40 CFR §266.102(e)(1) and (2)(iii) for Phase II sources if the permittee or applicant elects to comply with any of the options listed in 40 CFR §270.235(a) to minimize emissions of toxic compounds from startup, shutdown, and malfunction events;
2. Those standards and associated requirements for particulate matter, hydrogen chloride and chlorine gas, and non-mercury metals that a Phase II area source elects to comply with in 40 CFR §§266.105, 266.106, and 266.107;
3. Those standards for particulate matter in 40 CFR 264.343(c) remain in effect for a Phase I source incinerator that elects to comply with the alternative to the particulate matter standard under 40 CFR 63.1206(b)(14) and 63.1219(e); and
4. Those provisions that the Executive Director may apply in 30 TAC Chapter 305, Subchapters I and Q, on a case-by-case basis. The Executive Director may require a permittee or an applicant to submit information in order to establish permit conditions under §305.50(a)(15) or (16) and §305.127(1)(B)(iii) or (4)(A) (i.e., risk-based permit conditions).

For hazardous waste combustion units subject to regulation by 40 CFR Part 63, Subpart EEE, some of the information requested in Sections V.H and V.I. will not be applicable for new units or existing units which have submitted a Notification of Compliance in accordance with 40 CFR 63.1207(j) and 63.1210(d), received a Finding of Compliance pursuant to 40 CFR 63.1206(b)(3), and have the associated RCRA permit conditions removed from the permit. Information which is not applicable or no longer applicable should not be included in the Part B application. *[Please note that the TCEQ will require a Finding of Compliance be made prior to modifying the permit by deleting redundant operating parameter limits and standards for the combustion units. Until such time as the permit is modified to delete the redundant RCRA-based operating parameter limits and standards in the permit or the permit is terminated or revoked, the permittee must comply with the RCRA-based conditions specified in the permit. More stringent risk-based permit conditions will remain in the RCRA permit.]*

For the exceptions listed in Items 1.-4., the owner and operator must provide the applicable information requested in the Part B permit application and any additional information required by the Executive Director to establish permit conditions.

N/A - There are no combustion units associated with this application.

A. General Engineering Reports

1. General Information

   Complete Table V.A. – Facility Waste Management Handling Units listing all past, current or proposed units. *[Indicate units' status as* Active, Closed, Inactive

(built but not yet managing waste), Proposed *(not yet built)*, Never Built, Transferred, or Post-Closure. *Indicate appropriate units for Capacity information.]* **Note for renewals and modifications involving adding or dropping units from the permit:** List all TCEQ Permit Unit Numbers that have been assigned previously as in a current permit Attachment D –Authorized Facility Units table and do not reuse or reassign permit numbers for units that have been replaced, closed, removed from the permit, or transferred to other ownership. All Notice of Registration (NOR) Numbers must match the State of Texas Environmental Electronic Reporting System (STEERS) and may not be reused for replacement units.

Provide an overall plan view of the entire facility. Identify each hazardous or industrial solid waste management unit (container storage area, tank, incinerator, etc.) to be permitted in relation to its location and the type of waste managed in that unit. Also provide a plan view at an appropriate scale to clearly show the location of all hazardous waste management units to be permitted on one or more 8 1/2" x 14" sheets. Indicate on this plan view how the design or operation provides for buffer zones or waste segregation as appropriate for incompatible, ignitable, or reactive wastes.

Submit a topographic map or maps of the facility which clearly shows the information specified in 40 CFR 270.14(b)(19), 270.14(c)(3), and 270.14(d)(1)(i) (for large HWM facilities, the TCEQ will allow the use of other scales on a case-by-case basis). Please note that the term "facility" includes all contiguous land, structures, other appurtenances, and improvements on the land for storing, processing, or disposing of hazardous and industrial solid waste.

2. Features to Mitigate Unsuitable Site Characteristics

   For all new hazardous waste management storage and/or processing facilities or areal expansions of existing hazardous waste management storage and/or processing facilities, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(a)(1) and (a)(3) through (9).

3. Construction Schedules

   a. In order to meet the required design standards, extensive retrofitting of some facilities may be required. In the worst case, the applicant may elect to close certain operations rather than comply with the RCRA standards. Thus, the permit may specify a schedule of compliance requiring the accomplishment of given tasks within specific time frames. As required, indicate an appropriate schedule(s) of compliance in this application. The schedule should provide for facility compliance as soon as possible and in accordance with 40 CFR 270.33(a)(2) and 270.33(b).

   b. For commercial hazardous waste management facilities, permit applications (new, renewal, or interim status applications), major amendments, and Class 3 modifications must include a construction schedule. A construction schedule must be submitted even if the application does not include an addition of units or a revision to permitted units. This schedule should comply with the requirements of 30 TAC 305.149.

4. Provide detailed plans and specifications which when, accompanied by the engineering report, will be sufficiently detailed and complete to allow the Executive Director to ascertain whether the facility will be constructed and

operated in compliance with all pertinent permitting requirements. Engineering plans and specifications must be prepared under the supervision of and sealed by a licensed Professional Engineer, with current license, along with the Registered Engineering Firm's name and Registration Number as required by the Texas Engineering Practice Act. For some facilities, plans in the form of a standard piping and instrumentation diagram will be sufficient. Overall dimensions and materials of construction must be shown.

The Engineering Report is in Attachment G.

B. Container Storage Areas

The Engineering Report is in Attachment G.

1. Provide an engineering report which includes all of the information specified in 40 CFR 264.170-264.173, 264.175-264.177, and 270.15.

   Complete Table V.B - Container Storage Areas and list the container storage areas covered by this application to be permitted. List the N.O.R. unit number, the rated capacity or size of each unit (including the maximum number of each type of container to be stored at each unit and total maximum capacity of all types wastes stored in the unit), the areal dimensions, containment volume, aisle space requirements, whether ignitable, reactive, or incompatible waste will be stored in each unit, and whether processing will occur within the unit.

2. Container storage areas must have a containment system that is capable of collecting and holding spills, leaks, and precipitation. In addition to the requirements of 40 CFR 270.15, the design report should include the following:
   a. Capacity of the containment relative to the number and volume of containers to be stored; in addition, for unenclosed areas, the amount of rainfall collected prior to removal. The TCEQ recommends using a 25-year, 24-hour rainfall event for this extra capacity; and
   b. Run-on into the containment system must be prevented, or a collection system with sufficient excess capacity must be provided. If run-on is collected within the containment system, delineate the area(s) from which run-on is collected. The 25-year, 24-hour rainfall event should be used to calculate the excess capacity.

3. Wastes Containing No Free Liquids

   With the exception of 40 CFR 264.175(d), storage areas that hold only wastes that do not contain free liquids need not have a containment system, provided that compliance with 40 CFR 264.175(c) is demonstrated. This demonstration must be submitted as part of the application and must include:
   a. test procedures and results or other documentation or information to show that the wastes do not contain free liquids; and
   b. a description of how the storage area is designed or operated to drain and remove liquids or how containers are kept from contact with standing liquids.

4. Managing Ignitable or Reactive Wastes

   If a container storage area will manage ignitable or reactive waste, as indicated on

Table V.B, provide in the engineering report drawings demonstrating compliance with the buffer zone requirement of 40 CFR 264.17 and 264.176.

5. Managing Incompatible Wastes

   If a container storage area will manage incompatible waste, as indicated on Table V.B, provide in the engineering report a description of the procedures used to ensure compliance with 40 CFR 264.17 and 264.177.

6. Managing Nonhazardous Wastes and/or Universal Wastes

   If a container storage area will manage nonhazardous wastes, and/or universal wastes in addition to hazardous waste, provide a description of all types of wastes managed in the engineering report and procedures used to ensure compliance with 40 CFR 264 Subpart I.

C. Tanks and Tank Systems

N/A - There are no tanks or tank systems associated with this application.

Provide an engineering report which includes all of the information specified in 40 CFR 264.190-264.194, 264.196, 264.198-264.199, and 270.16.

1. For inclusion into a permit, complete Table V.C - Tanks and Tank Systems and list the tanks covered by this application to be permitted. List the N.O.R. unit number, whether the unit is for storage and/or processing, the waste managed in each unit, the rated capacity of each unit, overall dimensions of each unit, containment volume, and whether ignitable, reactive, or incompatible waste will be stored in each unit.
2. If a tank will manage ignitable or reactive waste, as indicated on Table V.C, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.198 and provide drawings demonstrating compliance with any applicable buffer zone requirements and 40 CFR 264.17.
3. If a tank will manage incompatible waste, as indicated on Table V.C, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.199.
4. Submit written assessments that were reviewed and certified by an independent, qualified licensed Professional Engineer that attests to the structural integrity and suitability of handling the hazardous waste for each tank system, as required under 40 CFR 264.191-264.192 for existing tanks which do not have secondary containment meeting the standards of 40 CFR 264.193. The engineer signing the written assessment must make the certification specified in 40 CFR 270.11(d). The certification must be sealed by a licensed Professional Engineer, with current license, along with the Registered Engineering Firm's name and Registration Number as required by the Texas Engineering Practice Act.
5. If a tank has been de-rated or if the permitted capacity is otherwise different from the design capacity, specify any such change(s) in the engineering report.

Provide in the report any additional information for tanks and tank systems as specified in the above regulatory citations including: specifics of leak, spill, and unfit for use systems responses; assessments of tank systems; new tank systems or components;

overfill control and prevention; special requirements for ignitable and/or reactive wastes; incompatible wastes; air emissions control; detection of leaks into secondary containment; ancillary equipment; and plans and specifications individually sealed by a licensed professional engineer with current Texas registration with the Registered Engineering Firm's name and Registration number.

D. Surface Impoundments

N/A - There are no surface impoundments associated with this application.

Provide an engineering report which includes all of the information specified in 30 TAC 305.50(a)(6), 335.168, 335.169, and 40 CFR 264.19, 264.220, 264.221, 264.222, 264.223, 264.226(a) and (c), 264.227, 264.229-264.231, and 270.17.

For storage surface impoundments at a new hazardous waste management facility or which are part of an areal expansion of an existing hazardous waste management facility, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(d). For any surface impoundment to be closed as a landfill (where wastes will remain after closure of the impoundment) at a new hazardous waste management facility or which are part of an areal expansion of an existing hazardous waste management facility, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(e).

For all impoundments, include in the report the following information.

1. Complete Table V.D.1 - Surface Impoundments and list the surface impoundments, covered by this application, to be permitted. List the waste(s) managed in each unit and the rated capacity or size of each unit.
2. If a surface impoundment will manage ignitable or reactive waste, as indicated on Table V.D.1., describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.229.
3. If a surface impoundment will manage incompatible waste, as indicated on Table V.D.1., describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.230.
4. If a surface impoundment will manage F020, F021, F022, F023, F026, and F027 waste, as indicated on Table V.D.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.231.
5. Describe the surface impoundment. Detailed plan view and cross-sectional drawings of the surface impoundment should be included with the engineering report.
6. Freeboard

   Specify the minimum freeboard to be maintained and the basis of the design to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error. Show that adequate freeboard will be available to prevent overtopping from a 100-year, 24-hour storm. [40 CFR 264.221(g)]

   If the impoundment is inflow sensitive, it should be equipped with a high-level

alarm based on a different level sensor than that used for automatic control.

7. Waste Flow

Describe the means that will be used to immediately shut off the flow of waste to the impoundment to prevent overtopping or in the event of liner failure, and include appropriate detailed drawings.

If the surface impoundment is a flow-through facility describe the flow of waste, including a hydraulic profile.

8. Dike Construction

a. If dikes are used, include the following certification as part of the engineering report:

"I, *(qualified licensed Professional Engineer)*, Texas P.E. License Number _____, of Registered Firm *(Name)* Registered Firm No. *(Registration Number)* certify under penalty of law that I have personally examined and am familiar with the design and construction of the dikes that are a portion of *(surface impoundment unit name)*.

I further certify that I have evaluated the dike design and materials of construction using accepted engineering procedures, and have determined that the dike, including the portion of the dike providing freeboard, has structural integrity, and

(1) will withstand the stress of the pressure exerted by the types and amounts of wastes to be placed in the impoundment; and
(2) will not fail due to scouring or piping, without dependence on any liner system included in the impoundment construction.

Date: _____"

"(Signature)"

"(Seal)"

b. The structural integrity of the dike system must be certified by a qualified Professional Engineer before a permit is issued. If the impoundment is not being used, the dike licensed system must be certified before it can be put into use. The certification must be sealed by a licensed Professional Engineer, with current license, along with the Registered Engineering Firm's name and Registration Number as required by the Texas Engineering Practice Act.

c. A report shall accompany the dike certification which summarizes the activities, calculations, and laboratory and field analyses performed in support of the dike certification. Describe the design basis used in construction of the dikes. Provide the following analyses as attachments to the engineering report (A Quality Assurance Project Plan <QAPP> should be included in the report to ensure that each analysis is performed appropriately):

(1) Slope Stability Analysis
(2) Hydrostatic and Hydrodynamic Analysis
(3) Storm Loading
(4) Rapid Drawdown

d. Earthen dikes should have a protective cover to minimize wind and water erosion and to preserve the structural integrity of the dike. Describe the protective cover used and describe its installation and maintenance.

9. Containment System

We suggest that the applicant use available recognized guidance documents, such as EPA publication 530-SW-85-014, which provide design guidance for liner systems. The applicant is strongly encouraged to test each synthetic liner after installation by an electrical leak location test, such as the electric field method described in EPA Technical Guidance Document EPA/600/R-93/182, Quality Assurance and Quality Control for Waste Containment Facilities, or an equivalent method, such as those found in ASTM publications, and approved by the Executive Director. Construction above the liner may not proceed until any detected leaks are sealed.

a. Complete Table V.D. 6. - Surface Impoundment Liner System for each surface impoundment to be permitted.

b. In the engineering report, describe the design, installation and operation of liner and leak detection components. The description must demonstrate that the liner and leak detection system will prevent discharge to the land, and ground and surface water. Include the following analyses as attachments to the engineering report (A QAPP should be included in the report to ensure that each analysis is performed appropriately):

For artificial liners:

(1) Seaming method
(2) Surface preparation method
(3) Tensile Strength
(4) Impact Resistance
(5) Compatibility Demonstration
(6) Foundation Design (including Settlement Potential, Bearing Capacity and Stability, and Potential for Bottom Heave Blow-out)

For soil liners:

(7) Waste Migration Analysis (based on head, porosity, and permeability) for the most mobile and least attenuated waste constituents
(8) Atterberg Limits, % passing a #200 sieve, and Permeability
(9) Moisture Content
(10) Standard Proctor Density, Compaction Data

For leachate collection systems:

(11) Pipe Material and Strength
(12) Pipe Network Spacing and Grading
(13) Collection Sump(s) Material and Strength
(14) Drainage Media Specifications and Performance
(15) Analyses showing that pipe and pipe perforation size will prevent clogging and allow free liquid access to the pipe.
(16) Compatibility Demonstration
(17) Capacity of System
    (a) rate of leachate removal
    (b) capacity of sumps
    (c) thickness of mounding and maximum hydraulic head

c. Specify the liner system installation date and expected lifetime of liner system (years).

d. Specify whether the liner is chemically resistant to the waste and how this resistance was determined. Attach any tests or documentation to the

engineering report.

e. Submit a quality assurance/quality control plan for all components to demonstrate that all components will be properly installed and will perform to design specifications.

f. Submit a Response Action Plan that proposes actions to be taken if the Action Leakage Rate for the surface impoundment exceeds. At a minimum the Response Action Plan must include the requirements of 40 CFR 264.223.

10. Surface impoundments that receive waste on or after May 8, 1985 (or for newly-regulated units, the effective date of the new RCRA regulation) into new units and/or lateral expansions or replacements of existing units must meet the minimum technological requirements of the Hazardous and Solid Waste Amendments of 1984, unless an appropriate waiver is granted by the Commission. The owner or operator of each new surface impoundment unit for which the construction commences after January 29, 1992, or each lateral expansion of an existing surface impoundment unit where construction commences after July 29, 1992, or replacement of an existing surface impoundment unit that commence reuse after July 29, 1992 must install two or more liners and leachate collection and removal system unless commission approves alternate design or operating practices. Plans and specifications for both new and existing surface impoundments must demonstrate conformity with 30 TAC 335.168 and 40 CFR 264.221

11. Run-on Diversion

Describe in detail how the surface impoundment system will manage stormwater run-on away from the surface impoundment. Stormwater run-on must be diverted away from a surface impoundment. Use at least a 100-year, 24-hour rainfall event in the design and analysis of diversion structures. Where dikes are used to divert run-on, they must be protected from erosion. Include all analyses used to calculate run-on volumes.

12. The Commission may approve an alternate design or operating practice for a surface impoundment if the owner or operator demonstrates that such design or operating practices, together with location characteristics [40 CFR 264.221(d)]:

a. Will prevent the migration of hazardous constituents into the groundwater or surface water at least as effectively as the liners and leachate collection and removal system required by 40 CFR 264.221; and

b. Will allow detection leaks of hazardous constituents through the top liner at least as effectively.

13. Exemption from Double-Liner Requirements for Monofills [264.221(e)]

Owners or operators of hazardous waste surface impoundment monofills will be exempted from the double-liner requirements if the Commission finds, based on a demonstration by the owner or operator, that alternative design and operating practices, together with location characteristics are at least as effective as a double liner in preventing migration of hazardous constituents to the groundwater or surface water. If an exemption is sought, submit detailed plans and engineering and hydrogeologic reports, as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous constituents into the groundwater or surface water at any future time.

E. Waste Piles

N/A - There are no waste piles associated with this application.

This section applies to owners or operators of industrial solid waste facilities that store or process hazardous waste in piles. A hazardous waste pile that will be closed with wastes left in place must be managed as a landfill. Existing portions of waste piles are those areas that were listed on the original Part A and on which wastes have been lawfully placed.

Provide an engineering report which includes all of the information specified in 30 TAC 335.170 and 40 CFR 264.19, 264.250, 264.251, 264.252-264.253, 264.254(a) and (c), 264.256, 264.257, 264.259, and 270.18.

For waste piles at a new hazardous waste management facility or which are part of any areal expansion of an existing hazardous waste management facility, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(c).

For all waste piles, include in the report the following information.

1. For inclusion into a permit, complete Table V.E.1 - Waste Piles and list the waste piles covered by this application. List the waste managed in each unit and the rated capacity or size of the unit.
2. If a waste pile will manage ignitable or reactive waste, as indicated on Table V.E.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.256.
3. If a waste pile will manage incompatible waste, as indicated on Table V.E.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.257.
4. If a waste pile will manage F020, F021, F022, F023, F026, and F027 waste, as indicated on Table V.E.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.259.
5. Describe the waste pile, including any structure surrounding or enclosing the waste pile.
6. Containment System

   We suggest that the applicant use available recognized guidance documents, such as EPA publication 530-SW-85-014, which provide design guidance for liner systems. The applicant is strongly encouraged to test each synthetic liner after installation by an electrical leak location test, such as the electric field method described in EPA Technical Guidance Document EPA/600/R-93/182, Quality Assurance and Quality Control for Waste Containment Facilities, or an equivalent method, such as those found in ASTM publications, and approved by the Executive Director. Construction above the liner may not proceed until any detected leaks are sealed.

   a. For inclusion into a permit, complete Table V.E. 3 - Waste Pile Liner System and specify the type of containment/liner system.
   b. In the engineering report, describe the design, installation, construction, and operation of the liner and leachate collection system. The description must

demonstrate that containment systems will prevent discharge to the land, surface water, or groundwater. Include the following analyses as attachments to the engineering report, when applicable to the containment system being described (A QAPP should be included in the report to ensure that each analysis is performed appropriately):

For artificial liners:

(1) Seaming method
(2) Surface preparation method
(3) Tensile Strength
(4) Impact Resistance
(5) Compatibility Demonstration
(6) Foundation Design (including Settlement Potential, Bearing Capacity and Stability, and Potential for Bottom Heave Blow-out)

For soil liners:

(7) Waste Migration Analysis (based on head, porosity, and permeability) for the most mobile and least attenuated constituents.
(8) Atterberg Limits, % passing a #200 sieve, and Permeability
(9) Moisture Content
(10) Standard Proctor Density, Compaction Data

For leachate detection, collection, and removal system:

(11) Capacity of system
  (a) rate of leachate removal
  (b) capacity of sumps
  (c) thickness of mounding and maximum hydraulic head
(12) Pipe Material and Strength
(13) Pipe Network Spacing and Grading
(14) Collection Sump(s) Material and Strength
(15) Drainage Media Specifications and Performance
(16) Analysis showing that pipe and perforation size will prevent clogging and allow free liquid access to the pipe.
(17) Compatibility Demonstration

c. Containment/liner system installation date and expected lifetime of liner system (years).
d. Specify whether the containment/liner system is chemically resistant to the waste and how this resistance was determined. Attach any tests or documentation to the engineering report.
e. Submit a quality assurance/quality control plan for all components to demonstrate that all components will be properly installed and will perform to design specifications.
f. Submit a Response Action Plan that proposes actions to be taken if the Action Leakage Rate for the waste pile exceeds. At a minimum the Response Action Plan must include the requirements of 40 CFR 264.253.

7. Wind Dispersal [30 TAC 335.170(j)]

Waste piles containing hazardous waste which could be subject to dispersal by wind must be covered or otherwise managed so that wind dispersal is minimized. Describe practices to control wind dispersal (e.g., cover or frequent wetting) of

the hazardous waste.

8. Run-on Diversion [30 TAC 335.170(g)]

   Describe in detail the measures used to control and divert run-on from the unit. The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 100-year, 24-hour storm.

   Include all analyses used to calculate: flow rates; run-on volume and depth; and back-water calculations for the ditches on plant property.

   Any tanks or basins associated with the run-on control systems must be emptied or otherwise managed expeditiously after a storm to maintain the design capacity of the system. [30 TAC 335.170(i)]

9. Run-off Control [30 TAC 335.170(h)]

   Describe in detail the measures used to control run-off from the unit. Include all analyses used to calculate the run-off volumes.

   The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 100-year, 24-hour storm.

   Collection and holding facilities (e.g., tanks or basins) associated with the run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain the design capacity of the system. [30 TAC 335.170(i)]

10. Give a description of design and operating procedures to properly manage and/or dispose of any residuals (e.g., leachate) that may be generated during waste management. Describe the management process and any equipment used.

11. Provide a description and list of all equipment and procedures used to place the waste in or on the waste pile, and how the liner surface will be exposed for inspection, if necessary. A containment system must be protected from plant growth which could puncture any component of the system.

12. Exemption from Liner and Leachate Collection Requirements

    The Commission may approve an alternate design or operating practice for a waste pile if the owner or operator demonstrates that such design or operating practices, together with location characteristics [40 CFR 264.251(d)]:

    a. Will prevent the migration of hazardous constituents into the groundwater or surface water at least as effectively as the liners and leachate collection and removal system; and
    b. Will allow detection leaks of hazardous constituents through the top liner at least as effectively.

13. Exemption from Groundwater Monitoring under 40 CFR 264.250(c)

    A waste pile may be exempt from groundwater monitoring if the following standards are met:

    a. The waste pile (including its underlying liners) must be located entirely above the seasonal high water table; and
    b. The waste pile is inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated, provided that:

(1) Liquids or materials containing free liquids are not placed in the pile;
(2) The waste pile is protected from surface water run-on by the structure or in some other manner;
(3) The waste pile is designed and operated to control dispersal of the waste by wind, where necessary, by means other than wetting; and
(4) The waste pile will not generate leachate through decomposition or other reactions; or

c. The waste pile must have a leachate collection and removal system above the top liner; and

d. Underlayment:

(1) either:

(a) The waste pile must be underlain by two liners, which are designed and constructed in a manner that prevents the migration of liquids into or out of the space between the liners and a leak detection system which must be designed, constructed, maintained, and operated between the liners to detect any migration of liquids into the space between the liners; and

(b) A demonstration must be made that there is a low potential for migration of liquid from the waste pile to the uppermost aquifer during the life of the waste pile (including the closure period). The owner or operator must base any predictions made on assumptions that maximize the rate of liquid migration;

(2) or:

(a) The waste pile must be underlain by a liner (base) that is designed, constructed, and installed in a manner that prevents the migration of liquids or waste beyond the liner; and

(b) The wastes in the waste pile must be removed periodically, and the liner must be inspected for deterioration, cracks, or other conditions that may result in leaks. The frequency of inspection will be specified in the inspection plan and must be based on the potential for the liner (base) to crack or otherwise deteriorate under the conditions of operation (e.g., waste type, rainfall, loading rates and subsurface stability).

The liner(s) used to satisfy V.D.13.d. must be of sufficient strength and thickness to prevent failure due to puncture, cracking, tearing, or other physical damage from equipment used to place waste in or on the pile or to clean and expose the liner surface for inspection.

F. Land Treatment Units

N/A - There are no land treatment units associated with this application.

Provide an engineering report which includes all of the information specified in 30 TAC 305.50(a)(6), 335.171, 335.172, 40 CFR 264.270-264.272, 264.273, 264.276, 264.278,

264.279, 264.281-264.283, and 270.20 for each land treatment unit.

For land treatment units at a new hazardous waste management facility or which are part of an areal expansion of an existing hazardous waste management facility, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(b).

For all land treatment units, include in the report the following information.

1. Complete Tables V.F.1 - Land Treatment Units and V.F.2 - Land Treatment Unit Capacity and list the land treatment units covered by this application. List the waste(s) managed in each unit and the rated capacity or size of the unit. If different wastes are placed on separate portions of the land treatment area, each portion is considered a land treatment unit, and requires a separate summary form and engineering report.

   The treatment zone is defined as the soil area of the unsaturated zone of a land treatment unit within which hazardous constituents are degraded, transformed, or immobilized. In this section, specify the depth of the treatment zone. The maximum depth of the treatment zone for new land treatment units must be [40 CFR 264.271(c)]:

   a. No more than 1.5 meters (5 feet) from the surface; and
   b. More than 1 meter (3 feet) above the seasonal high water table.

2. If a land treatment unit will manage ignitable or reactive waste, as indicated on Table V.F.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.281.

3. If a land treatment unit will manage incompatible waste, as indicated on Table V.F.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.282.

4. If a land treatment unit will manage F020, F021, F022, F023, F026 and F027 waste, as indicated on Table V.F.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.283.

5. Describe the land treatment unit. The report shall include all the information requested in this section including drawings. At a minimum, a plan view and cross-section of the unit should be included with the engineering report.

6. Complete Table V.F.3. - Land Treatment Principal Hazardous Constituents and list the wastes for which the treatment demonstration will be made and the principal hazardous constituents in each waste. Specify in the report the data sources to be used to make the demonstration such as laboratory data, field data, operating data, literature, or other.

7. Run-on Diversion

   Describe in detail the measures used to control run-on and divert run-on from the unit. Include all the analyses used to calculate the run-on volumes.

   The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the land treatment unit during peak discharge from a 100-year, 24-hour storm. [30 TAC 335.171(3)]

   Collection holding facilities (e.g., tanks or basins) associated with the run-on control system must be emptied or otherwise managed expeditiously after storms

to maintain the design capacity of the system. [30 TAC 335.171(5)]

8. Run-off Control

   Describe in detail the measures used to control the run-off from the unit, and minimize hazardous constituents in the run-off, include all the analyses used to calculate the run-off volumes.

   The owner or operator must design, construct, operate and maintain a run-off management system to collect and control at least the water volume resulting from a 100-year, 24-hour storm. [30 TAC 335.171(4)]

   Collection and holding facilities (e.g., tanks or basins) associated with run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system. [30 TAC 335.171(5)]

9. Wind Dispersal

   The owner or operator of a land treatment unit containing hazardous waste which could be subject to dispersal by wind must cover or otherwise manage the land treatment unit so that wind dispersal is minimized. Describe practices to control wind dispersal (e.g., cover or frequent wetting) of the hazardous waste. [30 TAC 335.171(6)]

10. Treatment Demonstration

    A description of the treatment demonstration required under 40 CFR 264.272 and 270.20(a) shall be included with the engineering report. If the owner or operator intends to conduct field tests or laboratory analyses in order to make the demonstration, he must obtain a treatment or disposal permit.

11. The owner or operator must establish an unsaturated zone monitoring program in accordance with 40 CFR 264.278 and a detailed monitoring program must be included in the application.

12. Food Chain Crops [40 CFR 264.276]

    Several conditions must be satisfied if food-chain crops are to be grown in or on the treatment zone. A demonstration must be prepared similar to the one described in the Treatment Demonstration and submitted at least 90 days prior to the planting of crops. The demonstration need not be submitted with this application. However, a description of the demonstration must be included as part of the engineering report. This demonstration may be combined with the Treatment Demonstration description, as some of the information required is identical.

G. Landfills

N/A - There are no landfills associated with this application.

Provide an engineering report which includes all of the information specified in 30 TAC 305.50(a)(5), (6), (9), (10), and (12), 335.173, 40 CFR 264.19, 264.300, 264.301, 264.302, 264.303(a), 264.304, 264.309, 264.312, 264.313, 264.315-264.317, and applicable requirements of 270.21. The text of the report should be written to supplement engineering plans, specifications, and test results necessary to provide a detailed description of how the landfill will comply with these standards.

For landfills at a new hazardous waste management facility or which are part of an areal expansion of an existing hazardous waste management facility, include in the engineering report design, construction, and operational information specified in 30 TAC 335.204(e).

For all landfills, include in the report the following information.

1. Complete Table V.G.1 - Landfills and list the landfills (and number of cells, if applicable) covered by this application. List the waste(s) managed in each unit and the rated capacity or size of the unit. If wastes are segregated in some manner, list the cell number in which wastes are placed next to each waste type.

2. If a landfill will manage ignitable or reactive waste, as indicated on Table V.G.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.312.

3. If a landfill will manage incompatible waste, as indicated on Table V.G.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17 and 264.313.

4. If a landfill will manage F020, F021, F022, F023, F026, and F027 waste, as indicated on Table V.G.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.317.

5. Describe the landfill. A plan view and cross-section of the landfill should be included with the engineering report. As appropriate, detailed plan, elevation, cross-section of landfill containment facilities shall be included with the report.

6. Containment System

   We suggest that the applicant use available recognized guidance documents, such as EPA publication 530-SW-85-014, which provide design guidance for liner systems. The applicant is strongly encouraged to test each synthetic liner after installation by an electrical leak location test, such as the electric field method described in EPA Technical Guidance Document EPA/600/R-93/182, Quality Assurance and Quality Control for Waste Containment Facilities, or an equivalent method, such as those found in ASTM publications, and approved by the Executive Director. Construction above the liner may not proceed until any detected leaks are sealed.

   a. Complete Table V.G.3. - Landfill Liner System and specify the type of liner used for the landfill.

   b. In the engineering report, describe the design, installation, construction, and operation of the liner and leachate collection system. The description must demonstrate that the liner system will prevent discharge to the land, groundwater, and surface water. The following analyses should be included as attachments to the engineering report (A QAPP should be included in the report to ensure that each analysis is performed appropriately):

   For artificial liners:

   (1) Seaming method
   (2) Surface preparation method
   (3) Tensile Strength
   (4) Impact Resistance
   (5) Compatibility Demonstration
   (6) Foundation Design (including Settlement Potential, Bearing

Capacity and Stability, and Potential for Bottom Heave Blow-out)

For soil liners:

(7) Waste Migration Analysis (based on head, porosity, and permeability) for the most mobile and least attenuated waste constituents
(8) Atterberg Limits, % passing a #200 sieve, and Permeability
(9) Moisture Content
(10) Standard Proctor Density, Compaction Data

For Leachate Collection System

For incorporation into the permit, complete Table V.G.4. - Landfill Leachate Collection System used for the landfill.

(11) Capacity of the system:
  (a) rate of leachate removal
  (b) capacity of sumps
  (c) thickness of mounding and maximum hydraulic head
(12) Pipe Material and Strength
(13) Pipe Network Spacing and Grading
(14) Collection Sump(s) Material and Strength
(15) Drainage Media Specifications and Performance
(16) Analyses showing that pipe and pipe perforation size will prevent clogging and allow free liquid access to the pipe.
(17) Compatibility Demonstration

c. State whether the liner system components are chemically resistant to the waste and how this resistance was determined. Attach any tests or documentation to the engineering report.
d. Provide a quality assurance/quality control plan for all components to demonstrate that all components will be properly installed and will perform to design specifications.
e. Whether the leachate collection components are chemically resistant to the waste and how this resistance was determined. Attach any tests or documentation to the engineering report.
f. Provide a Response Action Plan that proposes actions to be taken in the case of exceedance of the landfill Action Leakage Rate. At a minimum the Response Action Plan must include the requirements of 40 CFR 264.304.

7. For Dikes:
   a. Slope Stability Analysis;
   b. Hydrostatic and Hydrodynamic Analyses
   c. Ability to withstand scouring from leaking liner.

8. Landfills that receive waste on or after May 8, 1985 (or for newly-regulated units, the effective date of the new RCRA regulation) into new units and/or lateral expansions or replacements of existing units must meet the minimum technological requirements of the Hazardous and Solid Waste Amendments of 1984, unless an appropriate waiver is granted by the Commission. The owner or operator of each new landfill unit for which the construction commences after January 29, 1992, or each lateral expansion of an existing landfill unit where construction commences after July 29, 1992, or replacement of an existing

landfill unit that commence reuse after July 29, 1992 must install two or more liners and leachate collection and removal system unless commission approves alternate design or operating practices. Plans and specifications for both new and existing landfills must demonstrate conformity with 30 TAC 335.173 and 40 CFR 264.301(c).

9. Site Development Plan

Describe the methods used to deposit waste in the landfill. This description should include rate of waste deposition, waste segregation, average lift size, maximum lift, average cell or trench size, maximum cell or trench size, and other information necessary to depict how the landfill will be developed. Do not include liner or leachate collection system information, closure information, or handling of special wastes. This will be included elsewhere in the report.

10. Run-on Control [30 TAC 335.173(g)]

The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a 100-year, 24-hour storm.

In the engineering report, include the following analyses:

a. Run-on volume and depth calculations from the peak discharge of the 100-year, 24-hour storm; and
b. For ditches on the plant property, back-water calculations.

Collection and holding facilities (e.g., tanks or basins) associated with the run-on control system must be emptied or otherwise managed expeditiously. [30 TAC 335.173(i)]

11. Run-off Control [30 TAC 335.173(h)]

The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control the water volume resulting from a 100-year, 24-hour storm.

Include all analyses used to calculate run-off volumes.

Collection and holding facilities (e.g., tanks or basins) associated with run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system. [30 TAC 335.173(i)]

12. Wind Dispersal [30 TAC 335.173(j)]

If the landfill contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the landfill to minimize wind dispersal. Based upon the characteristics of the material to be landfilled describe the likelihood of wind dispersal occurring. Describe in detail any method and/or control mechanism used to prevent wind dispersal.

13. Liquid Waste

If liquid waste or waste containing free liquids is to be stabilized and then placed in the landfill, the procedures used to stabilize the waste must be described in the engineering report. The waste must be treated prior to landfilling using a treatment technology that does not solely involve the use of a material that functions primarily as a sorbent. Provide supporting documentation to verify that an appropriate stabilization procedure is used to comply with 30 TAC

335.175.

14. The Commission may approve an alternate design or operating practice for a landfill if the owner or operator demonstrates that such design or operating practices, together with location characteristics [40 CFR 264.301(d)]:
    a. Will prevent the migration of hazardous constituents into the groundwater or surface water at least as effectively as the liners and leachate collection and removal system; and
    b. Will allow detection leaks of hazardous constituents through the top liner at least as effectively.

15. Exemption from Double-Liner Requirements for Monofills [264.301(e)]

    Owners or operators of hazardous waste monofills will be exempted from the double-liner requirements if the Commission finds, based on a demonstration by the owner or operator, that alternative design and operating practices, together with location characteristics are at least as effective as a double liner in preventing migration of hazardous constituents to the groundwater or surface water. If an exemption is sought, submit detailed plans and engineering and hydrogeologic reports, as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous constituents into the groundwater or surface water at any future time.

16. Above-grade Benefits

    The engineering report must evaluate the benefits, if any, associated with the construction of the landfill above existing grade at the proposed site, the costs associated with the above-grade construction, and the potential adverse effects, if any, which would be associated with the above-grade construction. [TX. Health and Safety Code 361.108]

H. Incinerators

N/A - There are no incinerators associated with this application.

As applicable, provide an engineering report which includes all of the information specified in 30 TAC 305.171-305.176, 40 CFR 264.340, 264.342-264.346, 264.347(a), and 270.19. In addition, the Executive Director may require additional information to address the requirements in 30 TAC 305.50(a)(15).

Note: Please review the information provided in the section above entitled "Engineering Report for Combustion Units" and 40 CFR 270.19(e) to determine applicability of standards and associated requirements in 40 CFR Part 264, Subpart O. If the permit contains risk-based permit conditions, please ensure that all applicable supporting information is included in the engineering report.

1. Complete Table V.H.1 - Incinerators and list the incinerators covered by this application and list the waste managed in each unit.
2. Complete Table V.H.2 - Incinerator Permit Conditions, Monitoring, and Automatic Waste Feed Cutoff Systems for each Incinerator.
3. Complete Table V.H.3 - Maximum Constituents Feed Rate for each Incinerator.

4. Complete Table V.H.4 - Maximum Allowable Emission Rates for each Incinerator.

5. For use during the shakedown period, the trial burn period and the period after completion of the initial trial burn, complete Table V.H.5 - Incinerator Permit Conditions, Monitoring, and Automatic Waste Feed Cutoff-Short-Term Operation for each new or modified Incinerator.

6. If an incinerator will manage reactive or incompatible waste, as indicated on Table V.H.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17.

7. If an incinerator will manage F020, F021, F022, F023, F026, and F027 waste, as indicated on Table V.H.1, the DRE requirement is 99.9999%.

8. If a trial burn for a modified unit and Comprehensive Performance Test under 40 CFR Part 63, Subpart EEE (HWC MACT) (for all new and modified units) will be performed, designate one or more of the 40 CFR 261 Appendix VIII organic compounds present in the wastes to be incinerated as Principal Organic Hazardous Constituents (POHCs). Selection will be based upon the degree of difficulty of incineration of these compounds and upon their concentration or mass in the waste feed. These POHCs will be used to determine the destruction and removal efficiency (DRE) specified in the performance standards of 40 CFR 264.343 and HWC MACT. In addition, complete Table V.H.8 - Principal Organic Hazardous Constituents.

9. Submit a Quality Control/Quality Assurance Plan for all sampling, analysis, and monitoring activities which will occur in conjunction with the trial burn.

10. As applicable, facilities with existing permits may request that the Executive Director to address permit conditions that minimize emissions from startup, shutdown, and malfunction events in accordance with the options under 40 CFR 270.235 when requesting the removal of permit conditions that are no longer applicable according to 30 TAC 305.175. Please provide the relevant information needed to process the requested option to minimize emissions identified in 40 CFR 270.235(1)(a)(i)-(iii). (30 TAC 305.176)

I. Boilers and Industrial Furnaces

N/A - There are no boilers and industrial furnaces associated with this application.

As applicable, provide an engineering report which includes all of the information specified in 30 TAC 305.50(a)(13), 305.571-573, 40 CFR 266.100 and 266.102 (as incorporated by reference in 30 TAC 335.221 through 335.225), 266.104-266.112, and 270.22. In addition, the Executive Director may require additional information to address the requirements in 30 TAC 305.50(a)(15).

Note: Please review the information provided in the section above entitled "Engineering Report for Combustion Units" and 40 CFR 270.22 to determine applicability of standards and associated requirements in 40 CFR Part 266, Subpart H. Area sources that elect to comply with the standards and associated requirements of 40 CFR 266.105, 266.106, and 266.107 should address those elected standards and requirements in the engineering report. If the permit contains risk-based permit conditions, please ensure

that all applicable supporting information is included in the engineering report.

1. Complete Table V.I.1 - Boilers and Industrial Furnaces and list the boilers and/or industrial furnaces covered by this application to be permitted and list the waste managed in each unit.
2. Complete Table V.I.2 - Boiler and Industrial Furnace Permit Conditions, Monitoring, and Automatic Waste Feed Cutoff Systems for each unit.
3. Complete Table V.I.3 - Maximum Constituent Feed Rate for each unit.
4. Complete Table V.I.4 - Maximum Allowable Emission Ratesfor each unit.
5. For use during the shakedown period, trial burn period and the period after completion of the initial trial burn, complete Table V.I.5 - Boiler and Industrial Furnace Permit Conditions, Monitoring, and Automatic Waste Feed Cutoff Systems-Short-Term Operation for each new or modified unit.
6. If a boiler or industrial furnace will manage reactive or incompatible waste, as indicated on Table V.I.1, describe in the engineering report the procedures used to ensure compliance with 40 CFR 264.17.
7. If a boiler and industrial furnace will manage F020, F021, F022, F023, F026, and F027 waste, as indicated on Table V.I.1, the DRE requirement is 99.9999%.
8. If a trial burn for modified units and Comprehensive Performance Test under 40 CFR Part 63, Subpart EEE (HWC MACT) (for all new and modified units) will be performed, designate one or more of the 40 CFR 261 Appendix VIII organic compounds present in the wastes to be incinerated as Principal Organic Hazardous Constituents (POHCs). Selection will be based upon the degree of difficulty of incineration of these compounds and upon their concentration or mass in the waste feed. These POHCs will be used to determine the destruction and removal efficiency (DRE) specified in the performance standards of 40 CFR 266.104 and HWC MACT. In addition, complete Table V.I.8 - Principal Organic Hazardous Constituents.
9. Submit a Quality Control/Quality Assurance Plan for all sampling, analysis, and monitoring activities.
10. As applicable, facilities with existing permits may request that the Executive Director to address permit conditions that minimize emissions from startup, shutdown, and malfunction events in accordance with the options under 40 CFR 270.235 when requesting the removal of permit conditions that are no longer applicable according to 30 TAC 305.571(b). Please provide the relevant information needed to process the requested option to minimize emissions identified in 40 CFR 270.235(1)(a)(i)-(iii). [30 TAC 305.572(a)(6)]

J. Drip Pads

N/A - There are no drip pads associated with this application.

Provide an engineering report which includes all of the information specified in 40 CFR 264.570-573 and 270.26.

1. Complete Table V.J.1. - Drip Pads and list the drip pads, covered by this application, to be permitted. List the N.O.R. unit number, the waste managed in

each unit, the rated capacity of each unit, and the overall dimensions of the unit (including perimeter curb or berm height) that will be in contact with the waste.

2. For either new drip pads[1] or existing drip pads for which the owner/operator elects to comply with the synthetic liner requirement of 40 CFR 264.573(b), please complete Table V.J.2. - Drip Pad Synthetic Liner System.

3. In the engineering report, describe the design, installation, construction, and operation of the liner and leakage collection system. The description must demonstrate that the liner system will prevent discharge to the land, groundwater, and surface water. The following analyses should be included as attachments to the engineering report (A QAPP should be included in the report to ensure that each analysis is performed appropriately):

For artificial liners:

a. Seaming method
b. Surface preparation method
c. Tensile Strength
d. Impact Resistance
e. Compatibility Demonstration
f. Foundation Design (including Settlement Potential, Bearing Capacity and Stability, and Potential for Bottom Heave Blow-out)

For Leakage Collection System

g. Capacity of the system:
    (1) rate of leachate removal
    (2) capacity of sumps
    (3) thickness of mounding and maximum hydraulic head
h. Pipe Material and Strength
i. Pipe Network Spacing and Grading
j. Collection Sump(s) Material and Strength
k. Drainage Media Specifications and Performance
l. Analyses showing that pipe and pipe perforation size will prevent clogging and allow free liquid access to the pipe.
m. Compatibility Demonstration

K. Miscellaneous Units

N/A - There are no miscellaneous units associated with this application.

A miscellaneous unit is a unit other than a container, tank, incinerator, boiler, industrial furnace, landfill, surface impoundment, waste pile, underground injection well, land treatment area, drip pad, or unit eligible for an R, D & D permit that is used to process,

1 New drip pads are those drip pads constructed after 12/06/90 and which had no binding contract for construction. If electing to comply with 40 CFR 264.573(b), the requirement to install a leakage collection system of 40 CFR 264.573(b)(3) applies only to those drip pads constructed after 12/24/92 and which had no binding contract for construction.

store, or dispose of hazardous waste.

For each miscellaneous unit for which an operating permit is sought, provide an engineering report which includes all of the information specified in 40 CFR 264.600-264.602, and 270.23.

1. Complete Table V.K - Miscellaneous Units and list the miscellaneous units covered by this application. List the waste managed in each unit and the rated capacity or size of the unit. If the information requested is not applicable, an explanation must be submitted.
2. Provide any other information which is descriptive of the relationship between the miscellaneous unit and the environment. Application information may include design requirements of 30 TAC 305 and 335, 40 CFR Part 264 Subparts I through O, and Part 270 that are appropriate for the miscellaneous unit or portions of the unit being permitted.
3. For a unit which involves combustion, please provide emissions data or a trial burn plan. Tables V.H.1-5 for incinerators or Tables V.I.1-5 for boilers and industrial furnaces may be adapted as appropriate to provide operation, monitoring, and emission information for a miscellaneous combustion unit.

L. Containment Buildings

N/A - There are no containment buildings associated with this application.

Provide an engineering report which includes all of the information specified in 40 CFR 264.1100-1101(c)(3), and 264.1101(d)-(e).

Complete Table V.L. - Containment Buildings and list the containment buildings covered by this application to be permitted. List the N.O.R. unit number, whether the unit is for storage and/or processing, the waste or debris managed in each unit, the rated capacity of each unit, and the overall dimensions of the unit (including containment wall height) that will be in contact with the waste or debris.

Table V.A. – Facility Waste Management Handling Units

TCEQ Permit Unit No.[1]	Unit Name	NOR No.[1]	Unit Description[3]	Capacity	Unit Status[2]
1	Hazardous Waste Storage Facility. Building 257	20	Concrete and metal building used for container storage	17,200 gallons	Closed
3	DRMO Conforming Storage Building CLOSED – NOT BUILT	28	Never Built	46,200 gallons	Never Built
4	Building 1820 CLOSED – NOT USED	34	Never Used	74,500 gallons	Closed
TBA	Building 258	TBA	Concrete and metal building used for container storage	21,120 gallons	Proposed

1. Permitted Unit No. and NOR No. cannot be reassigned to new units or used more than once and all units that were in the Attachment D of a previously issued permit must be listed.
2. Unit Status options: Active, Closed, Inactive (built but not managing waste), Proposed (not yet built), Never Built, Transferred, Post-Closure.
3. If a unit has been transferred, the applicant should indicate which facility/permit it has been transferred to in the Unit Description column of Table V.A.

Table V.B. – Container Storage Area

Permit Unit No.	Container Storage Area	N.O.R. No.	Waste Nos.[4]	Rated Capacity[3]	Dimensions	Containment Volume (including rainfall for unenclosed areas)	Unit will manage Ignitable[1], Reactive[1], or Incompatible[2] waste (state all that apply)
TBA	Building 258	TBA	1-55	21,120 gallons	53 ft x 60 ft	4,416 gallons	Ignitable, Reactive and Incompatible

1 Containers managing ignitable or reactive waste must be located at least 15 meters (50 feet) from the facility's property line.
2 Incompatible waste must be separated from other waste or materials stored nearby in other containers, piles, open tanks, or surface impoundments by means of a dike, berm, wall, or other device.
3 Container Storage Areas need to include in capacity calculations any nonhazardous wastes and universal wastes managed in the unit in addition to hazardous wastes.
4 from Table IV.B, first column

Table V.C. – Tanks and Tank System

NA – There are no tanks or tank systems associated with this application.

Permit Unit No.	Tank	N.O.R. No.	Storage and/or Processing	Waste Nos.[1]	Rated Capacity	Dimensions	Containment Volume (including rainfall for unenclosed areas)	Unit will manage Ignitable, Reactive, or Incompatible Waste (state all that apply)

1 from Table IV.B, first column

Table V.D.1. – Surface Impoundments

NA – There are no surface impoundments associated with this application.

Permit Unit No.	Surface Impoundment	N.O.R. No.	Waste Nos.[1]	Rated Capacity	Dimensions[2]	Distance from lowest liner to groundwater	Action Leakage Rate (if required)	Unit will manage Ignitable, Reactive, Incompatible, or F020, F021, F022, F023, F026, and F027 Waste (state all that apply)

1from Table IV.B, first column
2Dimensions should be provided as average length, width and depth, also include the surface acreage for the unit.

Table V.D.6. – Surface Impoundment Liner System

NA – There are no surface impoundment liners associated with this application.

Surface Impoundment	Primary Liner			Secondary Liner			Clay Liner		
	Material	Permeability (cm/sec)	Thickness	Material	Permeability (cm/sec)	Thickness	Material	Permeability (cm/sec)	Thickness

Table V.E.1. – Waste Piles

NA – There are no waste piles associated with this application.

Permit Unit No.	Waste Pile	N.O.R. No.	Waste Nos.[1]	Rated Capacity	Dimensions[2]	Distance from lowest liner to groundwater	Action Leakage Rate (if required)	Unit will manage Ignitable, Reactive, Incompatible, or F020, F021, F022, F023, F026, and F027 Waste (state all that apply)

1from Table IV.B, first column
2Dimensions should be provided as average length, width and depth, also include the surface acreage for the unit.

Table V.E.3. – Waste Pile Liner System

NA – There are no waste pile liner systems associated with this application.

Waste Pile	Primary Liner			Secondary Liner			Clay Liner		
	Material	Permeability (cm/sec)	Thickness	Material	Permeability (cm/sec)	Thickness	Material	Permeability (cm/sec)	Thickness

Table V.F.1. – Land Treatment Units

NA – There are no land treatment units associated with this application.

List the land treatment units covered by this application. List the waste managed in each unit and the rated capacity or size of the unit.

Permit Unit No.	Land Treatment Unit	N.O.R. No.	Waste Nos.[1,2]	Dimensions[3]	Distance from lowest liner to groundwater	Unit will manage Ignitable, Reactive, Incompatible, or F020, F021, F022, F023, F026, and F027 Waste (state all that apply)

1from Table IV.B, first column
2If cadmium is present in the waste, state the concentration in the report.
3Dimensions should be provided as average length, width and depth, also include the surface acreage for the unit.

Table V.F.2. – Land Treatment Unit Capacity

NA – There are no land treatment units associated with this application.

For the land treatment units listed in Table IV.F.1, specify the waste treatment capacity.

Permit Unit No.*	Land Treatment Unit	N.O.R. No.	Rated Capacity				Treatment Zone Depth
			Monthly Hydraulic Loading	Monthly Organic Loading	Monthly Inorganic Loading	Cumulative Lifetime Loading	

* This number should match the Permit Unit No. given on Table V.F.1.

Table V.F.3. – Land Treatment Principal Hazardous Constituents

NA – There are no land treatment units associated with this application.

List the wastes for which the demonstration will be made and the principal hazardous constituents in each waste. Indicate by an (*) asterisk which constituents will be treated and rendered nonhazardous.

Waste	Hazardous Constituents

Table V.G.1. – Landfills

NA – There are no landfills associated with this application.

Permit Unit No.	Landfill	N.O.R. No.	Waste Nos.[1]	Rated Capacity	Dimensions[2]	Distance from lowest liner to groundwater	Action Leakage Rate (if required)	Unit will manage Ignitable, Reactive, Incompatible, or F020, F021, F022, F023, F026, and F027 Waste (state all that apply)

1from Table IV.B, first column
2Dimensions should be provided as average length, width and depth, also include the surface acreage for the unit.

Table V.G.3. – Landfill Liner System

NA – There are no landfill liners associated with this application.

Permit Unit No.*	Landfill		Primary Liner			Secondary Liner			
			Material	Permeability (cm/sec)	Thickness	Material	Permeability (cm/sec)	Thickness	Mate

* This number should match the Permit Unit No. given on Table V.G.1.

Table V.G.4. – Landfill Leachate Collection System

NA – There are no landfill leachate collection systems associated with this application.

Landfill	Primary Leachate Collection System					Secondary Leachate Collection System				
	Drainage Media	Collection Pipes (including risers)	Filter Fabric	Geofabric	Sump Material	Drainage Media	Collection Pipes (including risers)	Filter Fabric	Geofabric	Sump Material

Table V.H.1. – Incinerators

NA – There are no incinerators associated with this application.

List the incinerators covered by this application to be permitted. List the waste managed in each unit and the rated capacity or size of each unit.

Permit Unit No.*	Incinerators	N.O.R. No.	Waste Nos.[1]	Waste Physical Form (Pumpable or Non-pumpable	Reactive, Incompatible, or F020, F021, F022, F023, F026, or F027 Waste

1From the first column of Table IV.B.

* If the unit is already permitted, use the established "Permit Unit No." If the unit is not yet permitted, the number given here for the unit will become the "Permit Unit No." The numbers should be in an order that will be convenient for the facility operator.

Table V.H.2. – Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems

NA – There are no incinerators associated with this application.

[Use a table for each unit and fill in all columns with the appropriate information]

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Permit Limit	Primary Combustion Chamber AWFCO Y/N2	Secondary Combustion Chamber AWFCO Y/N[2]
Operating Parameters						
Maximum Total Hazardous Waste Feed Rate *[Additional hazardous waste feed limits shall be added as determined necessary based upon feed mechanism and/or waste-specific needs]*		*[Volumetric Flow Meter[3] or Mass Flow Meter as applicable to the feed mechanism]*	Feed System	lb/hr	Y	Y
Maximum Total Pumpable Hazardous Waste Mass Feed Rate *[Not applicable for Tier I or Tier I adjusted metals control limits]*		Volumetric Flow Meter[3] or Mass Flow Meter	Feed System	lb/hr		
Minimum Primary Combustion Chamber Temperature		Thermocouple *[or other device]*	Primary Chamber Exit	lb/hr		
Minimum Secondary Combustion Chamber Temperature		Thermocouple *[or other device]*	Secondary Chamber Exit	°F	Y	Y
Maximum Secondary and/or Primary Combustion Chamber Temperature [Include if using Tier II, III metals controls only]		Thermocouple *[or other device]*	Secondary Chamber Exit	°F	Y	Y
Maximum Flue Gas Temperature at PM Control Device Inlet [Tier II and Tier III Metals only as applicable]		Thermocouple *[or other device]*	At entrance to PM Control	°F	Y	Y
Maximum Combustion Gas Velocity Indicator *[If condition is something other than "maximum combustion gas velocity", write specific name of condition]*					Y	Y
Atomization parameters *[as necessary]*						[as appropriate]
Feed Rates: (Metals, Total Chlorine, and Ash)			Volumetric			

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Permit Limit	Primary Combustion Chamber AWFCO Y/N2	Secondary Combustion Chamber AWFCO Y/N[2]
			Flow Meter[3]			
or Mass Flow Meter	Feed Systems	Limits Specified in Table _____ *[Maximum Constituent Feed Rates]*	N	N		
Secondary Combustion Zone Pressure *[or other method for fugitives monitoring]*				e.g., in. H2O	*[Yes, if neg. pressure is used to control fugitives.]*	*[Yes, if neg. pressure is used to control fugitives.]*
Primary Combustion Zone Pressure *[or other method for fugitives monitoring]*				e.g., in. H2O	*[Yes, if neg. pressure is used to control fugitives.]*	*[Yes, if neg. pressure is used to control fugitives.]*
CEMS Monitoring Parameters						
Stack Oxygen	Continuous	CEMS	Stack	No Limit (for correction to 7% O2)	N	N
Stack CO	Continuous HRA	CEMS	Stack	100 ppmv HRA, 7% O2, dry basis	Y	Y
Stack THC *[If specified in the permit]*	Continuous HRA	CEMS	Stack	20 ppmv HRA, 7% O2, dry basis	Y	Y
APCD Parameters						
Pressure drop across Baghouse *[or fabric filter]*				_____ in. W.C.		
[Wet Scrubbers:]						
Ionizing Wet Scrubber minimum voltage				_____ kilovolts (kV)		

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Permit Limit	Primary Combustion Chamber AWFCO Y/N2	Secondary Combustion Chamber AWFCO Y/N[2]
Minimum liquid to flue gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)		
Minimum scrubber blowdown				_____ gallons/min		
Minimum scrubber water pH				_____		
[Venturi Scrubbers:]						
Venturi scrubber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet minute (acfm		
Minimum differential gas pressure across venturi scrubber				_____ in. W.C.		
[Dry Scrubbers:]						
Minimum alkaline reagent *[insert name of reagent here, such as lime]* flow to the dry scrubber				_____ pounds per minute		
Maximum flue gas flow rate				_____acfm		
[Absorbers:]						
Absorber minimum pH of incoming liquid				_____		
Absorber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)		
Other Air Pollution Control Devices permit conditions as necessary						

1Instantaneous as defined in 40 CFR 266.102(e)(6)(i)(A) shall mean a value which occurs at any time. A value shall be determined by the monitoring device no less than every 15 seconds.

Continuous monitor is one which continuously samples or measures the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

Hourly Rolling Average (HRA) as defined in 40 CFR 266.102(e)(6)(i)(B).

- For carcinogenic metals and lead feed rates: Instantaneous as defined above or, rolling average as defined in 40 CFR 266.102(e)(6)(ii).

2AWFCO: Automatic Waste Feed Cutoff. For AWFCOs indicated by "Y", the Permit Limit in the table triggers an AWFCO.
3The respective specific gravity and constituent concentration of each stream associated with a volumetric rate must be known to determine the mass feed rate.

Table V.H.3. – Maximum Constituent Feed Rates

NA – There are no incinerators associated with this application.

[Multi-chamber Incinerators (e.g., rotary kilns) may need feed rate limits to each combustion chamber.] The total feed rate of constituents to the incinerator(s) shall not exceed the following limitations in grams per hour (g/hr) or tons per year (T/yr), as noted. The metals limitations have been evaluated through the risk assessment. The ash and chlorine limits are based upon testing or regulatory limits.

Constituent	Maximum Allowable Feed Rate In All Feedstreams Hourly Basis (g/hr)	Maximum Allowable Feed Rate In All Hazardous Waste Feedstreams Hourly Basis (g/hr)[1]	Maximum Allowable Feed Rate in All Pumpable Hazardous Waste Feedstreams Hourly Basis (g/hr)[1]	Maximum Allowable Feed Rate in All Feedstreams Annual Basis (T/yr)
Arsenic				
Beryllium				
Cadmium				
Total Chromium				
Antimony				
Barium				
Lead				
Mercury				
Silver				
Thallium				
(Others as Necessary)				
Total Chlorine		Not applicable	Not applicable	Not applicable
Ash to Secondary Combustion Chamber or Other Primary Chamber if Only Pumpable Waste is Fed		Not applicable	Not applicable	Not applicable

1Not applicable for Tier I or Tier I adjusted metals feed rate screening limits.

[Hourly feed rate limits must comply with the requirements of 40 CFR 266.106 for carcinogenic metals and non-carcinogenic metals. As applicable, the feed rate limit for chromium may be specified as hexavalent and total chromium limits.]

Table V.H.4. – Maximum Allowable Emission Rates

NA – There are no incinerators associated with this application.

[Use a table for each operating mode as applicable]

Carcinogenic Constituent (Compliance Tier)	Maximum Allowable Emission Rate[1]	Units[2]
Arsenic (Tier____)		g/hr
Beryllium (Tier____)		g/hr
Cadmium (Tier____)		g/hr
Chromium, Total (Tier____)		g/hr
Non-Carcinogenic Constituent(Compliance Tier)	Maximum Allowable Emission Rate1	Units2
Antimony (Tier____)		g/hr
Barium (Tier____)		g/hr
Lead (Tier____)		g/hr
Mercury (Tier____)		g/hr
Silver (Tier____)		g/hr
Thallium (Tier____)		g/hr
Hydrogen Chloride (Tier____)		g/hr
Free Chlorine (Tier____)		g/hr
Particulate Matter	0.08	Grains/dscf

1 Not applicable for Tier I or Tier I adjusted feed rate screening limits.
2g/hr denotes grams per hour. Grains/dscf denotes grains per dry standard cubic foot (standard conditions: 760 mm Hg, 68 °F) after correction to a stack gas concentration of 7% oxygen.

Note: Site-specific dispersion modeling factor x.xxx *[insert dispersion factor for Tier III as applicable]* micrograms per cubic meter per grams per second emission rate.

Table V.H.5. - Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems - Short-Term Operation

NA – There are no incinerators associated with this application.

[Use this table for each new or modified Incinerator unit and fill in all columns with the appropriate information]

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N[2]	Secondary Combustion Chamber AWFCO Y/N[2]
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Operating Parameters								
Maximum Total Hazardous Waste Feed Rate *[Additional hazardous waste feed limits shall be added as determined necessary based upon feed mechanism and/or waste-specific needs]*		*[Volumetric Flow Meter[3] or Mass Flow Meter as applicable to the feed mechanism]*	Feed System	lb/hr			Y	Y
Maximum Total Pumpable Hazardous Waste Mass Feed Rate *[Not applicable for Tier I or Tier I adjusted metals screening limits]*		Volumetric Flow Meter[3] or Mass Flow Meter	Feed System	lb/hr				
Minimum Primary Combustion Chamber Temperature		Thermocouple *[or other device]*	Primary Chamber Exit	°F			Y	N
Minimum Secondary Combustion Chamber Temperature		Thermocouple *[or other device]*	Secondary Chamber Exit	°F			Y	Y
Maximum Secondary and/or Primary Combustion Chamber Temperature *[Include if using Tier II/ III metals controls.]*		Thermocouple *[or other device]*	Secondary Chamber Exit	°F			Y	Y
Maximum Flue Gas Temperature at PM Control Device Inlet *[Tier II/III metals controls as applicable.]*		Thermocouple *[or other device]*	At entrance to PM Control Device	°F			Y	Y

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N[2]	Secondary Combustion Chamber AWFCO Y/N[2]
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Maximum Combustion Gas Velocity Indicator *[If condition is something other than "maximum combustion gas velocity", write specific name of condition]*							Y	Y
Atomization parameters *[as necessary]*								*[as appropriate]*
Feed Rates: (Metals, Total Chlorine, and Ash)		Volumetric Flow Meter[3] or Mass Flow Meter	Feed Systems	Limits Specified in Table _____			N	N
Secondary Combustion Zone Pressure *[or other method for fugitives monitoring]*				e.g., in. H2O			*[Yes, if neg. pressure is used to control fugitives.]*	*[Yes, if neg. pressure is used to control fugitives.]*
Primary Combustion Zone Pressure *[or other method for fugitives monitoring]*				e.g., in. H2O			*[Yes, if neg. pressure is used to control fugitives.]*	N
CEMS Monitoring Parameters								
Stack Oxygen	C	CEMS	Stack	No Limit (for correction to 7% O2)			N	N
Stack CO	C, HRA	CEMS	Stack	100 ppmv HRA, 7% O2, dry basis			Y	Y
Stack THC *[If specified in the permit]*	C, HRA	CEMS		20 ppmv HRA, 7% O2, dry basis			Y	Y
APCD Parameters								

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N[2]	Secondary Combustion Chamber AWFCO Y/N[2]
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Pressure drop across Baghouse *[or fabric filter]*				_____ in. W.C.				
[Wet Scrubbers:]								
Ionizing Wet				_____ kilovolts (kV)				
Scrubber minimum voltage								
Minimum liquid to flue gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)				
Minimum scrubber blowdown				_____ gallons/min				
Minimum scrubber water pH				_____				
[Venturi Scrubbers:]								
Venturi scrubber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet minute (acfm)				
Minimum differential gas pressure across venturi scrubber				_____ in. W.C.				
[Dry Scrubbers:]								
Minimum alkaline reagent [insert name of reagent here, such as lime] flow to the dry scrubber				_____ pounds per minute				
Maximum flue gas flow rate				_____acfm				
[Absorbers:]								

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N[2]	Secondary Combustion Chamber AWFCO Y/N[2]
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Absorber minimum pH of incoming liquid				_____				
Absorber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)				
Other Air Pollution Control Devices permit conditions as necessary								

1 **(I)** *Instantaneous* as defined in 40 CFR 266.102(e)(6)(i)(A) shall mean a value which occurs at any time. A value shall be determined by the monitoring device no less than every 15 seconds.
(C) *Continuous monitor* is one which continuously samples or measures the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.
(HRA) *Hourly Rolling Average* as defined in 40 CFR 266.102(e)(6)(ii).
For carcinogenic metals and lead feed rates: *Instantaneous* as defined above or, *Rolling average* as defined in 40 CFR 266.102(e)(6)(ii)
2**AWFCO**: *Automatic Waste Feed Cutoff*. For AWFCOs indicated by "Y", the Permit Limit in the table triggers an AWFCO.
3The respective specific gravity and constituent concentration of each stream associated with a volumetric rate must be known to determine the mass feed rate.

Table V.H.8 - Principal Organic Hazardous Constituents

NA – There are no incinerators associated with this application.

List the wastes for which the trial burn demonstration will be made and the principal organic hazardous constituents (POHCs) in each waste.

Waste	Principal Organic Hazardous Constituents

Table V.I.1. - Boilers/Industrial Furnaces

NA – There are no boilers or industrial furnaces associated with this application.

Permit Unit No.	Boilers/Industrial Furnaces	N.O.R. No.	Waste Nos.[1]	Waste Physical Form (Pumpable or Non-pumpable)	Reactive, Incompatible, or F020, F021, F022, F023, F026, or F027 Waste

1From the first column of Table IV.B.

* If the unit is already permitted, use the established "Permit Unit No." If the unit is not yet permitted, the number given here for the unit will become the "Permit Unit No." The numbers should be in an order that will be convenient for the facility operator.

Table V.I.2. - Boiler/Industrial Furnace Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems

NA – There are no boilers or industrial furnaces associated with this application.

[Use a table for each unit and fill in all columns with the appropriate information]

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Permit Limit	AWFCO Y/N[2]
Operating Parameters					
Maximum Total Hazardous Waste Feed Rate *[Additional hazardous waste feed limits shall be added as determined necessary based upon feed mechanism and/or waste-specific needs]*		*[Volumetric Flow Meter[3] or Mass Flow Meter as applicable to the feed mechanism]*	Feed System	lb/hr	Y
Maximum Total Pumpable Hazardous Waste Mass Feed Rate *[Not applicable for Tier I or Tier I adjusted metals control limits]*		Volumetric Flow Meter[3] or Mass Flow Meter	Feed System	lb/hr	
Minimum Primary Combustion Chamber Temperature		Thermocouple *[or other device]*	Primary Chamber Exit	°F	Y
Minimum Secondary Combustion Chamber Temperature		Thermocouple *[or other device]*	Secondary Chamber Exit	°F	Y
Maximum Secondary and/or Primary Combustion Chamber Temperature *[Include if using Tier II, III metals controls only]*		Thermocouple *[or other device]*	Secondary Chamber Exit	°F	Y
Maximum Flue Gas Temperature at PM Control Device Inlet *[Tier II and Tier III Metals only as applicable]*		Thermocouple *[or other device]*	At entrance to PM Control Device	°F	Y
Maximum Combustion Gas Velocity Indicator *[If condition is something other than "maximum combustion gas velocity", write specific name of condition]*					Y
Atomization parameters *[as necessary]*					
Feed Rates: (Metals, Total Chlorine, and Ash)		Volumetric Flow Meter[3]			
or Mass Flow Meter	Feed Systems	Limits Specified in Table _____ *[Maximum Constituent Feed Rates]*	N	N	

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Permit Limit	AWFCO Y/N[2]
Secondary Combustion Zone Pressure *[or other method for fugitives monitoring]*				e.g., in. H2O	*[Yes, if neg. pressure is used to control fugitives.]*
Primary Combustion Zone Pressure *[or other method for fugitives monitoring]*				e.g., in. H2O	*[Yes, if neg. pressure is used to control fugitives.]*
CEMS Monitoring Parameters					
Stack Oxygen	Continuous	CEMS	Stack	No Limit (for correction to 7% O2)	N
Stack CO	Continuous HRA	CEMS	Stack	100 ppmv HRA, 7% O2, dry basis	Y
Stack THC *[If specified in the permit]*	Continuous HRA	CEMS	Stack	20 ppmv HRA, 7% O2, dry basis	Y
APCD Parameters					
Pressure drop across Baghouse *[or fabric filter]*				_____ in. W.C.	
[Wet Scrubbers:]					
Ionizing Wet Scrubber minimum voltage				_____ kilovolts (kV)	
Minimum liquid to flue gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)	
Minimum scrubber blowdown				_____ gallons/min	
Minimum scrubber water pH				_____	
[Venturi Scrubbers:]					
Venturi scrubber minimum liquid to gas ratio (L/G)				_____	

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Permit Limit	AWFCO Y/N[2]
				gallons/1000 actual cubic feet minute (acfm)	
Minimum differential gas pressure across venturi scrubber				_____ in. W.C.	
[Dry Scrubbers:]					
Minimum alkaline reagent *[insert name of reagent here, such as lime]* flow to the dry scrubber				_____ pounds per minute	
Maximum flue gas flow rate				_____acfm	
[Absorbers:]					
Absorber minimum pH of incoming liquid				_____	
Absorber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)	
Other Air Pollution Control Devices permit conditions as necessary				_____ gallons/1000 actual cubic feet (acf)	

1 *Instantaneous* as defined in 40 CFR 266.102(e)(6)(i)(A) shall mean a value which occurs at any time. A value shall be determined by the monitoring device no less than every 15 seconds.
Continuous monitor is one which continuously samples or measures the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.
Hourly Rolling Average as defined in 40 CFR 266.102(e)(6)(ii).
For carcinogenic metals and lead feed rates: *Instantaneous* as defined above or, *Rolling average* as defined in 40 CFR 266.102(e)(6)(ii)
2*AWFCO*: *Automatic Waste Feed Cutoff*. For AWFCOs indicated by "Y", the Permit Limit in the table triggers an AWFCO.
3The respective specific gravity and constituent concentration of each stream associated with a volumetric rate must be known to determine the mass feed rate.

Table V.I.3 - Maximum Constituent Feed Rates

NA – There are no boilers or industrial furnaces associated with this application.

The total feed rate of constituents to the boiler/industrial furnace(s) shall not exceed the following limitations in grams per hour (g/hr) or tons per year (T/yr), as noted. The metals limitations have been evaluated through risk assessment. The ash and chlorine limits are based upon testing or regulatory limits.

Constituent	Maximum Allowable Feed Rate In All Feedstreams Hourly Basis (g/hr)	Maximum Allowable Feed Rate In All Hazardous Waste Feedstreams Hourly Basis (g/hr)[1]	Maximum Allowable Feed Rate in All Pumpable Hazardous Waste Feedstreams Hourly Basis (g/hr)[1]	Maximum Allowable Feed Rate in All Feedstreams Annual Basis (T/yr)
Arsenic				
Beryllium				
Cadmium				
Total Chromium				
Antimony				
Barium				
Lead				
Mercury				
Silver				
Thallium				
(Others as Necessary)				
Total Chlorine		Not applicable	Not applicable	Not applicable
Ash		Not applicable	Not applicable	Not applicable

1Not applicable for Tier I or Tier I adjusted metals feed rate screening limits.

[Hourly feed rate limits must comply with the requirements of 40 CFR 266.106 for carcinogenic metals and non-carcinogenic metals. As applicable, the feed rate limit for chromium may be specified as hexavalent and total chromium limits.]

Table V.I.4. - Maximum Allowable Emission Rates

NA – There are no boilers or industrial furnaces associated with this application.

[Applicant to use a table for each operating mode as applicable and for each unit]

Carcinogenic Constituent (Compliance Tier)	Maximum Allowable Emission Rate[1]	Units[2]
Arsenic (Tier____)		g/hr
Beryllium (Tier____)		g/hr
Cadmium (Tier____)		g/hr
Chromium, Total (Tier____)		g/hr
Non-Carcinogenic Constituent(Compliance Tier)	Maximum Allowable Emission Rate[1]	Units[2]
Antimony (Tier____)		g/hr
Barium (Tier____)		g/hr
Lead (Tier____)		g/hr
Mercury (Tier____)		g/hr
Silver (Tier____)		g/hr
Thallium (Tier____)		g/hr
Hydrogen Chloride (Tier____)		g/hr
Free Chlorine (Tier____)		g/hr
Particulate Matter	0.08	Grains/dscf

1 Not applicable for Tier I or Tier I adjusted feed rate screening limits.
2 *g/hr* denotes grams per hour. *Grains/dscf* denotes grains per dry standard cubic foot (standard conditions: 760 mm Hg, 68 °F) after correction to a stack gas concentration of 7% oxygen.

Note: Site-specific dispersion modeling factor 'x.xxx *[insert dispersion factor for Tier III as applicable]* micrograms per cubic meter per grams per second emission rate.

Table V.I.5 - Boiler/Industrial Furnace Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems - Short-Term Operation

NA – There are no boilers or industrial furnaces associated with this application.

[Use this table for each new or modified Boiler/Industrial Furnace unit and fill in all columns with the appropriate information]

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N[2]	Secondary Combustion Chamber AWFCO Y/N[2]
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Operating Parameters								
Maximum Total Hazardous Waste Feed Rate *[Additional hazardous waste feed limits shall be added as determined necessary based upon feed mechanism and/or waste-specific needs]*		*[Volumetric Flow Meter[3] or Mass Flow Meter as applicable to the feed mechanism]*	Feed System	lb/hr			Y	Y
Maximum Total Pumpable Hazardous Waste Mass Feed Rate *[Not applicable for Tier I or Tier I adjusted metals screening limits]*		Volumetric Flow Meter[3] or Mass Flow Meter	Feed System	lb/hr				
Minimum Primary Combustion Chamber Temperature		Thermocouple *[or other device]*	Primary Chamber Exit	°F			Y	N
Minimum Secondary Combustion Chamber Temperature		Thermocouple *[or other device]*	Secondary Chamber Exit	°F			Y	Y
Maximum Secondary and/or Primary Combustion Chamber Temperature *[Include if using Tier II/ III metals controls.]*		Thermocouple *[or other device]*	Secondary Chamber Exit	°F			Y	Y
Maximum Flue Gas Temperature at PM Control Device Inlet *[Tier II/III metals controls as applicable.]*		Thermocouple *[or other device]*	At entrance to PM Control Device	°F			Y	Y

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N[2]	Secondary Combustion Chamber AWFCO Y/N[2]
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Maximum Combustion Gas Velocity Indicator *[If condition is something other than "maximum combustion gas velocity", write specific name of condition]*							Y	Y
Atomization parameters *[as necessary]*								*[as appropriate]*
Feed Rates: (Metals, Total Chlorine, and Ash)		Volumetric Flow Meter[3] or Mass Flow Meter	Feed Systems	Limits Specified in Table _____			N	N
Secondary Combustion Zone Pressure *[or other method for fugitives monitoring]*				e.g., in. H2O			*[Yes, if neg. pressure is used to control fugitives.]*	*[Yes, if neg. pressure is used to control fugitives.]*
Primary Combustion Zone Pressure *[or other method for fugitives monitoring]*				e.g., in. H2O			*[Yes, if neg. pressure is used to control fugitives.]*	N
CEMS Monitoring Parameters								
Stack Oxygen	C	CEMS	Stack	No Limit (for correction to 7% O2)			N	N
Stack CO	C, HRA	CEMS	Stack	100 ppmv HRA, 7% O2, dry basis			Y	Y
Stack THC *[If specified in the permit]*	C, HRA	CEMS		20 ppmv HRA, 7% O2, dry basis			Y	Y
APCD PARAMETERS								

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N[2]	Secondary Combustion Chamber AWFCO Y/N[2]
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Pressure drop across Baghouse *[or fabric filter]*				_____ in. W.C.				
[Wet Scrubbers:]								
Ionizing Wet				_____ kilovolts (kV)				
Scrubber minimum voltage								
Minimum liquid to flue gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)				
Minimum scrubber blowdown				_____ gallons/min				
Minimum scrubber water pH				_____				
[Venturi Scrubbers:]								
Venturi scrubber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet minute (acfm)				
Minimum differential gas pressure across venturi scrubber				_____ in. W.C.				
[Dry Scrubbers:]								
Minimum alkaline reagent [insert name of reagent here, such as lime] flow to the dry scrubber				_____ pounds per minute				
Maximum flue gas flow rate				_____acfm				
[Absorbers:]								

Parameter	Monitoring Basis[1]	Monitoring Device	Device Location	Short-Term Operating Permit Limits			Primary Combustion Chamber AWFCO Y/N[2]	Secondary Combustion Chamber AWFCO Y/N[2]
				Pre-Trial Burn - Shakedown	Trial Burn	Post Trial Burn		
Absorber minimum pH of incoming liquid				_____				
Absorber minimum liquid to gas ratio (L/G)				_____ gallons/1000 actual cubic feet (acf)				
Other Air Pollution Control Devices permit conditions as necessary								

1 **(I)** *Instantaneous* as defined in 40 CFR 266.102(e)(6)(i)(A) shall mean a value which occurs at any time. A value shall be determined by the monitoring device no less than every 15 seconds.

(C) *Continuous monitor* is one which continuously samples or measures the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

(HRA) *Hourly Rolling Average* as defined in 40 CFR 266.102(e)(6)(i)(B).

- For carcinogenic metals and lead feed rates: *Instantaneous* as defined above or, *Rolling average* as defined in 40 CFR 266.102(e)(6)(ii).

2 **AWFCO**: *Automatic Waste Feed Cutoff*. For AWFCOs indicated by "Y", the Permit Limit in the table triggers an AWFCO. During the Trial Burn phase, AWFCOs will be as necessary to ensure protection of human health and the environment.

3 The respective specific gravity and constituent concentration of each stream associated with a volumetric rate must be known to determine the mass feed rate

.

Table V.I.8. - Principal Organic Hazardous Constituents

NA – There are no boilers or industrial furnaces associated with this application.

List the wastes for which the trial burn demonstration will be made and the principal organic hazardous constituents in each waste.

Waste	Principal Organic Hazardous Constituents

Table V.J.1. - Drip Pads

NA – There are no drip pads associated with this application.

Permit Unit No.*	Drip Pad	N.O.R. No.	Storage and/or Processing	Waste Nos.[1]	Overall Dimensions	Collection System Volume

1from Table IV.B, first column

* If the unit is already permitted, use the established "Permit Unit No." If the unit is not yet permitted, the number given here for the unit will become the "Permit Unit No." The numbers should be in an order that will be convenient for the facility operator.

Table V.J.2 - Drip Pad Synthetic Liner System

NA – There are no drip pads associated with this application.

Drip Pad	Synthetic Liner			Leakage Detection System			Leak Collection System		
	Material	Permeability (cm/sec)	Thickness	Material	Permeability (cm/sec)	Thickness	Material	Permeability (cm/sec)	Thickness

Table V.K. - Miscellaneous Units

NA – There are no miscellaneous units associated with this application.

Permit Unit No.*	Miscellaneous Unit	N.O.R. No.	Storage, Processing, and/or Disposal	Waste Nos.[1]	Rated Capacity	Dimensions	Unit will manage Ignitable, Reactive, or Incompatible Waste (state all that apply)

1from Table IV.B, first column

*If the unit is already permitted, use the established "Permit Unit No." If the unit is not yet permitted, the number given here for the unit will become the "Permit Unit No." The numbers should be in an order that will be convenient for the facility operator.

Table V.L. - Containment Buildings

NA – There are no containment buildings associated with this application.

Permit Unit No.*	Containment Building	N.O.R. No.	Storage and/or Processing	Waste Nos.[1]	Rated Capacity	Overall Dimensions

1 from Table IV.B, first column

*If the unit is already permitted, use the established "Permit Unit No." If the unit is not yet permitted, the number given here for the unit will become the "Permit Unit No." The numbers should be in an order that will be convenient for the facility operator.

VI. Geology Report

The Geotechnical Engineering Report is included in Attachment G.

This portion of the application applies to owners or operators of new hazardous waste management facilities; areal and/or capacity expansions of existing hazardous waste management facilities; and existing industrial solid waste facilities that store, process or dispose of hazardous waste in surface impoundments, landfills, land treatment units, waste piles (except those waste piles that meet the requirements of Section V.E.10.b. of this application), and tanks or drip pads which require a contingent post-closure plan.

For a new Compliance Plan or modification/amendment to an existing Compliance Plan of Section XI of this application, submit a Geology Report which contains updated site geologic information derived from on-going investigations since submittal of the last Permit modification/amendment application.

Submit a Geology Report which includes at a minimum the following information. This report and all specifications, details, calculations/estimates and each original sheet of plans, drawings, maps, cross-sections, other graphics, such as limits of contamination maps, etc. or any other geoscientific work must be signed and sealed by a Professional Geoscientist licensed in the State of Texas under the Professional Geoscientists Practice Act.

A. Geology and Topography

1. Active Geologic Processes

   Provide a description and interpretation of the active geologic processes in the vicinity of the facility. This description should include:

   a. An identification of any faults (active or otherwise) in the area of the facility. The preparer should determine which Holocene sediments or man-made structures have been displaced. The report should contain a description of the investigation techniques used to identify faults and should assess the degree, if any, to which a particular fault increases the long-term potential for waste migration. The clearance required from active faults to ensure that liner systems will not be disrupted will be based upon site specific factors such as the zone of significant surface deformation, uncertainty in locating the fault, activity of the fault, and a distance to provide a reasonable margin of safety. These issues should be addressed when discussing the offset of an industrial solid waste facility unit from an active fault.

      To satisfy the requirements of 30 TAC 305.50(a)(4)(D) and 305.50(a)(10)(E), for a proposed hazardous waste management facility or a modification or amendment of a permit which includes a capacity expansion of an existing hazardous waste management facility, submit the following.

      (1) A geologic literature review should be conducted, from which useful information on the possibility of faulting at a given site may be revealed. This includes, but is not limited to, maps of surface faults, subsurface structure, and field investigations by the author(s).
      (2) Descriptions and maps of faulting, fracturing, and lineations in the area are necessary. An aerial photo with lineation interpretations is suggested.
      (3) The maps and cross-sections are to be constructed using an

amount of data necessary to adequately describe the geology of the area. Surface data, including data regarding known surface expressions, such as surface faults, gas seeps, lineations, etc., should be accounted for in the subsurface interpretations. A surface structure map should be prepared, incorporating all of the subsurface data as well as known surface features.

(4) A minimum of two structural cross-sections, utilizing available oil field and/or water well electric log data, shall be made perpendicular to each other, crossing at the proposed surface unit location. These cross-sections should define geologic units, indicating especially Holocene sediments and Underground Sources of Drinking Water (USDWs), as well as lithology. The cross-sections should be constructed from the surface, down through the shallowest major structure or the base of the Holocene, whichever is deeper. These cross-sections need to be on a scale necessary to depict the local geology (3000' radius from the site location minimum). If needed to adequately describe the local geology, then a larger radius or deeper area of review may be necessary.

(5) A minimum of two structural subsurface maps need to be prepared. One map should be made on the shallowest mappable subsurface marker, the other on a deeper horizon that shows the underlying major structure. Additional maps may be necessary.

(6) Field surveillance will be necessary to check the area of the facility for surface features, such as lineations, and to investigate potential surface faults as indicated by, but not limited to, aerial photos, topographic maps, and seismic and subsurface structural maps.

(7) The above requirements do not limit the use of any additional information, such as seismic data, isopach maps, or potentiometric maps, that may help in defining the geology of the area of review.

(8) If faulting exists within 3000 feet of the surface unit, it must be demonstrated that the fault has not had displacement within Holocene time. If such a fault does exist, it cannot pass within 200 feet of the surface unit.

(9) If a fault that has been active within the Holocene is located within 3000 feet of the surface unit, it must be demonstrated that, a.) the fault is not transmissive, i.e., it will not provide for groundwater movement that would result in endangerment to human health or the environment, and b.) there is no actual and/or potential problem of subsidence, which could endanger the stability of the surface unit.

b. A discussion of the extent of land surface subsidence in the vicinity of the facility including total recorded subsidence and past and projected rates of subsidence. For facilities located at low elevations along the coast which have experienced appreciable rates of subsidence, the potential for future submergence beneath Gulf water should be addressed.

c. A discussion of the degree to which the facility is subject to erosion. The potential for erosion due to surface water processes such as overland flow, channeling, gullying, and fluvial processes such as meandering streams and undercut banks should be evaluated. If the facility is located in a low-lying

coastal area, historical rates of shoreline erosion should also be provided.

d. Complete Table VI.A.1. – Major Geologic Formations.

2. Regional Physiography and Topography (applicable only to owners or operators of facilities that store, process, or dispose of hazardous waste in surface impoundments, landfills, land treatment units, waste piles, except waste piles exempt from groundwater monitoring requirements, and tanks which require a contingent post-closure plan)

   a. Distance and direction to nearest surface water body
   b. Slope of land surface
   c. Direction of slope
   d. Maximum elevation of facility
   e. Minimum elevation of facility

3. Regional Geology (applicable only to owners or operators of facilities that store, process, or dispose of hazardous waste in surface impoundments, landfills, land treatment units, waste piles, except waste piles exempt from groundwater monitoring requirements, and tanks which require a contingent post-closure plan)

   Provide a description of the regional geology of the area. This section should include:

   a. A geologic map of the region with text describing the stratigraphic and lithologic properties of the map units. An appropriate section of a published map series such as the Geologic Atlas of Texas prepared by the Bureau of Economic Geology is acceptable.
   b. A description of the generalized stratigraphic column in the facility area from the base of the lowermost aquifer capable of providing usable groundwater to the land surface. At least the uppermost 1,000 feet of section below the facility should be described. The geologic age, lithology, variation in lithology, thickness, depth, geometry, hydraulic conductivity, and depositional history of each geologic unit should be described based upon available geologic information. Regional stratigraphic cross sections should be provided, where available.

4. Subsurface Soils Investigation Report

   This section should contain the results of an investigation of subsurface conditions for each land based unit and/or unit which requires contingent closure and post-closure care. If several units are in close proximity, a single investigation for the area will suffice. This report should include:

   a. The logs of borings performed at the waste management area. All borings must be conducted in accordance with established field exploration methods. Investigation procedures should be discussed in the report. A sufficient number of borings should be performed to establish subsurface stratigraphy and to identify and allow assessment of potential pathways for pollution migration. Borings must be sufficiently deep to allow identification of the uppermost aquifer and underlying hydraulically interconnected aquifers. Borings should penetrate through the uppermost aquifer and all deeper hydraulically interconnected aquifers, deep enough to identify the aquiclude at the lower boundary. Borings should be completed to a depth at least 30 feet below the deepest excavation planned at the waste management area.

The required number of borings will increase or decrease depending on the heterogeneity of subsurface materials. Locations with stratigraphic complexities such as non-uniform beds which pinch out, vary significantly in thickness, coalesce, or grade into other units, will require a significantly greater degree of subsurface investigation than areas with simple hydrogeologic frameworks. Boring logs should include a detailed description of materials encountered including any discontinuities such as fractures, fissures, slickensides, lenses or seams. Whenever possible, electric logs should be run on each borehole. The hollow stem auger boring method is recommended in those instances where an accurate determination of initial water levels is important. A key explaining both the symbols used on the boring logs and the classification terminology for soil type, consistency, and structure should be provided.

b. Cross-sectional drawings prepared from the borings depicting the generalized soil strata profile at the site. For small waste management areas two cross sections prepared perpendicular to each other will normally suffice.

c. A text which describes the investigator's interpretations of the subsurface stratigraphy based upon the field investigation. If appropriate, soils may be assigned to generalized strata to aid in the discussion.

d. Complete Table VI.A.4. - Waste Management Area Subsurface Conditions and provide in the report data which describes the geotechnical properties of the subsurface soil materials. All laboratory and field tests must be performed in accordance with recognized procedures. A brief discussion of test procedures should be included. All major strata encountered during the field investigation phase should be characterized with regard to: Unified Soil Classification, moisture content, percent less than number 200 sieve, Atterberg limits (liquid limit, plastic limit, and plasticity index), and coefficient of permeability. Field permeability tests should be used to determine the coefficient of permeability of sand or silt units and should also be used to supplement laboratory tests for more clay-rich soils. In addition, particle size distribution and relative density based upon penetration resistance should be determined for coarse-grained soils. For fine-grained soils the following parameters should also be determined: cohesive shear strength based upon either penetrometer or unconfined compression tests, dry unit weight, and degree of saturation(s). For the major soil strata encountered, the maximum, minimum, and average for each of these variables should be compiled.

e. For land treatment units, provide a description of the surficial soils at the site which includes:

    (1) The name and description of the soil series at the site;
    (2) Important physical properties of the series such as depth, permeability, available water capacity, soil pH, and erosion factors;
    (3) Engineering properties and classifications such as USDA texture, Unified Soil Classification, size gradation, and Atterberg limits (liquid limit, plastic limit, and plasticity index); and
    (4) The cation exchange capacity (CEC) of the soil(s) expressed in units of meq/100g.

Much of this information may be obtained by consulting the county soil survey published by the United States Department of Agriculture, Soil Conservation

Service. If available, a copy of an aerial photograph showing soil series units on the land treatment area should be provided.

If an aerial photograph is not available, include a soil series map as an attachment to this subsurface soils investigation report.

B. Facility Groundwater

If past monitoring has shown the presence of hazardous constituents in the groundwater, the owner or operator must submit a Compliance Plan Application with this application. The Compliance Plan Application and instructions can be found in Section XI of this application form.

1. Regional Aquifers

Provide a description of the regional aquifers in the vicinity of the facility based upon available geologic references. The section should provide:

a. Aquifer names and their association with geologic units described in Section VI.A.3.b.;
b. A description of the constituent materials of the aquifer(s);
c. A description of the water-bearing and transmitting properties of the aquifer(s);
d. Whether the aquifers are under water table or artesian conditions;
e. Whether the aquifers are hydraulically connected;
f. A regional water table contour map or potentiometric surface map for each aquifer, if available, from published references;
g. An estimate of the rate of groundwater flow in units of ft/yr;
h. Values for total dissolved solids content of groundwater from the aquifers;
i. Identification of areas of recharge to the aquifers; and

Note: An application for a new hazardous waste surface impoundment, waste pile, land treatment unit, or landfill, which is to be located in the apparent recharge zone of a major or minor aquifer, as designated by the Texas Water Development Board, must include a hydrogeologic report documenting the potential effects, if any, on the regional aquifer in the event of a release from the waste containment system. See the publication entitled Water for Texas, Today and Tomorrow (1990) or subsequent revision (Available at http://www.twdb.texas.gov/waterplanning/swp/1990/index.asp) for more information [30 TAC 305.50(6)]

j. The present use of groundwater withdrawn from aquifers in the vicinity of the facility.

The preparer should update Section III.C.1.e. of the Part A permit application to ensure that all water wells within 1 mile of the property boundaries of the facility have been located. The aquifer(s) yielding water should be identified for each well.

2. Provide groundwater conditions for each land based unit or unit which requires post closure care which includes all the information specified in 30 TAC 335.156-335.167. This discussion should also include:

a. Records of water level measurements in borings. The boring logs prepared in response to Section VI.A.4.a. should be annotated to note the level at which

groundwater is first encountered and the level of groundwater after equilibration. Normally a 24-hour period is adequate for equilibration of groundwater but an extended period may be required for saturated clay deposits. This information should also be presented on the cross-sections required in Section VI.A.4.b. and recorded and retained in the facility groundwater monitoring record.

b. Records of historical maximum and minimum static water level measurements in monitor wells. Historic water level measurements made during any previous groundwater monitoring should be presented in a table for each well.

c. Upper and lower limits of the uppermost aquifer and deeper aquifers which are hydraulically interconnected to it beneath the facility boundary. In most cases this identification would include surface contour maps of the top and bottom surfaces. Indicate the typical depth at which groundwater is first encountered.

d. A site specific water table contour map or potentiometric surface map for the uppermost aquifer, and the basis for such identification (the information obtained from hydrogeologic investigations of the facility area). The predicted groundwater flow direction and rate should be indicated.

e. A discussion of the variation of hydraulic gradient across the site, including vertical gradient. Calculations for the maximum, minimum, and average groundwater flow velocities for each aquifer identified should also be provided, including pump test data where appropriate.

f. An analysis of the most likely pathway(s) for pollutant migration in the event that the primary barrier liner system is penetrated.

3. Description of the Detection Monitoring Program

The groundwater monitoring standards apply to owners and operators of facilities that treat, store, or dispose of hazardous waste in surface impoundments, waste piles, land treatment units, landfills, or tanks without satisfactory secondary containment for which a post-closure care plan or permit is required. If a waste management unit meets certain standards it may qualify for an exemption to the groundwater monitoring requirements. An exemption for a unit does not exempt an entire facility. (See the instructions for each type of unit for a specific exemption.) A facility-wide exemption is described in Section VI.C.

It is important to note that even if the proposed program may use the same well system as the present program, the sampling parameters may be different.

a. Include in the design report a description of the proposed detection monitoring program. This description should contain all requirements of 30 TAC 335.163-335.164.

b. Provide a justification for the selected suite of waste specific parameters specified in Table VI.B.3.c. - Groundwater Sample Analysis based on toxicity, mobility, persistence, and concentrations in light and dense non-aqueous phase components of the waste.

c. (Sampling and Analysis Plan) Describe the proposed sampling and analysis methods, as well as statistical comparison procedures to be utilized in evaluating groundwater monitoring data. Note: Methods listed for use in groundwater programs may provide flexibility allowing for updates of the

base method. For methods other than the standard acceptable methods, applicant must provide a demonstration that the proposed methods are appropriate for groundwater analysis per 30 TAC 335.163(5).

d. Specify the statistical method and process for determining whether constituent concentrations in groundwater are above background, in accordance with 30 TAC 335.163. Refer to the EPA guidance document entitled Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities – Unified Guidance (March 2009) (document # EPA 530-F-09-020) for recommended methods.

   All data submitted to the TCEQ shall be in a manner consistent with the latest version of the "*Quality Assurance Project Plan for Environmental Monitoring and Measurement Activities Relating to the Resource Conservation Recovery Act and Underground Injection Control*" (TCEQ QAPP) which a can be found on the agency's website.

   Monitoring samples and measurements shall be taken at times and in a manner so as to be representative of the monitored activity. The method used to obtain a representative sample of the material to be analyzed shall be the appropriate method from ***Ground Water, Volume II: Methodology***, (document # EPA/625/6-90/016b) or an equivalent method approved by the Executive Director of the TCEQ. Laboratory methods shall be those specified in ***Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846***, 1987, as revised; ***Standard Methods for the Examination of Water and Wastewater, Fifteenth Edition***, 1980, and 1981 supplement, or current adopted edition; ***RCRA Ground-Water Monitoring: Draft Technical Guidance***, 1992, ***OSWER Directive 9950.1***, or an equivalent method approved in writing prior to use by the Executive Director. [30 TAC Section 305.125(11)(A)]

e. For inclusion into a permit, complete Table VI.B.3.b. - Unit Groundwater Detection Monitoring System to specify the proposed well system for each unit or waste management area which requires groundwater monitoring.

f. For inclusion into a permit, complete Table VI.B.3.c to specify:
   (1) the suite of waste specific parameters (indicator parameters, waste constituents, or reaction products) which will be analyzed at each sampling event for each well or group of wells. These parameters must provide a reliable indication of the presence of hazardous constituents in the groundwater;
   (2) the sampling frequencies and calendar intervals (e.g., monthly; quarterly within the second 30 days of each quarter; semiannually within the first 30 days of the 2nd and 4th quarters, etc.);
   (3) the analytical method and the laboratory predicted detection limit and predicted Practical Quantification Limit (PQL) of the sample preparation and analysis methods for the selected parameters. This detection limit will represent the capability of the sampling and analysis to reliably and accurately determine the presence of the selected parameters in the sample; and
   (4) the concentration limit which will be the basis for determining whether a release has occurred from the waste management unit/area. Concentration limits shall be based on background

values for the waste management unit/area, or PQL values developed through laboratory data obtained using practices consistent with the latest version of the TCEQ QAPP. If background values are lower than PQLs, the applicant may choose respective PQLs as concentration limits for hazardous constituents.

g. Submit drawings depicting the monitoring well design, current and proposed.

h. Submit at least one map of the entire facility and additional maps or drawings if necessary on one or more 8.5" x 11" sheets of sufficient scale to show the following in adequate detail:

(1) Monitoring well locations, current and proposed;
(2) Soil-pore liquid and core sampling points, current and proposed;
(3) Waste management unit(s)/area;
(4) Property boundary;
(5) Point of compliance;
(6) Direction of groundwater flow; and
(7) Extent of any known plume of contamination

i. For the description of site-specific groundwater for inclusion in permit summary documents, please complete the following brief description:

Groundwater is typically encountered approximately *[###]* feet below grade (*[###]* feet *[above/below]* Mean Sea Level) in the uppermost aquifer. The uppermost aquifer is part of the *[Name]* Formation and consists of *[brief lithological description]* ranging in thickness from *[### to ###]* feet. Groundwater flow is generally toward the *[north/east/south/west]*.

C. Exemption from Groundwater Monitoring for an Entire Facility

In accordance with 30 TAC 335.156(b)(4), a waste management facility may be exempt from groundwater monitoring if the owner or operator can demonstrate that there is no potential for migration of liquid from any regulated unit to the uppermost aquifer during the active life of the regulated unit (including the closure period) and post-closure care period. This demonstration must be submitted with the permit application, and must be certified by a qualified geologist or geotechnical engineer.

This exemption does not apply to Unsaturated Zone Monitoring. Owners and operators of Land Treatment Units must monitor the unsaturated zone under all circumstances.

The following areas should be addressed in the demonstration, and any predictions must be made on assumptions that maximize the rate of liquid migration:

1. Thickness of soil between the base of the unit and saturated zone;
2. Thickness of saturated zone;
3. Head pressure of the fluids;
4. Properties of the saturated and unsaturated zone (including permeability, effective porosity, and homogeneity), and
5. Total life of facility

The criteria used for the evaluation of this demonstration are more stringent than those used for evaluations of demonstrations submitted prior to permitting. Thus it is necessary for an owner or operator to submit another demonstration even if one was submitted and approved previously.

This type of exemption differs from the exemptions described in Sections V.D. (Surface Impoundments), V.E. (Waste Piles), and V.G. (Landfills). An owner or operator may pursue a facility-wide exemption as well as an exemption for a particular unit, if the owner or operator wishes.

D. Unsaturated Zone Monitoring

This section applies only to facilities which contain land treatment units. Attach any previous monitoring data to the monitoring report. Provide any additional information necessary to demonstrate compliance with 40 CFR 264.278.

1. List all hazardous constituents that have been or will be monitored.
   a. Current parameters.
   b. Proposed parameters.
2. Number of soil-pore liquid sampling points.
   c. Depth of sampling points.
   d. Equipment used for soil pore liquid monitoring.
3. Number of soil core sampling points.
   e. Depth of soil core sampling points.
   f. Indicate on a facility map locations of all sampling points.

Table VI.A.1. – Major Geologic Formations

NA – The proposed facility is not a land based permitted unit.

Names Of Major Geologic Formation(s) Beneath The Facility	Lithology Of The Major Geologic Formation	Formation Thickness (Feet)	Depth To Top Of Formation	
			Feet/MSL(1)	Feet/BGS(2)

(1) MSL: Mean Sea Level
MLGL: Mean Low-tide Gulf Level
(2) BGS: Below Grade Surface

Table VI.A.4 – Waste Management Area Subsurface Conditions

NA – The proposed facility is not a land based permitted unit.

Boring Number	Depth Below Grade	Stratum	USC Symbol	Liquid Limit*	Plasticity Index*	Percent Passing #200 Sieve*	Permeability*	Percent Porosity*

Maximum depth: feet below grade
feet above MSL

*For the major soil strata encountered, record the minimum, maximum, and average values of these parameters as applicable.

Table VI.B.3.b. – Unit Groundwater Detection Monitoring Systems

NA – The proposed facility is not a land based permitted unit.

Waste Management Unit/Area Name[1]						
Well Number(s):						
Hydrogeologic Unit Monitored						
Type (e.g., point of compliance, background, observation, etc.)						
Up or Down Gradient						
Casing Diameter and Material						
Screen Diameter and Material						
Screen Slot Size (in.)						
Top of Casing Elevation (Ft, MLGL or MSL)						
Grade or Surface Elevation (Ft, MLGL or MSL)						
Well Depth (Ft, Below Grade Surface *[BGS]*)						
Well Depth (Ft, Below Top of Casing *[BTOC]*)						
Screen Interval From(Ft, BGS) To(Ft, BGS)						
Screen Interval From(Ft, BTOC) To(Ft, BTOC)						
Facility Coordinates (e.g., lat./long. or						

Waste Management Unit/Area Name[1]						
company coordinates)						

1From Tables in Section V.
MSL: Mean Sea Level; *MLGL*: Mean Low-tide Gulf Level; *BGS*: Below Grade Surface; *BTOC*: Below Top of Casing

Table VI.B.3.c. – Groundwater Detection Monitoring Parameters

NA – The proposed facility is not a land based permitted unit.

Unit/Waste Management Area:

Well No(s):

Parameter	Sampling Frequency	Analytical Method	Method Detection Limit (MDL) or Method Quantification Limit (MQL) Value, (units), MDL or MQL[2]	Concentration Limit[1]

1 The concentration limit is the basis for determining whether a release has occurred from the waste management unit/area.

2 a. Enter the laboratory expected *Method Detection Limit* if determination of *Statistically Significant Increase* (SSI) occurrence is based on detection of the presence of the constituent of concern in the sample.

2 b. Enter the laboratory expected Method Quantification Limit if determination of SSI is based on statistical analysis of detection monitoring data or direct comparison to a limit value.

This should be based on the laboratory's minimum expected level of performance. Please designate which type of limit has been entered for each constituent, with its value and units.

VII. Closure and Post-Closure Plans
The Closure Plan is in Attachment H.

Submit a full closure plan and post-closure plan, if applicable, which contains all the information required by 30 TAC 335.8, 335.169, 335.172, 335.174, 335.177, 335.178, 335.551-335.569, 30 TAC Chapter 350, 40 CFR 264.112, 264.118, 264.178, 264.197, 264.228, 264.258, 264.280, 264.310, 264.351, 264.575, 264.601, 264.603, 264.1102, 270.14(b)(13), 270.17(f), 270.18(h), 270.20(f), 270.21(e), 270.23(a)(2) & (3), and 270.26(c)(16) where applicable. The owner of property on which an existing disposal facility is located must also submit documentation that a notation has been placed in the deed to the facility that will in perpetuity notify any potential purchasers of the property that the land has been used to manage hazardous wastes and its use is restricted (see 30 TAC 335.5). For hazardous waste disposal units that were closed before submission of the application, the applicant should submit documentation to show that plats and notices required under 40 CFR 264.116 and 264.119 have been filed.

A. Closure

This section applies to the owners and operators of all hazardous waste management facilities to be permitted. The applicant must close the facility in a manner that minimizes need for further maintenance and controls, or eliminates, to the extent necessary to protect human health and the environment, the post-closure release of hazardous waste, hazardous constituents, leachate, contaminated rainfall, or waste decomposition products to the groundwater, surface waters, or to the atmosphere.

The facility type and type of unit to be closed can determine the level of detail sufficient for a closure plan.

For each unit to be permitted, complete Table VII.A. - Unit Closure and list the facility components to be decontaminated, possible methods of decontamination, and possible methods of disposal of wastes and waste residues generated during unit closure. All ancillary components must be included in calculating closure cost estimates.

Additionally, if the applicant plans to close a surface impoundment in accordance with 30 TAC 335.169(a)(1) and the impoundment does not comply with the liner requirements of 30 TAC Section 335.168(a) then the closure plan for the impoundment must include both a plan for complying with 30 TAC 335.169(a)(1) and a contingent plan for complying with 30 TAC 335.169(a)(2).

Guidance on design of a closure cap and final cover for landfills is given in TCEQ Technical Guideline No. 3, and EPA publication 530-SW-85-014 presents guidance on construction quality assurance of liner construction.

If a waste pile does not comply with the liner requirements of 30 TAC Section 335.170(a)(1) then the closure plan for the waste pile must include both a plan for complying with 40 CFR 264.258(a) and a contingent plan for complying with 40 CFR 264.258(b).

The final certification of closure of a land treatment unit may be prepared by an independent licensed Professional Geoscientist in lieu of an independent licensed Professional Engineer. [30 TAC 335.172(b)]

B. Closure Cost Estimate (including contingent closure) [30 TAC 335.178, 40 CFR 264.142]

NA – A Closure Cost Estimate is not required for a federally owned

facility.

This section applies to owners or operators of all hazardous waste facilities, except state and federal agencies. A detailed estimate, in current dollars, of the cost of closing the facility should be included in the report. The cost estimate must include the cost of closure at the point in the facilities operating life when the extent and manner of its operation would make closure the most expensive. The TCEQ has published Technical Guideline No. 10, Closure and Post-Closure Cost Estimates, for calculating closure costs which should be consulted. Closure costs should be developed on the basis of abandonment of the site at full capacity and closure activities to be conducted by a third party with no operable on-site equipment. The costs for closing each unit must be detailed.

1. If closure costs are based on contractor bids, the applicant should submit a copy of the bid specification and each contractor's response.

2. If closure costs are based on a detailed analysis, the applicant should submit details of item costs and number of each item, and details of costs for equipment rental, third party labor and supervision, transportation, analytical costs, etc. Provide an itemized cost on Table VII.B. - Unit Closure Cost Estimate for a complete, third party permitted facility closure.

   As units are added or deleted from these tables through future permit amendments or modifications, the remaining itemized unit costs should be updated for inflation when re-calculating the revised total cost in current dollars.

3. The closure plan may propose on-site disposal of wastes, residues, etc. during closure of a unit, and this may be executed if on-site capacity exists in other units during closure of a unit. However, the cost estimate for closure must be based on off-site shipment and disposal during closure of all wastes, waste residues, wastes generated by decontamination, contaminated stormwater, and leachate.

4. For each surface impoundment, waste pile, or tank system required to have a contingent closure plan, the cost for closure under the contingent closure plan should be detailed, as well as the cost of proposed closure. The more expensive of the cost of the proposed closure of a unit versus the cost of the contingent closure of the unit should be used in the total facility closure cost estimate.

C. Post-closure

NA – Post-closure is not anticipated because all waste and residual will be removed during final closure.

This section applies to owners or operators of all hazardous waste disposal facilities. This section also applies to certain waste piles, tanks and surface impoundments from which the owner or operator intends to remove wastes at closure but which are required to have contingent post-closure plans.

Post-closure care of each hazardous waste management unit must continue for 30 years after the date of completing closure of the unit and must consist of monitoring and reporting of the groundwater monitoring systems in addition to the maintenance and monitoring of waste containment systems. Continuation of certain security requirements may be necessary after the date of closure. Post-closure use of property on or in which hazardous waste remains after closure must never be allowed to disrupt the integrity of the containment system. In addition, submit the following information.

1. The post-closure care plan for a landfill or of a surface impoundment, waste pile,

miscellaneous unit, or tank system closed with wastes or waste constituents left in place, or closed under a contingent closure plan, must demonstrate compliance with 30 TAC 335.174(b).

2. The name, address, and phone number of the person or office to contact about the disposal facility during the post-closure period; and

3. A discussion of the future use of the land associated with each unit.

4. For landfills, surface impoundments, waste piles, and land treatment areas closed under interim status, submit the required documentation of 40 CFR 270.14(b)(14).

5. Landfills, surface impoundments, waste piles and land treatment areas that received hazardous wastes after July 26, 1982 or for which closure was certified after January 26, 1983 must be included in post-closure care plans unless they have been determined to have closed by removal equivalent to the closure standards in 40 CFR 264 Subpart G. If such a demonstration has been made pursuant to 40 CFR 270.1(c)(5), but an equivalency determination has not been made, please submit a copy of the demonstration documentation. If an equivalency determination has been made pursuant to 40 CFR 270.1(c)(6), applicant should submit a copy of the determination. Complete Table VII.C.5. - Land-Based Units Closed Under Interim Status for all land based units closed under interim status.

D. Post-closure Cost Estimate [40 CFR 264.144]
NA – A Post-closure Cost Estimate is not required for a federally owned facility.

This section regarding post-closure cost estimate applies to owners or operators of all hazardous waste disposal facilities, except state and federal agencies, and certain waste piles, tank systems, and surface impoundments from which the owner or operator intends to remove wastes at closure, but which are required to have contingent closure and post-closure plans. A detailed estimate, in current dollars, of the annual cost of monitoring and maintenance of the facility in accordance with the applicable post-closure regulations must be included in the report. The TCEQ has published Technical Guideline No. 10 for calculating post-closure costs, which should be consulted. Costs should be developed in detail for 30 years of post-closure care activities to be conducted by a third party, for each applicable unit.

1. The applicant should submit details of item costs and number of each item for off-site disposal of leachate and bailed monitor well water, labor and supervision, monitor well sampling and analyses, inspection and repair of the cap(s), mowing and re-seeding of the vegetative cover, maintaining site security, etc. Provide an itemized cost estimate on Table VII.D. - Unit Post-Closure Cost Estimate for complete, third party permitted facility post-closure care.

2. As units are added or deleted from these tables through future permit amendments or modifications, the remaining itemized unit costs should be updated for inflation when re-calculating the revised total cost in current dollars.

3. Total annual cost of post-closure care for the facility including costs of contingent post-closure care should be multiplied by 30 years.

Closure and Post-Closure Cost Summary

NA –Closure and Post-closure Cost Estimates are not required for a federally owned facility.

Please complete Table VII.E.1 - Permitted Unit Closure Cost Summary.

Please complete Table VII.E.2 - Permitted Unit Post-Closure Cost Summary.

Table VII.A. - Unit Closure
See Attachment H – Closure Plan

For each unit to be permitted, list the facility components to be decontaminated, the possible methods of decontamination, and the possible methods of disposal of wastes and waste residues generated during unit closure:

Equipment or HWM Unit	Possible Methods of Decontamination[1]	Possible Methods of Disposal[1]

1Applicants may list more than one appropriate method.

Table VII.B. - Unit Closure Cost Estimate
NA – Unit Closure Cost Estimate is not required for a federally owned facility.

Task	Cost
(Name of permitted unit, e.g., Tank TK-1)	
Verbal description of task *(waste amount generated x disposal cost/unit amount)*	$$,$$$
Verbal description of task *(waste amount generated x disposal cost/unit amount)*	$$,$$$
Verbal description of task *(waste amount generated x disposal cost/unit amount)*	$$,$$$
Verbal description of task *(waste amount generated x disposal cost/unit amount)*	$$,$$$
Other tasks *(such as labor, lab analysis, transportation, certifications, etc.)*	$$,$$$
Other tasks	$$,$$$
Subtotal	**$$$,$$$**
Contingency (10% minimum)	**$$,$$$**
Total Unit Closure Cost	**$$$,$$$ (20___)**
(Name of permitted unit, e.g.,. Surface Impoundment West)	$$,$$$
Verbal description of task *(waste amount generated x disposal cost/unit amount)*	$$,$$$
Verbal description of task *(waste amount generated x disposal cost/unit amount)*	$$,$$$
Verbal description of task *(waste amount generated x disposal cost/unit amount)*	$$,$$$
Verbal description of task *(waste amount generated x disposal cost/unit amount)*	$$,$$$
Other tasks *(such as labor, lab analysis, transportation, certifications, etc.)*	$$,$$$
Other tasks	$$,$$$
Subtotal	**$$$,$$$**
Contingency (10% minimum)	**$$,$$$**
Total Unit Closure Cost	**$$$,$$$ (20___)**
Total Permitted Facility Closure Cost *(all unit costs combined)*	**$,$$$,$$$ (20___)**

Table VII.C.5. - Land-Based Units Closed Under Interim Status
NA – There are no land-based units closed under interim status associated with this permit modification.

N.O.R. Unit #	Unit Description[1,2]	Date of Receipt of Last Waste[3]	Date of Closure Certification[3]

1Indicates a unit for which a 40 CFR 264 closure equivalency determination has been requested pursuant to 40 CFR 270.1(c)(5).
2Indicates a unit for which a 40 CFR 264 closure equivalency determination has been made pursuant to 40 CFR 270.1(c)(6).
3Enter month, day, and year.

Table VII.D. - Unit Post-Closure Cost Estimate
NA – Unit Post-closure Cost Estimate is not required for a federally owned facility.

Task	Cost
(Name of permitted unit, e.g., East Landfill)	
Verbal description of annual task, e.g., leachate collected (*amount generated x disposal cost/unit amount)*	$$,$$$
Verbal description of annual task, e.g., cap maintenance *(material needed x cost/unit amount)*	$$,$$$
Verbal description of annual task, e.g., detection monitoring system *(# of wells x # sample events/well/year x lab analysis cost)*	$$,$$$
Verbal description of annual task	$$,$$$
Other annual tasks	$$,$$$
Other annual tasks	$$,$$$
Subtotal	**$$$,$$$**
Contingency (10% minimum)	**$$,$$$**
Total Unit Post-Closure Care Cost x 30 yrs. (or other post-closure care period)	**$$$,$$$ (20___)**
(Name of permitted unit, e.g.,. Surface Impoundment West)	$$,$$$
Verbal description of annual task, e.g., leachate collected *(amount generated x disposal cost/unit amount)*	$$,$$$
Verbal description of annual task, e.g., cap maintenance *(material needed x cost/unit amount)*	$$,$$$
Verbal description of annual task, e.g., detection monitoring system *(# of wells x # sample events/well/year x lab analysis cost)*	$$,$$$
Verbal description of annual task	$$,$$$
Other annual tasks	$$,$$$
Other annual tasks	$$,$$$
Subtotal	**$$$,$$$**
Contingency (10% minimum)	**$$,$$$**
Total Unit Post-Closure Care Cost x 30 yrs. (or other post-closure care period)	**$$$,$$$ (20___)**
Total Permitted Facility Closure Cost *(all unit costs combined)*	**$,$$$,$$$ (20___)**

Table VII.E.1. - Permitted Unit Closure Cost Summary
NA – Permitted Unit Closure Cost Estimate is not required for a federally owned facility.

Existing Unit Closure Cost Estimate	
Unit	Cost
Total Existing Unit Closure Cost Estimate	$$$$$$$$$$$$$$$$ (in 20__ Dollar)[1]

Proposed Unit Closure Cost Estimate	
Unit	Cost

1 As units are added or deleted from these tables through future permit amendments or modifications, the remaining itemized unit costs should be updated for inflation when re-calculating the revised total cost in current dollars.

Table VII.E.2. - Permitted Unit Post-Closure Cost Summary
NA – Permitted Unit Closure Cost Estimate is not required for a federally owned facility.

Existing Unit Post-Closure Cost Estimate	
Unit	Cost
Total Existing Unit Post-Closure Cost Estimate	$$$$$$$$$$$$$$$$ (in 20__ Dollar)[1]

Proposed Unit Post-Closure Cost Estimate	
Unit	Cost

1 As units are added or deleted from these tables through future permit amendments or modifications, the remaining itemized unit costs should be updated for inflation when re-calculating the revised total cost in current dollars.

VIII. Financial Assurance

NA – Financial Assurance is not required for a federally owned facility.

A. Financial Assurance Information Requirements for all Applicants (30 TAC Chapter 37, Subchapter P, 305.50(a)(4)(A-E), 335.152(a)(6) and 335.179)

1. Financial Assurance for Closure

   An owner or operator must establish financial assurance for the closure of the facility no later than 60 days prior to the first receipt of waste [30 TAC Section 37.31(a)]. Please refer to 30 TAC Chapter 37, Subchapter P, for the financial assurance requirements for closure and provide a signed statement from an authorized signatory per 30 TAC 305.44 regarding how the owner or operator will comply with this provision.

   If a financial mechanism has been obtained, provide a copy of the mechanism.

   For applications involving a permit transfer, the new owner or operator must provide a financial assurance mechanism (in original form) satisfactory to the TCEQ executive director. Prior to the executive director issuing the permit modification transferring the permit, the new owner or operator must provide proof of financial assurance in compliance with 30 TAC Section 305.64 (g) and Chapter 37, Subchapter P.

2. Financial Assurance for Post-Closure Care (applicable to disposal facilities and contingent post-closure care facilities only)

   An owner or operator subject to post-closure monitoring or maintenance requirements must establish financial assurance for the post-closure care of the facility no later than 60 days prior to the first receipt of waste [30 TAC Section 37.31(a)]. Please refer to 30 TAC Chapter 37, Subchapter P for the financial assurance requirements for post-closure and provide a signed statement from an authorized signatory per 30 TAC 305.44 regarding how the owner or operator will comply with this provision.

   If a financial mechanism has been obtained, provide a copy of the mechanism.

   For applications involving a permit transfer, the new owner or operator must provide a financial assurance mechanism (in original form) satisfactory to the TCEQ executive director. Prior to the executive director issuing the permit modification transferring the permit, the new owner or operator must provide proof of financial assurance in compliance with 30 TAC Section 305.64 (g) and Chapter 37, Subchapter P.

3. Financial Assurance for Corrective Action

   An owner or operator must establish financial assurance for corrective action of the facility no later than 60 days after the permit or order requiring the corrective action financial assurance is signed by the executive director or commission [30 TAC Section 37.31(b)]. Please refer to 30 TAC Chapter 37, Subchapter P, for the financial assurance requirements for closure and provide a signed statement from an authorized signatory per 30 TAC 305.44 regarding how the owner or operator will comply with this provision and indicate below the type of financial

assurance mechanism to cover corrective action for the facility.

If a financial mechanism has been obtained, provide a copy of the mechanism.

For applications involving permit transfers, the new owner or operator must provide a financial assurance mechanism (in original form) satisfactory to the TCEQ executive director. Prior to the executive director issuing the permit modification transferring the permit, the new owner or operator must provide proof of financial assurance in compliance with 30 TAC Section 305.64 (g) and Chapter 37, Subchapter P.

4. Liability Requirements (not required for post-closure care)

All owners or operators must establish financial assurance for third party sudden liability coverage of the facility no later than 60 days prior to the first receipt of waste [30 TAC Section 37.31(a)]. Owners or operators of disposal facilities must establish financial assurance for third party sudden and nonsudden liability coverage of the facility no later than 60 days prior to the first receipt of hazardous waste. Please refer to 30 TAC Chapter 37, Subchapter P, for the financial assurance requirements for liability coverage, and provide a signed statement from an authorized signatory per 30 TAC 305.44 regarding how the owner or operator will comply with this provision.

If a financial mechanism has been obtained, provide a copy of the mechanism.

For applications involving a permit transfer, the new owner or operator must provide a financial assurance mechanism (in original form) satisfactory to the TCEQ executive director. Prior to the executive director issuing the permit modification transferring the permit, the new owner or operator must provide proof of financial assurance in compliance with 30 TAC Section 305.64 (g) and Chapter 37, Subchapter P.

B. Applicant Financial Disclosure Statements for a new permit, permit amendment, or permit modification, or permit renewal (30 TAC 305.50(a)(4))

Refer to the Supplemental Technical Information Guidance for Applicants Subject to Financial Capability Requirements, included in Section VIII.B., and the requirements listed below as you complete this section.

1. Provide information required in 30 TAC 305.50(a)(4), as applicable to the application request.
2. Complete Table VIII.B. if requesting capacity expansion or new construction.
3. For new commercial hazardous waste management facility applications, a written statement signed by an authorized signatory per 30 TAC 305.44 explaining how the applicant intends to provide emergency response financial assurance per 30 TAC 305.50(a)(12)(C) or (D).
4. For renewal applications with no capacity expansion, please complete and submit the attached Financial Disclosure Letter.

Information for Applicants Subject to Financial Capability Requirements

Certain applications involving Hazardous Waste facilities are subject to review of the applicant's financial ability to construct, operate, and/or close the facility, perform post-closure care and corrective action at the facility in accordance with State law as specified in Section 361.085 of the Texas Health and Safety Code. TCEQ refers to these reviews as financial capability reviews. This document summarizes and clarifies the information required in an application to meet the TCEQ requirements of 30 Texas Administrative Code (TAC) 305.50.

Information requirements vary depending on the type of financial information available to applicants, primarily whether audited financial statements are available as well as the type of application submitted. For each scenario described below, financial information must be provided for the specific applicant.

I. New Facilities, Facility Expansions and Permit Transfers

A. Publicly traded Entities

1. Securities and Exchange Commission (SEC) Form 10-Ks

   This portion of the requirement calls for the two most recent 10-K reports filed.

2. SEC Form 10-Q

   This portion of the requirement calls for a copy of the most recent quarterly report.

3. Explanation statement

   This portion of the requirement calls for a statement signed by an authorized signatory [as described in 30 TAC 305.44(a)] explaining in detail how the applicant demonstrates sufficient financial resources to construct, safely operate, properly close, perform post-closure care, perform corrective action and provide adequate liability coverage for the facility. This statement must also address how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met. (ie. which financial assurance mechanism is or will be used).

4. Construction capital cost estimates

   This portion of the requirement calls for estimates of capital costs for expansion and/or initial construction if the application encompasses facility expansion, capacity expansion, or new construction.

B. Privately held entities with audited financial statements

1. Audited financial statements

   This portion of the requirement calls for complete copies of the audited financial statements for each of the most recent two fiscal years. If an audit has not been completed for one of the previous two years, a complete copy of the fiscal year end financial statement and federal tax return may be substituted in lieu of the audit not performed. The tax return must be certified by original signature of an authorized signatory as being a "true and correct copy of the return filed with the Internal Revenue Service." Financial statements must be prepared consistent with generally accepted accounting principles and include a balance sheet, income statement, cash flow statement, notes to the financial statement, and an accountant's opinion letter.

2. Quarterly financial statement

   This portion of the requirement calls for a complete copy of the most current quarterly financial statement prepared consistent with generally accepted accounting principles. Internally prepared statements are satisfactory.

3. Supplementary information statement

   This portion of the requirement calls for a written statement detailing the information that would normally be found in SEC's Form 10-K including descriptions of the business and its operations; identification of any affiliated relationships; credit agreements and terms; any legal proceedings involving the applicant; contingent liabilities; and significant accounting policies.

4. Construction capital cost estimates

   This portion of the requirement calls for estimates of capital costs for expansion and/or initial construction if the application encompasses facility expansion, capacity expansion, or new construction.

5. Explanation statement

   This portion of the requirement calls for a statement signed by an authorized signatory [as described in 30 TAC 305.44(a)] explaining in detail how the applicant demonstrates sufficient financial resources to construct, safely operate, properly close, perform post-closure care, perform corrective action and provide adequate liability coverage for the facility. This statement must also address how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met (ie. which financial assurance mechanism is or will be used).

C. Entities without audited financial statements or entities choosing not to provide the information listed above

1. Financial Plan

   This portion of the requirement calls for a financial plan (including balance sheets listing assets, liabilities and capital accounts) sufficiently detailed to clearly demonstrate that the applicant will be in a position to readily secure financing for construction, operation, and closure, post-closure, and corrective action if the permit is issued. At least 3 balance sheets should be included as of: a) approximately the date of the permit application, b) 12 months after any construction is completed (or assumption of operational control for a permit transfer), and c) 24 months after any construction is completed (or assumption of operational control for a permit transfer).

2. Letters of opinion

   The submitted financial plan must be accompanied by original letters of opinion from two financial experts, not otherwise employed by the applicant, who have the demonstrated ability to either finance the facility or place the required financing. If the permit action sought involves construction of a new facility or expansion of an existing facility, the opinion letters must certify that financing is obtainable within 180 days of permit approval and include the time schedule contingent upon permit finality for securing the financing as well as certify the financial plan is reasonable. Even if the application does not involve a facility or capacity expansion, the opinion letters must certify that the financial plan is reasonable. Only one opinion letter from a financial expert, not otherwise

employed by the applicant, is required if the letter renders a firm commitment to provide all the necessary financing.

Letters of opinion are usually issued by investment or commercial bankers but there could be additional sources. Applicants are encouraged to verify the adequacy of the credentials of their chosen financial expert with TCEQ's financial assurance unit prior to a formal engagement. Financial experts should describe their qualifications and disclose their independence from the applicant and/or any entity or person affiliated with the applicant.

3. Operating and cash flow statement

   This portion of the requirement calls for a written detail of the annual operating costs of the facility and a projected cash flow statement including the period of construction and first two years of operation. The cash flow statement must demonstrate the financial resources to meet operating costs, debt service, and provide financial assurance for closure, post-closure care, and liability coverage requirements. A list of the assumptions made to forecast cash flow must also be provided.

4. Explanation statement

   This portion of the requirement calls for a statement addressing how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met (ie. which financial assurance mechanism is or will be used).

5. Construction capital cost estimates

   This portion of the requirement calls for estimates of capital costs for expansion and/or initial construction if the application encompasses facility expansion, capacity expansion, or new construction.

D. Entities with a resolution from a governing body approving or agreeing to approve the issuance of bonds to satisfy financial assurance requirements (e.g. a city or county)

1. Explanation statement

   This portion of the requirement calls for a statement signed by an authorized signatory [as described in 30 TAC30 305.44(a)] explaining in detail how the applicant demonstrates sufficient financial resources to construct, safely operate, properly close, perform post-closure, perform corrective action and provide adequate liability coverage for the facility. This statement must also address how the closure, post-closure, corrective action, and liability coverage financial assurance requirements of Chapter 37, Subchapter P will be met (ie. which financial assurance mechanism is or will be used).

2. Certified copy of the resolution from the governing body,

3. Certification by the governing body of passage of the resolution.

II. Permit Renewals

Complete the attached letter with applicable information inserted into the parentheses. *Note that additional information must be provided if requested by TCEQ.*

[Date]

Mr. Robert Patton, Jr.
Manager, Industrial and Hazardous Waste Permits Section
Texas Commission on Environmental Quality
Building F, MC 130
12100 Park 35 Circle
Austin, Texas 78753

Re: Financial Disclosure Letter for [name of applicant]

Permit Renewal
Hazardous Waste Permit No. [xxxxx] / Compliance Plan No. [xxxxx]
Industrial Solid Waste Registration No. [xxxxx]
EPA ID No. [TXDxxxxxxxxx]
RN[xxxxxxxxx]; CN[xxxxxxxxx]

Dear Mr. Patton:

This letter is furnished to you in response to financial disclosure requirements as applicable under Texas Health and Safety Code Section 361.085 and Title 30, Texas Administrative Code (30 TAC), Section 305.50 to provide assurance that [name of applicant] has sufficient financial resources.

In keeping with the above law and rule requirements I hereby certify that [name of applicant] is adequately capitalized and has sufficient financial resources to operate, close, provide post-closure care for and perform corrective action for the above-referenced facility in a safe manner, and in compliance with the permit and all applicable rules.

[name of applicant] currently provides a [describe type of mechanism, i.e., letter of credit, surety bond, etc.] financial assurance mechanism as set out in 30 TAC, Chapter 37, Subchapter C to meet [name of applicant]'s financial assurance obligations.

I am authorized to make these statements on behalf of [name of applicant]. I understand that the TCEQ may request additional information as part of their review.

Sincerely,

[Signature block]
[Title of Signatory]

*[**Note**: signatory must be person whose title and job responsibilities meet the requirements in 30 TAC § 305.44]*

Table VIII.B - Estimated Capital Costs
NA – Estimated Capital Costs is not required for a federally owned facility.

	Estimated Capital Costs
Site preparation, fencing, paving, curbing, lighting, roadways:.....	$_____
Foundations, buildings, other structures, utilities and connections, drainage system, HVAC system, electrical system, wastewater system:.....	$_____
Process and control equipment:.....	$_____
Auxiliary equipment, including but not limited to exhaust hoods fans, ducting, pumps, piping, conveyors, stacks, storage tanks, process tanks, waste disposal facilities, pollution control equipment, and fire protection system:.....	$_____
Process integration and instrumentation:.....	$_____
Emergency response equipment:.....	$_____
Transportation equipment:.....	$_____
Office equipment:.....	$_____
Engineering design, supervision, overhead:.....	$_____
Construction expenses including permits, insurance, temporary facilities, and clean-up.....	$_____
Contractor's fees and overhead.....	$_____
Contingency.....	$_____
Total	$_____

The estimates listed above were derived from the following sources:

X. Air Emission Standards

Section X.D. applies to Permittees with "one- stop" permits applying for an amendment, modification, or renewal of the Air Permits Division portions of their combined "one-stop" permit.

A. Process Vents

Does the facility have process vents and equipment subject to the requirements of 40 CFR Part 264, Subpart AA?

☐ Yes ☒ No

If Yes: please provide a report that includes all of the information required by 40 CFR §270.24. Indicate on a facility plot plan the approximate location of process vents.

1. For incorporation into the permit, complete Table X.A - Process Vents for all vents on waste management units that manage hazardous waste with an annual average total organics concentration of 10 ppmw or greater ("process vents"). Specifically include:
   a. process vents on distillation, fractionation, thin-film evaporation, solvent extraction, air or steam stripping operations, and vents on condensers serving these operations; and
   b. process vents on tanks (e.g., distillate receivers, bottom receivers, surge control tanks, separator tanks, and hot wells) associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping processes if emissions from these process operations are vented through the tanks.

      Emissions caused by natural means such as daily temperature changes or by tank loading and unloading are not subject to control.
2. For process vents, include the following certification as part of the air emissions report:

   I,____ *[owner or operator]* __, certify that the operating parameters used in the design analysis reasonably represent the conditions that exist when the hazardous waste management unit is or would be operating at the highest load or capacity level reasonably expected to occur.

   I further certify that the control device is designed to operate at an efficiency of 95 weight percent or greater.

   OR

   I further certify that the total organic emission limits of 40 CFR §264.1032(a) for affected process vents at the facility can be attained by a control device involving vapor recovery at an efficiency less than 95 weight percent.

   [Signature] _____ *[Date]* _____.

B. Equipment Leaks

Does the facility have equipment subject to the requirements of 40 CFR Part 264, Subpart BB?

☐ Yes ☐ No X Not Applicable (facility contains no regulated ancillary equipment types associated with permitted units)

If No: please provide the regulatory exclusion/exemption(s):

If Yes: please provide a report that includes all of the information required by 40 CFR §270.25.

1. For incorporation into the permit, complete Table X.B. – Equipment Leaks for all valves, pumps, compressors, pressure relief devices, sampling connection systems, and open-ended valves or lines that contain or contacts hazardous waste streams with organic concentrations of 10% by weight or greater. Equipment in vacuum service is not subject to control if identified in the facility operating record.

2. For equipment, include the following statement as part of the air emissions report:

   I,____ *[owner or operator]* __, certify that the operating parameters used in the design analysis reasonably represent the conditions that exist when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur.

   I further certify that the control device is designed to operate at an efficiency of 95 weight percent or greater.

   [Signature] _____ *[Date]* _____.

C. Tanks, Surface Impoundments, and Containers

Does the facility have tanks subject to the requirements of 40 CFR Part 264, Subpart CC?

☐ Yes ☐ No ☒ Not Applicable (no permitted tanks)

If No: provide the regulatory exception/exemption(s) for each tank subject to regulation under 40 CFR Part 264, Subpart J:

Does the facility have surface impoundments subject to the requirements of 40 CFR Part 264, Subpart CC?

☐ Yes ☐ No X Not Applicable (no permitted surface impoundments)

If No: provide the regulatory exception/exemption(s) for each permitted surface impoundment subject to regulation under 40 CFR Part 264, Subpart K:

Does the facility have containers subject to the requirements of 40 CFR Part 264, Subpart CC?

☒ Yes ☐ No ☐ Not Applicable (no permitted container storage areas)

If No: provide the regulatory exception/exemption(s) applicable to the authorized containers subject to regulation under 40 CFR Part 264, Subpart I:

If the facility contains tanks, surface impoundments, and containers subject to the requirements of 40 CFR Part 264 Subpart CC, please provide a report that includes all of the information required by 40 CFR §270.27.

See Attachment L Air Emissions Report.

1. For incorporation into the permit, complete Table X.C.

2. As applicable, include the following floating roof cover certification as part of the air emissions report for tanks:

   I,____*[owner or operator]*__, certify that the floating roof cover meets the applicable design specifications as listed in 40 CFR §264.1084(e)(1) or 40 CFR §264.1084(f)(1).

   [Signature] _____ *[Date]* _____.

3. As applicable, include the following floating membrane cover certification as part of the air emissions report for surface impoundments:

   I,____*[owner or operator]*__, certify that the floating membrane cover meets the applicable design specifications listed in 40 CFR §264.1085(c)(1).

   [Signature] _____ *[Date]* _____.

4. As applicable, include the following container certification as part of the air emissions report for containers:

   I,____*[owner or operator]*__, certify that the requirements of 40 CFR Part §264, Subpart CC, are met for all containers subject to control.

   [Signature] _____ *[Date]* _____.

5. As applicable, include the following control device certification as part of the air emissions report:

   I,____*[owner or operator]*__, certify that the control device is designed to operate at the performance level documented by a design analysis as specified in 40 CFR 264.1089 (e)(1)(ii) or by performance tests as specified in 40 CFR §264.1089(e)(1)(iii) when the tank, surface impoundment, or container is or would be operating at capacity or the highest level reasonably expected to occur.

   [Signature] _____ *[Date]* _____.

D. "One-Stop" Permits:

Does the facility have a "one-stop" permit?

☐ Yes ☒ No

If yes: does this permit application propose to delete the "one-stop" portion of the permit?

☐ Yes ☐ No

Does the facility want the application processed in accordance with 30 TAC Chapter 33 – Consolidated Permit Applications?

☐ Yes ☐ No

If yes: please provide a copy of the notification of intent required by 30 TAC 33.43.

Permittees having "one-stop" permits may elect to combine the air and waste management amendment, modification, or renewal of permitted waste management units. The combined amendment, modification, or renewal application will follow the application processing procedures for an industrial solid waste permit. "One-Stop"

permit applications shall include the following air quality information, as applicable.

1. Area map (to scale) showing the location of the plant and land use in the vicinity of the facility including buildings, schools, residences, etc. within 3000 feet.
2. Plot plan (to scale) with latitude and longitude showing the plant layout, property boundary and location of all emission points of air contaminants. Emission points are to be numbered.
3. Specific chemical name of each air contaminant and emission rate in maximum pounds per hour, maximum tons per year and calculations used to determine emission rates. Fugitive emissions are to be included. Complete Table 1(a) entitled "Emission Sources."
4. Process description, operating schedule, and flow chart in sufficient detail that will explain the process and operation and a material balance for processes where applicable. The description should include a discussion of disposal methods for any generated residues and associated air emissions.
5. Design specifications about each emission control device using the appropriate OAQ table.
6. Volatile organic compound (VOC) concentrations in water or sludges or soil and volumes or weights of water, sludges or soils to be processed.
7. Exhaust stack or emission point parameters for each emission point including height, diameter, temperature, velocity and flow rate, except ground level fugitive emissions.
8. Best available control technology (BACT) documentation for all new and modified facilities.
9. Documentation of compliance with any applicable Federal New Source Performance Standard (NSPS) and Federal National Emission Standard for Hazardous Air Pollutants (NESHAPS).
10. Documentation as to whether a permit is required under new source review requirements of part C or D or Title I of the Federal Clean Air Act, 42 U.S.C. 7401 et seq., for a major source or major modification.
11. Information that demonstrates reliability of emission control systems including process instrumentation, equipment redundancy and operating procedures.
12. Results of atmospheric dispersion modeling certified to have been conducted in accordance with applicable TCEQ Office of Air Quality (OAQ) procedures. Model results must show maximum off-property 30-minute and annual ground level concentrations of each air contaminant. Dispersion modeling results must indicate compliance with all OAQ Rules and Regulations. Dimensions of buildings/structures that may influence dispersion modeling are to be furnished. Please consult with OAQ before beginning any modeling study.
13. Storage tank data including capacity in gallons, diameter, height, paint color, composition, density, vapor pressure and molecular weight of liquid stored, maximum hourly and annual throughput and number of turnovers per year. Complete Table 7 entitled "Storage Tank Summary" for each tank.
14. A statement addressing the applicability of each OAQ regulation.
15. All methods of calculating emissions must be properly referenced with

justification for selecting and assuming the values used in any equation.

Table X.A. – Process Vents
NA – There are no Process Vents associated with this modification.

List all process vents covered by this application.

I.D. No. (if any)	Process Vent	Annual Throughput	Operating Hours	Total Vent Facility Emissions

Table X.B. - Equipment Leaks

NA – There are no Equipment Leaks associated with this modification.

List all equipment covered by this application

Equipment I.D. No.	Equipment Type	Waste Management Unit N.O.R. No.	Waste Management Unit Name	% by Weight Total Organics in Haz. Waste Stream	Waste State (gas, vapor, liquid)	Method of Compliance

Table X.C. – Tanks, Surface Impoundments, and Containers Subject to Air Emission Controls

List all units covered by this application

Permit Unit No.	Tanks	Design Capacity (Cubic Meters)	Hazardous Waste Maximum Organic Vapor Pressure[1] (Kilopascals)	Tank Used in Waste Stabilization Process (Y, N)	Tank Level Control (1, 2)[2]	Identify Tank Level 2 Control Tank Type and Control Device Type[3]
	none					

Permit Unit No.	Surface Impoundments	Control Type (Floating Membrane /Cover Vented through Closed Vent System to Control Device)[3]
	none	

Permit Unit No.	Container Storage Areas	Container Design Capacity (Cubic Meters)	In Light Material Service? (Y/N)	Container Level Standard2 (1, 2, 3)	Container Level Standard 3 Control Types (Closed-Vent System/ Enclosure, Control Device Type)[3]
TBA	Building 258	364.6	N	1	NA

1 Applicable to Tank Level 1 controls determined using procedures in 40 CFR 264.1083(c). If the tank is heated, see 40 CFR 264.1084(b)(ii).
2 See 40 CFR 264.1084(c) and (d) for tanks and 40 CFR 264.1086(b) for containers.
3 See 40 CFR 264.1084(d)(1)-(5) for tanks, 40 CFR 264.1087(c)(1) for control devices, 40 CFR 264.1085(b) for surface impoundments, and 40 CFR 264.1086(c), (d), and (e) for containers.

Table X.D.1(a) – Emission Point Parameters
NA – There are no Emission Points associated with this modification.

Table 1(a) _____ Page _____ of _____

Emission Sources _____ Date _____

Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this Table.

Air Contaminant Data									Emission Point Discharge Parameters						
Emission Point[1]		Chemical Composition of Total Stream		Air Contaminant Emission Rate		UTM Coordinates of Emission Pt. [6]			Stack Sources (7)					Area Sources [8]	
											Exit Data				
Number	Name	Component or Air Contaminant Name [2]	Conc. (%v)	Lb/hr [4]	Tons/ Yr [5]	Zone	East [meters] (Lat.)	North [meters] (Long.)	Height Above Ground [ft.]	Height Above Structures [ft.]	Dia. [ft.]	Vel. [fps]	Temp. [°F]	Length [ft.]	Width [ft.]

Ground Elevation of Facility Above Mean Sea Level _____ feet.

TACB Standard Conditions Are 68°F and 14.7 psia [RULE 131.01.00.001(55)]

General Instructions for Table X.D.1(a):

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits and Emissions Inventory Questionnaire. Limit emission point number to 8 character spaces. For each emission point, use as many lines as necessary to list air contaminant data. Typical emission point names are : heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are OK.
2. Typical component names are: air, H2O, nitrogen, oxygen, CO2, CO, Nox, SO2, hexane, particulate matter (PM), etc. Abbreviations are OK.
3. Concentration data is required for all gaseous components. Show concentration in volume percent of total gas stream.
4. Pounds per hour (lb/hr) - maximum emission rate expected by applicant.
5. Tons per year (tons/year, t/yr.) is annual maximum emission rate expected by applicant which takes into account process operating schedule.
6. As a minimum, applicant must furnish a facility plot plan drawn to scale showing a plant benchmark, latitude and longitude correct to the nearest second for the benchmark, and all emission points dimensioned with respect to the benchmark as required by General Application, Form PI-1. This information is essential for calculation of emission point UTM coordinates. Please show emission point UTM coordinates if known.
7. Supply additional information as follows if appropriate:
   a. Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
   b. Stack's height above supporting or adjacent structures if structure is within three (3) "stack heights above ground" of stack.
   c. If emission point is a flare, show flare data on Table 8.
8. Normally used for fugitive sources. Show dimensions of a minimum size rectangle which will "enclose" all fugitive sources included in this emission point number.

Table X.D.7 – For Fugitive Sources
NA – There are no Fugitive Sources associated with this modification.

Table 74-82 Storage Tank Summary

I. Applicant's Name:_____

II. Tank Parameters (one form for each tank).

1. Location (indicate on plot plan or provide coordinates):

   _____

2. Tank No. _____

3. Emission Point No. _____

4. Nominal Capacity : _____ barrels or

   _____ gallons

5. Dimensions: Diameter _____ft.

   Height or Length _____ ft.

6. Color: Chalking white ☐ Aluminum ☐ Light grey or blue ☐

   Dark color or not paint ☐ Other ☐ (Describe _____)

7. Status: New tank ☐ Altered tank ☐ Relocation ☐ Change of Service ☐

8. Previous permit or exemption number

   _____

9. Type: Fixed roof ☐ Pressure ☐ Insulated ☐ External floating roof o

10. Open top ☐ Underground ☐ Internal floating roof ☐ Horizontal ☐

11. Heated/Cooled ☐ (Temp. _____°F)

12. For floating roof tanks, please supply the following information:

    a. Type of roof: Double deck ☐ Pontoon ☐
       Other ☐ (Describe_____)

    b. Roof color: Chalking white ☐ Aluminum ☐
       Other ☐ (Describe _____)

    c. Shell construction: Riveted ☐ Welded ☐
       Other ☐ (Describe_____)

    d. Seals:

       Primary:

       Mechanical Shoe ☐ Liquid-Mounted ☐ Vapor-Mounted ☐

       Other ☐ (Describe _____)

       Secondary:

       Shoe-Mounted ☐ Rim-Mounted ☐ Weather Shield ☐None ☐

Other ☐ (Describe_____)

Vent Valve Data	Number	Pressure Setting	Vacuum Setting *[Specify "atmosphere" or Discharging To: (name of abatement device)]*
Combination vent valve			
Pressure vent valve			
Vacuum vent valve			
Open vent			

III. Properties of Stored Material (If tank is to hold several different materials or mixtures, attach appropriate information)

1. Material to be stored in this tank:

   _____

2. Liquid density at average annual bulk storage temperature: _____lbs/gal or _____°API
3. Average vapor molecular weight _____
4. Vapor pressure @ average annual bulk storage temperature: _____psia @ _____°F. (or _____lbs. Reid).
5. Vapor pressure @ maximum bulk storage temperature: _____psia @ _____°F.
6. Initial boiling point: _____°F.
7. If material stored is a solution, please supply the following information:
   a. Name of solvent: _____
   b. Partial pressure of solvent: _____ psia
   c. Name of solute: _____
   d. Partial pressure of solute: _____ psia
   e. Concentration of solute: _____ wt% or _____ vol% or _____lbs/gal.

IV. Operating Data:

1. Maximum filling rate: _____ bbls/hr or _____ gal/hr.
2. Average outage (average distance from top of tank shell to liquid surface): _____ft.
3. Tank turnovers per year: _____ (Use zero (0) for constant-level tanks).

XII. Hazardous Waste Permit Application Fee

In accordance with 30 TAC 305.53, complete Tables XII.A. - Hazardous Waste Units (For Application Fee Calculations) and XII.B. - Hazardous Waste Permit Application Fee Worksheet. Use the following information in calculating your fee. The application fee will be non-refundable once an initial review of the application has been completed. The applicant's fees are subject to evaluation by the technical staff of the Texas Commission on Environmental Quality (TCEQ). However, the TCEQ reserves the right to assess further fees as may be necessary.

A. The minimum permit application fee for a permit or a permit renewal for each hazardous waste facility to be used for Storage, Processing, Disposal, or Closure/Post-Closure Care (disposal has already occurred) of hazardous waste shall be $2,000, plus notice fee, and the maximum shall be $50,000, calculated according to these instructions:

1. Process Analysis - $1,000.00.
2. Management/Facility Analysis - $500.00.
3. A facility unit(s) analysis of $500 per unit is charged for the following:
   a. each cell of a landfill (note that multiple cells that are identical in type and use are subject to a single $500 fee);
   b. tanks and container storage areas (note that multiple tanks and container storage areas that are identical in type and use are subject to a single $500 fee)
   c. identical in type and use means the following:
      (1) made of the same material and same design;
      (2) the same size/capacity within + 10%;
      (3) store the same waste (as identified by USEPA hazardous waste number - 40 CFR 261 Subparts C & D); and
      (4) have the same management characteristics (e.g., storage only).
   d. Each incinerator, boiler/industrial furnace unit, surface impoundment, waste pile, land treatment unit, drip pad, miscellaneous unit, or containment building.
4. Site Evaluation - $100 per acre of surface used for hazardous waste management up to 300 acres. No additional fee thereafter. This shall be calculated as any acreage which will be permitted to manage hazardous waste. This shall include, for example, the entire area within the secondary containment of a tank farm, the area within a fence that surrounds individual units (other than the facility fence), or the area defined by the toe of the dike surrounding a landfill or impoundment, etc.
5. An applicant shall also include with each initial application a fee of $50 to be applied toward the cost of providing the required notice. An additional notice fee of $15 is required with each application for renewal.

B. The application fee for a major amendment or a Class 2 or 3 modification to a hazardous waste permit for operation, closure, or post-closure care is subject to the fees listed below:

1. A management/facility analysis fee of $500.

2. The notice fee is $50.
3. If a unit is added or a unit area is expanded for any purpose, $100 per additional acre is assessed, until the total additional acreage reaches 300 acres.
4. If one or more of the following reports are added or are significantly revised, the process analysis fee of $1000 is assessed:
    a. waste analysis plan;
    b. site-specific or regional geology report;
    c. site-specific or regional geohydrology report;
    d. groundwater and/or unsaturated zone monitoring;
    e. closure and/or post-closure care plan; or
    f. RCRA Facility Assessments (RFAs), or corrective action reports;
    g. Alternate Concentration Limit (ACL) demonstration or Development of Protective Concentration Limits (PCLs);
    h. Regulated Unit Facility Assessment, Corrective Action (CA) work plans or reports for Regulated Units; and/or
    i. RCRA Facility Investigation (RFI)/Affected Property Assessment (APA), Remedy Selection, Corrective Measure Implementation (CMI)/Remedial Action Plan for solid waste management units, and/or areas of concern;
    j. Facility Operations Area (FOA).
5. A unit analysis fee of $500 per unit is assessed if any of the following occur:
    a. if a unit is added (even if identical to units already in place, using the criteria discussed in A.3 above);
    b. if there are design changes in an existing unit; or
    c. if a unit status changes from closure to post-closure care;
    d. Changes in the number, location, depth, or design of wells approved in compliance plan or a permit (unless it is a replacement well);
    e. Changes in point of compliance and compliance monitoring program;
    f. Changes in Groundwater Protection Standards, indicator parameters, Alternate Concentration Limits or Protective Concentration Limits; and/or
    g. Changes in corrective action program.

C. The application fee for a minor amendment, a Class 1, or a Class 1[1] modification of a hazardous waste permit is $100 plus the notice fee of $50.

Table XII.A. – Hazardous Waste Units (For Application Fee Calculations)

Verbal Description of Unit	Rated Capacity	Surface Acreage[1]	# of Unit Types[2]	Identical Unit Justification[3]
Building 258	21,120 gallons	0.073 acres	1	none
		Total[4] 0.073	Total[4] 1	

1 Number of calculated acres.
2 Enter number of units except for units identical in type and use which only count toward a single $500.00 fee.
3 Explain justification for any units claimed as identical in type and use.
4 Enter these totals on the worksheet.

Table XII.B. - Hazardous Waste Permit Application Fee Worksheet

Name of Facility: **Naval Air Station Corpus Christi**

Solid Waste Registration Number: **30479**

1. Process Analysis - $1,000..... $1000
2. Facility Management Analysis - $500..... $500
3. Unit Analysis - __1___ units @ $500 per unit..... $500
4. Site Evaluation - _0.073 acres @ $100 per acre..... $7.30

   (Maximum of 300 acres)
5. Minor amendment, Class 1, or Class 1[1] modification - $100..... $
6. Cost of Providing Notice - $50 (+ $15 for a renewal)..... $50

Pay This Amount ☐ **Total** $_2057.3

Make Checks Payable To:

Texas Commission on Environmental Quality - Fund 549
(your canceled check will be your receipt)

Complete And Return With Payment To:

Texas Commission on Environmental Quality
Financial Administration Division - MC 214
P.O. BOX 13088
Austin, Texas 78711-3088

The applicant's fees are subject to evaluation by the technical staff of the Texas Commission on Environmental Quality (TCEQ). However, the TCEQ reserves the right to assess further fees as may be necessitated.

Please do not submit a photocopy of the check (or equivalent transaction submittal) with your application packet but provide only the following account information:

Check No.	Date of Check	Check Amount
Electronic transfer	In process	2057.30

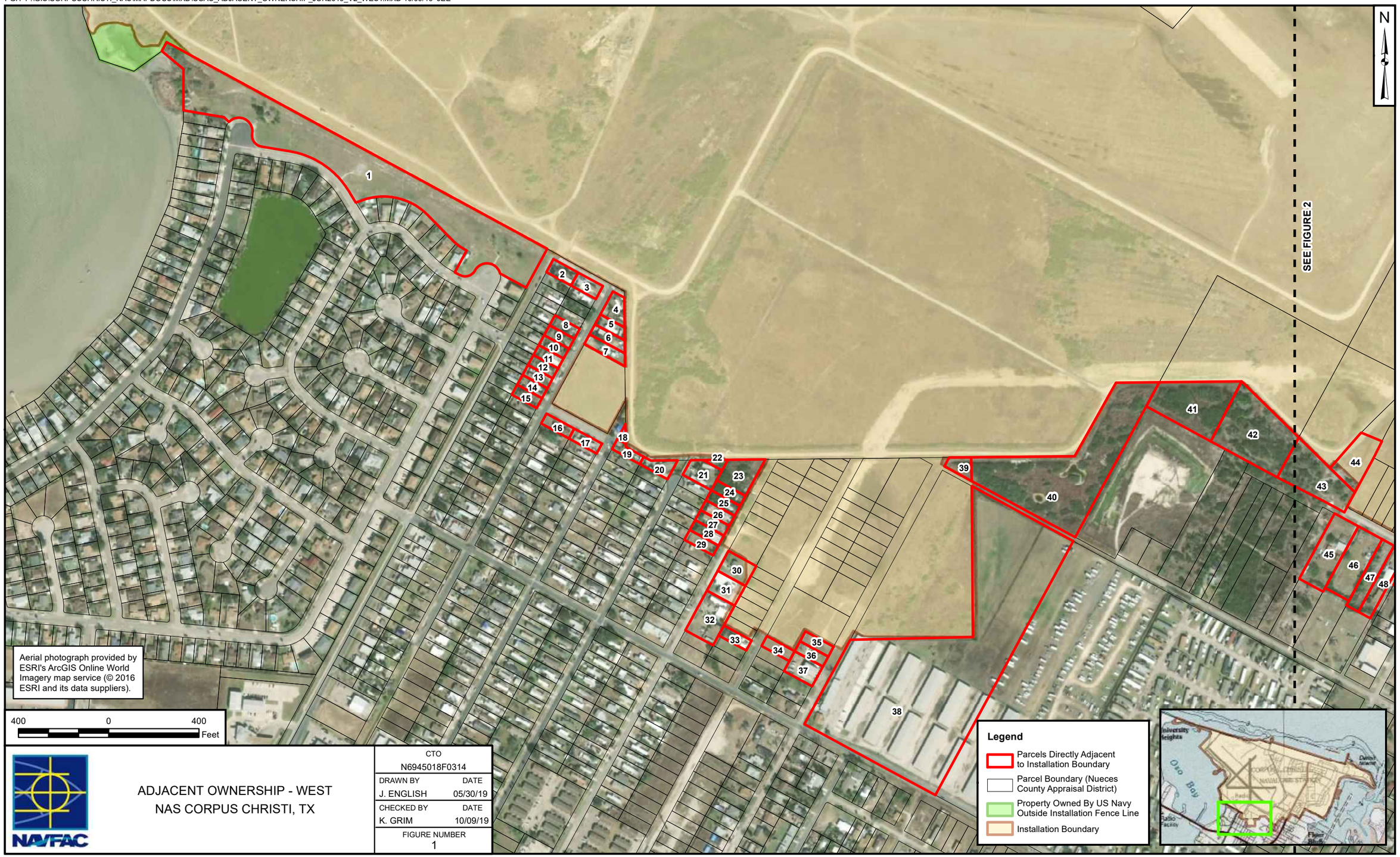
XIII. Confidential Material

Any information requested in the previous Sections I. through XI. of this application which is deemed confidential shall be provided in this Section as a separate collective document and clearly labeled **CONFIDENTIAL**.

A separate document lists the home addresses and phone numbers of emergency coordinators in Section III Facility Management, Table III.E.2 and in Attachment E.

Part B
Attachment A
Adjacent Property Owners

PGH P:\GIS\CORPUSCHRISTI_NAS\MAPDOCS\MXD\CCAS_ADJACENT_OWNERSHIP_JUN2019_V2_WEST.MXD 10/09/19 JEE



NAVFAC

ADJACENT OWNERSHIP - WEST
NAS CORPUS CHRISTI, TX

CTO	
N6945018F0314	
DRAWN BY	DATE
J. ENGLISH	05/30/19
CHECKED BY	DATE
K. GRIM	10/09/19
FIGURE NUMBER	
1	

PGH P:\GIS\CORPUSCHRISTI_NAS\MAPDOCS\MXD\CCAS_ADJACENT_OWNERSHIP_JUN2019_V2_EAST.MXD 10/09/19 JEE

Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2016 ESRI and its data suppliers).

SEE FIGURE 1

N

41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 62 63 64 65 66 67 68 69 70 71 72 73 74 75

Legend

- Parcels Directly Adjacent to Installation Boundary
- Parcel Boundary (Nueces County Appraisal District)
- Property Owned By US Navy Outside Installation Fence Line
- Installation Boundary

400 0 400 Feet

NAVFAC

ADJACENT OWNERSHIP - EAST
NAS CORPUS CHRISTI, TX

CTO	
N6945018F0314	
DRAWN BY	DATE
J. ENGLISH	05/30/19
CHECKED BY	DATE
K. GRIM	10/09/19
FIGURE NUMBER	
2	

RCRA Permit Renewal Application, Part B
Naval Air Station Corpus Christi, Texas
IHW Permit No. 50038
Solid Waste Registration No. 30479

The persons identified below could be considered as affected persons.

1. CITY OF CORPUS CHRISTI
PO BOX 9277
CORPUS CHRISTI, TX 78469 9277

2. RUTH B HUEBNER
701 FLOUR BLUFF DR
CORPUS CHRISTI, TX 78418 4919

3. NATALIA GARCIA
C/O MARY L WOMBLE
320 S MORNINGSIDE ST
CORPUS CHRISTI, TX 78404

4. CAROL K CANTRELL
6801 W POLY WEBB RD
APT 121
ARLINGTON, TX 76016 3627

4. CAROL K CANTRELL
C/O SHAWN R JAMES
701 MCDONALD ST
CORPUS CHRISTI, TX 78418

5. LAWRENCE F BUTLER
5012 MOULTRIE DR
CORPUS CHRISTI, TX 78413 2708

6. JUAN SILVIANO HERNANDEZ
AND ANA M HERNANDEZ
713 MCDONALD
CORPUS CHRISTI, TX 78418

7. JUAN SILVIANO HERNANDEZ
AND ANA M HERNANDEZ
713 MCDONALD
CORPUS CHRISTI, TX 78418

8. J2J INDUSTRIES LLC
15338 S PADRE ISLAND DR
CORPUS CHRISTI, TX 78418 7701

9. RALPH G PEREZ
3914 SARITA
CORPUS CHRISTI, TX 78416

10. JONI ELIZABETH LIVINGS
2230 BRIGHTON DR
CORPUS CHRISTI, TX 78418 4660

11. ROBERT BURDETTE & JACKIE BURDETTE
730 MCDONALD ST
CORPUS CHRISTI, TX 78418 4930

12. JESICA MARIE REYES
734 MCDONALD ST
CORPUS CHRISTI, TX 78418 4930

13. J2J INDUSTRIES LLC
15338 S PADRE ISLAND DR
CORPUS CHRISTI, TX 78418 7701

14. MARGARITA PADILLA
1205 BAYWOOD LANE
CORPUS CHRISTI, TX 78418

15. JAMES DEE VAN DE
746 MCDONALD ST
CORPUS CHRISTI, TX 78418

16. CLIFTON WALTER MATHEWS AND
KELLY MATHEWS PRYDE
754 CAMPANELLO WAY
BRENTWOOD, CA 94513 1959

17. RANDALL P ANDREWS &
CAROL A ANDREWS
PO BOX 18308
CORPUS CHRISTI, TX 78480 8308

18. BILLY DON JONES
745 WEAVER
CORPUS CHRISTI, TX 78418

19. CLAUDE GENTSCH JR
747 WEAVER
CORPUS CHRISTI, TX 78418 4941

20. BOB L JONES
ANNA R JONES
746 REDMOND ST
CORPUS CHRISTI, TX 78418

21. MARIA E CARRILLO HERNANDEZ
802 REDMOND ST
CORPUS CHRISTI, TX 78418 4938

The persons identified below could be considered as affected persons.

22. ERNESTINA FERNANDEZ
3017 WALDRON RD
CORPUS CHRISTI, TX 78418 4815

23. H EUGENE HART
802 BEHMANN ST
CORPUS CHRISTI, TX 78418

24. H EUGENE HART
802 BEHMANN ST
CORPUS CHRISTI, TX 78418

25. H EUGENE HART
802 BEHMANN ST
CORPUS CHRISTI, TX 78418

26. H EUGENE HART
802 BEHMANN ST
CORPUS CHRISTI, TX 78418

27. H EUGENE HART
802 BEHMANN ST
CORPUS CHRISTI, TX 78418

28. H EUGENE HART
802 BEHMANN ST
CORPUS CHRISTI, TX 78418

29. ROBIN MCMANUS
9238 HIGHWAY 359
ORANGE GROVE, TX 78372

30. JULIE SPAIN
410 POENISCH DR
CORPUS CHRISTI, TX 78412 2712

31. CRYSTAL ANN KEENER
2717 SUMMER RIDGE DR
CORPUS CHRISTI, TX 78414 3155

32. WILLIAM THOMAS NEISSER II
819 BEHMANN
CORPUS CHRISTI, TX 78418

33. MAMIE CHARLINE BARNES
834 MCIVER ST
CORPUS CHRISTI, TX 78418 4908

34. KEVIN L HILL
P O BOX 81202
CORPUS CHRISTI, TX 78468 1202

35. CITY OF CORPUS CHRISTI
P O BOX 9277
CORPUS CHRISTI, TX 78469

36. CITY OF CORPUS CHRISTI
P O BOX 9277
CORPUS CHRISTI, TX 78469

37. EDMONDS COASTAL PLUMBING LLC
921 RED START CIRCLE
CORPUS CHRISTI, TX 78418 5023

38. COQUINA INVESTMENTS INC
3450 S ALAMEDA ST
CORPUS CHRISTI, TX 78411 1720

39. UNITED STATES OF AMERICA
P O BOX 10068
CHARLESTON, SC 29411

40. S & G MARINA LLC
9300 E 29TH ST N STE 102
WICHITA, KS 67226 3007

41. STEVE BRIGHT
3106 LAGUNA SHORES RD
CORPUS CHRISTI, TX 78418 2920

42. STEVE BRIGHT
3106 LAGUNA SHORES RD
CORPUS CHRISTI, TX 78418 2920

43. STEVE BRIGHT
3106 LAGUNA SHORES RD
CORPUS CHRISTI, TX 78418 2920

The persons identified below could be considered as affected persons.

44. UNITED STATES OF AMERICA
P O BOX 10068
CHARLESTON, SC 29411

45. OMAR OLSEN JR
817 REDMOND STREET
CORPUS CHRISTI, TX 78418

46. BRUCE HEBERT &
MIKE RUSSELL
45 BRUSHWOOD CT
SPRING, TX 77380 1508

47. STEVE BRIGHT
3106 LAGUNA SHORES RD
CORPUS CHRISTI, TX 78418 2920

48. JOHN BRADLEY
913 STONE ST
CORPUS CHRISTI, TX 78418

49. ALL STAR AMERICAN
VENDING INC
418 MILITARY DR
CORPUS CHRISTI, TX 78418

50. MRS WM IBANEZ
413 MILITARY
CORPUS CHRISTI, TX 78418

51. STEPHEN JOSEPH BRATCHER AND
CHERYL LYNN
426 AVIATION
CORPUS CHRISTI, TX 78418

52. EVA V MOXON
P O BOX 18428
CORPUS CHRISTI, TX 78480 8428

53. AVIATOR DISTILLING LLC
6625 PHARAOH DR
CORPUS CHRISTI, TX 78412 3727

54. AVIATOR DISTILLING LLC
6625 PHARAOH DR
CORPUS CHRISTI, TX 78412 3727

55. AVIATOR DISTILLING LLC
6625 PHARAOH DR
CORPUS CHRISTI, TX 78412 3727

56. JUAN C VELA
706 SKIPPER LN
CORPUS CHRISTI, TX 78418

57. RANDALL L HUNDT AND WF
PEGGY L HUNDT
PO BOX 18357
CORPUS CHRISTI, TX 78480 8357

58. FLOUR BLUFF CLUB INC
320 ANCHOR ST
CORPUS CHRISTI, TX 78418

59. PAUL E EARLS
LINDA S
4433 DOLPHIN
CORPUS CHRISIT, TX 78411

60. UNITED STATES OF AMERICA
P O BOX 10068
CHARLESTON, SC 29411

61. PAUL E EARLS AND WIFE
4433 DOLPHIN
CORPUS CHRISTI, TX 78411

62. UNITED STATES OF AMERICA
P O BOX 10068
CHARLESTON, SC 29411

63. CITY OF CORPUS CHRISTI
PO BOX 9277
CORPUS CHRISTI, TX 78469 9277

64. JOE GILBERT TAMEZ
PO BOX 822
ROBSTOWN, TX 78380 0

65. UNITED STATES OF AMERICA
P O BOX 10068
CHARLESTON, SC 29411

The persons identified below could be considered as affected persons.

66. ARNOLDO RAY GONZALEZ AND
BELINDA V GONZALEZ
234 NAS DR
CORPUS CHRISTI, TX 78418 3248

67. UNITED STATES OF AMERICA
P O BOX 10068
CHARLESTON, SC 29411

68. TOBY KETTER
5601 S PADRE ISLAND DR STE D
CORPUS CHRISTI, TX 78412 3930

69. TIMOTHY S WELKER & CHRISTINE D
5601 S PADRE ISLAND DR
CORPUS CHRISTI, TX 78412 3930

70. NUECES COUNTY
NUECES COUNTY TRUSTEE
901 LEOPARD ST
CORPUS CHRISTI, TX 78401 3606

71. UNITED STATES OF AMERICA
P O BOX 10068
CHARLESTON, SC 29411

72. UNITED STATES OF AMERICA
P O BOX 10068
CHARLESTON, SC 29411

73. UNITED STATES OF AMERICA
P O BOX 10068
CHARLESTON, SC 29411

74. AEP TEXAS CENTRAL CO
P O BOX 16428
COLUMBUS, OH 43216-6428

75. STRATEGIC INVESTMENT SOLUTIONS LLC
5411 WILLIAMS DR. STE 303
GEORGETOWN, TX 78633 5236

Part B
Attachment B
Topographical Map

VICINITY MAP

LEGEND

Environmental Sample Location

- Borehole/Soil boring
- Monitoring well
- Temporary well point
- Discharge Point
- Stormwater Inlet
- Open Drainage

- Wastewater Treatment Plant (WWTP)
- Fire Station
- One Mile Radius from Hazardous Waste Storage Facility
- Buildings
- Installation Boundary
- IRP Site
- Fence

Adjacent Land Use

- Water
- Public Land/Park/Conservation Area
- Vacant
- Residential
- Commercial
- Light Industrial

Notes:
1. Imagery Source: USGS 7.5 minute topographic quadrangles:
Oso Creek NE, TX (published 1977)
Crane Islands NW, TX (published 1977)

N

0 750 1,500 3,000 Feet

Part B, Attachment B
Plain View Map
NAS Corpus Christi
Corpus Christi, Texas

R:\ENBG\00_Proj\N\Navy\CorpusChristi\MapFiles\NAS_CC_topo_wLU_fences.mxd gtwigg 6/23/2017 12:35:49 PM

Rev. 2, 6/30/2020

NAS Corpus Christi, TX Topo Map

Feet
2,500 5,000 7,500 10,000

N

Legend

- NPDES Outfall Point
- Background Wells
- Monitoring Wells
- Contours (5 foot interval)
- SWMU 9 (Not in Track 1 Metes & Bounds Survey)
- Boundary
- New Hazardous Waste Storage Building Location
- 100 Year Flood Zone Area

Rev. 2, 06/30/2020

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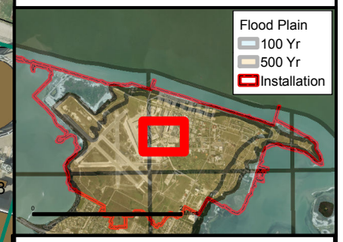
Part B Permitted Facility Topographic Map

NAS CORPUS CHRISTI

N00216



Legend

- Fence
- Part B Haz Waste Storage Facility
- Monitoring Well
- 1,000 FT Buffer
- Water Main Line
- Water Service Line
- Sewer Force Main
- Sewer Gravity Main
- Stormwater Inlet
- Temporary Retention Pond
- Building/Structure
- Elevation Contour

N

Coordinate System: WGS 1984 UTM Zone 14N
Projection: Transverse Mercator
Datum: WGS 1984

Sheet Size 11" W x 17" H

Scale: 1:2,432

1 inch = 203 feet

0 25 50 Meters

0 100 200 Feet

NAVFAC GeoReadiness

PREPARED BY:

NAVFAC Naval Facilities Engineering Command NAVFAC SOUTHEAST

Date: 7/2/2020
Naval Facilities Engineering Command Southeast
Asset Utilization Branch, AM4
Contact: Samuel Norman 361-961-2049

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Document Path: J:\GRC_Admins\Projects\FY18\18-001_Data&Map_Requests\20171122_MR_COR_Bldg257\MXD\20171130_MR_COR_BLDG_257.mxd

Part B
Attachment C
Hazardous Waste Storage Facility Personnel Training Plan Outline

Hazardous Waste Storage Facility Personnel Training Plan Outline

Introduction

Personnel involved in the hazardous waste (HW) management activities at the Hazardous Waste Storage Facility (HWSF) must successfully complete a training program to ensure that their duties are performed in a safe and environmentally sound manner within 6 months of being assigned or within 6 months of employment, whichever is later. No employee hired or assigned to work at the HWSF will work with HW unsupervised prior to completion of the training program.

This training plan includes:

- A written job title and position description for each position at the permitted facility related to hazardous waste management
- A written description of the type and amount of training for each position
- Record keeping requirements job description for each position

The training plan outlined below is based on requirements established in 40 Code of Federal Regulations (CFR) 264.16, 270.14(b)(12), 49 CFR 172.704 (Hazmat employee training), and 29 CFR 1910.120(e).

Personnel Requiring Training

The hazardous waste training program is designed to address the specific hazardous waste activities associated with individual duty assignments (see Table C-1 – Hazardous Waste Employee Job Descriptions). Training techniques include formal classroom instruction with presentations, videos, on-the-job training (oral instruction and/or demonstration), review of standard operating procedures, etc. The program will establish the worker's knowledge in chemical handling and safety procedures, waste management and processing procedures, and emergency response actions.

Required training and frequency associated with specific jobs are listed in Table C-2. Training may be conducted on site or off site. Training will be coordinated and conducted by qualified personnel. Onsite training may be conducted by contract personnel or by qualified government personnel. These individuals may reach out to other facility personnel (e.g., Fire Chief) to assist in the onsite training. Alternately, training may be conducted off site through certified DoD training programs or qualified contract personnel.

The program will be directed by a person trained in HW management procedures and must include instruction which teaches facility personnel HW management procedures (including contingency plan implementation) relevant to the positions in which they are employed. The Training Director(s) are qualified through training and experience to serve in this capacity. The Training Director need not personally conduct required training but be sufficiently informed so that individuals with duties pertaining to direct hazardous waste handling and management receive the necessary level of training required by the regulations, their duties, and to protect their health and safety. The NAS Corpus Christi Training Director(s) have the following credentials;

- Fully qualified by degree and/or experience to serve in their duty positions
- Supplemental training via seminars, conferences, online training, and courses provided by reputable organizations to include the State of Florida, the DoD and the Navy
- Training as indicated in Table C-2

Documentation to demonstrate the training director's credentials is kept on file at the facility.

TABLE C-1 – HAZARDOUS WASTE EMPLOYEE JOB DESCRIPTIONS

Environmental Program Director

- Manages overall environmental program
- Serves as Primary Emergency Coordinator for response to hazardous waste incidents
- Obtains necessary permits and licenses
- Serves as a liaison with federal, state and local agencies on all environmental matters
- Provides support and technical expertise for hazardous waste management program

Hazardous Waste Program Manager

- Provides oversight of RCRA program and permit compliance
- Maintains Hazardous Waste Management Plan
- Serves as Training Director
- Approves funding requests for hazardous waste expenditures
- Serves as a liaison with federal, state and local agencies on all RCRA matters

Hazardous Waste Storage Facility Operator

- Maintains Waste Profile sheets
- Manifests waste
- Performs HWSF Inspections and Maintains HWSF Records
- Picks up and transports waste from accumulation areas to HWSF
- Ensures proper labeling and containerization of waste prior to transport and stored at HWSF
- Notifies Emergency Coordinator of incidents at HWSF or during transport/transfer of waste
- Implements spill response to minor incidents based on training

Hazardous Waste Storage Facility Supervisor

- Serves as Emergency Coordinator for response to hazardous waste incidents
- Operates HWSF in accordance with RCRA permit and appropriate regulations
- Acquires analytical tests of regulated waste and provides liaison with disposal vendor
- Initiates funding requests for hazardous waste expenditures
- Serves as Alternate Training Director
- Manifests waste

TABLE C-2 – REQUIRED TRAINING AND FREQUENCY

Required Training and Frequency	Job Title[1]			
	Environmental Program Director	HW Program Manager	HW Storage Facility Operator	HW Storage Facility Supervisor
40-Hour Hazardous Waste Operations and Emergency Response (29 CFR1910.120(e)(1)) **INITIAL:** Employee cannot perform any field activities until training completed. **REFRESHER:** Annual (8 Hour)	●	●	●	●
8-Hour OSHA Management and Supervisor Training (29 CFR 1910.120(e)(4)) **INITIAL:** Employee cannot perform any field activities until training completed. **REFRESHER:** Annual	●			●
DOT Hazardous Material Training (49 CFR 172.704) **INITIAL:** Within 90 days of assignment to position. Must be supervised by trained employee prior to completion. **REFRESHER:** Every 3 years	●	●	●	●
RCRA Training (40 CFR 264.16) Training **INITIAL:** Within 6 months of assignment to position. Must be supervised by trained employee prior to completion. **REFRESHER:** Annual	●	●	●	●

[1] Refer to Table X – Hazardous Waste Employee Job Descriptions for additional information

Content of the Training Program

See Table C-3 for training descriptions by required training type and regulation.

At a minimum, the training program must be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including:

- Incident action plan elements and planning, along with tabletop exercise
- Incident command system
- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment
- Key parameters for automatic waste feed cut-off systems
- Communications or alarm systems
- Response to fires or explosions

- Response to groundwater contamination incidents
- Shutdown of operations

TABLE C-3 – TRAINING DESCRIPTION

Training Type	Frequency	Training Description
40-Hour Hazardous Waste Operations and Emergency Response (29 CFR1910.120(e)(1))	**INITIAL:** Employee cannot perform any field activities until training completed **REFRESHER:** Annual (8 hour)	- Personnel/Alternates Responsible for Site Safety and Health - Safety, Health and Other Hazards Present - Use of Labeling and SDSs - Use of Personal Protective Equipment - Work Practices by Which Employee Can Minimize Risks From Hazards - Safe Use of Engineering Controls and Equipment - Medical Surveillance Requirements Including Recognition of Symptoms and Signs which might indicate over exposure to hazards - Decontamination Procedures - Emergency Response Plan - Confined Space Entry - Spill Containment Program
8-Hour OSHA Management and Supervisor Training (29 CFR 1910.120(e)(4))	**INITIAL:** Employee cannot perform any field activities until training completed **REFRESHER:** Annual	- Safety and Health Program - Employee Training Program - Personal Protective Equipment Program - Spill Containment Program - Health Hazard Monitoring Procedure/Techniques
DOT Hazardous Material Training (49 CFR 172.704)	**INITIAL:** Within 90 days of assignment to position and must be supervised by trained employee until training completed **REFRESHER:** Every 3 years	-General Awareness /Familiarization Training -Function Specific Training -Safety Training -Security Awareness Training
RCRA Training (40 CFR 264.16)	**INITIAL:** Within 6 months of assignment to position and must be supervised by trained employee until training completed **REFRESHER**: Annual	-Accumulation -Container/Tank Management -Hazardous Waste Regulations -Inspections -Making Waste Determinations -Pre-transportation (Manifests/Labels) -Properties of Facility Wastes -Reporting and Recordkeeping -Waste Minimization -Waste Packaging -Communications, Alarms, and Evacuation Routes -Contingency Plan Implementation/Emergency Response Procedures -Emergency Equipment Use, Inspection, and Repair -Response to Fire, Explosion, and Ground Water Contamination Incidents -Site Shutdown Procedures

Initial Training

Facility personnel must successfully complete an initial Occupational Safety and Health Administration (OSHA) training program prior to engaging in duties involving HW. The OSHA training as required by 29 CFR 1910.120(e) includes instruction in safety, waste handling, and emergency response.

Initial Resource Conservation and Recovery Act (RCRA) training mandated by 40 CFR 264.16 for HW facility personnel is required within 6 months after the date of employment or assignment to a new position at the facility. RCRA training focuses on emergency response, inspections, and the use and maintenance of communications, monitoring, and emergency equipment.

U.S. Department of Transportation (DOT) training mandated by 49 CFR 172.704 is required for HW personnel within 90 days after employment or a change in job function occurs. DOT training focuses on the use of material emergency response information, proper waste handling procedures, waste container packaging, marking, and labeling and security awareness.

Continuing Training

All facility personnel must take part in an annual review of the initial training program outlined in the previous section. In addition, personnel may attend outside training courses related to waste management. These courses may be sponsored by military or non-military agencies or by independent contractors. The courses should be attended at the discretion of individual command management to maintain the most effective level of waste management possible at the facility. It is the responsibility of the designated Training Director(s) to maintain compliance with all applicable training requirements as specified in Table C-2.

Record Keeping

Hazardous Waste Storage Facility management personnel must maintain the following training documents and records:

- Job title for each position related to waste management and the name of the employee filling that job, and date of employment in current position
- A written job description for each position including required skills, education, qualifications, and the duties assigned to each position
- A written description of the type and amount of both introductory and continuing training required and completed by the person filling each position

Training records on current NAS Corpus Christi Hazardous Waste personnel must be kept until closure of the facility. Training records on former employees will be kept for at least 3 years from the date the employee last worked at the facility or until facility closure, whichever comes first.

Part B
Attachment D
Inspection Log Form

Hazardous Waste Storage Facility Daily Inspection Form

US Department of the Navy Naval Air Station Corpus Christi Hazardous Waste Permit No. 50038	Inspecting Official: _____ Signature: _____ Date: Time:

Initial Applicable Blocks Below. Explain any Negative findings in Box 12.

1. Inventory generated? _____ Yes _____ No
2. Physical inventory performed? _____ Yes _____ No
3. Errors in inventory vs. physical? _____Yes _____No
4. All containers have TCEQ #'s marked? _____ Yes _____ No
5. All TCEQ waste numbers are permitted? _____Yes _____No
6. Loading and unloading areas free of spills/stains? _____ Yes _____ No
7. Floors free of spills/stains? _____ Yes _____ No
8. Number of containers in storage:

55 gal x _____= _____ 30 gal x _____= _____ 5 gal x _____ = _____ IBC 550 gal x _____= _____ IBC 300 gal x _____= _____ Triwall 202 gal x _____= _____	80% of Maximum Capacity Limits 16,896 Total Gallons

9. Total Volume of waste in storage= _____Gallons
10. Have any capacity limits been reached? _____ Yes _____ No
11. Has 80% of any capacity limit been reached? _____Yes _____No

12. Description of Findings and Corrective Action steps and dates:

U.S. Department of the Navy, Naval Air Station Corpus Christi
Daily Inspection Form Instructions

1. Has an inventory been generated?
   Inventory to be obtained from management system.
   Inventory to include Bldg. #, Row, Container #, ASD, TCEQ #, Container type and size.
   Inventory to be filed with this document.
2. Is a physical inventory performed?
   Physical inventory shall be performed by NASCC Environmental Personnel.
   All required fields of the inventory shall be confirmed against container information.
3. Are there errors in system inventory vs. physical?
   Differences between HW Track and Physical Inventories will be noted on the system Inventory.
4. Do all containers have TCEQ #'s marked?
   Each container shall have a legible TCEQ # marked on its label.
5. Are all TCEQ numbers permitted for Hazardous Waste Storage Facility?
   Each TCEQ number listed on the system inventory and/or witnessed by the physical inventory shall be listed in Table IV.B of the HW Permit.
6. Are loading and unloading areas free of spills/stains?
7. Floors free of spills/stains?
8. Number of containers in storage:
   For any "other" containers, make note of container size, type and quantity in box.
   IBC Box includes 1 Cubic yard, Tri-wall "Wrangler" type boxes.
9. Total volume of waste in storage:
   Maximum container capacity shall be used to calculate Total Volume in Gallons.
   Both Solids and Liquids will be included in the Total Volume Calculation.
   For boxes use the following conversions: 1 Yd^3 = 202 gallons and 1 Ft^3 = 8 gallons.
10. Have any capacity limits been reached?
    Capacity limits are any combination of drums, boxes, and IBC totes not to exceed 21,120 Gallons Total.
11. Has 80% of any Capacity Limit been reached?
    If 80% of any capacity limit is reached, the NASCC HW Manager must be notified in writing immediately.
12. Description of Findings and Corrective Action steps and dates:
    All fields, including inspector name and signature, date and time must be completed.
    All deficiencies require a clear description of the problem.
    System inventories or other paperwork may be attached as explanations.
    Corrective Actions should be taken and documented immediately, including responsible person's name, date and time.

Part B
Attachment E
Emergency Procedures and Contingency Plan

The Hazardous Waste Storage Facility is located near the intersection of Crecy Street and D Avenue. During duty hours, environmental staff are located at the Hazardous Waste Storage Facility. In the event of an emergency, personnel will immediately:

a. Stop work.

b. Warn others in the area by the most expeditious means (e.g., pull manual pull down handle, horn, voice, telephone) and notify emergency coordinator located at Bldg. 259.

c. Evacuate personnel using the evacuation plan to a safe distance (Figure 2 illustrates the evacuation route and muster areas).

d. Notify the Regional Dispatch Center by dialing 911 and identify the location as NAS Corpus Christi with specific building number and street address. The Regional Dispatch Center is notified by dialing 911 on the NAS Corpus Christi communication system. The Regional Dispatch Center will then notify the NAS Corpus Christi Fire Department, who will mobilize as the First Responder to secure the area, contain the emergency, and ensure that health and safety of personnel in the immediate area are protected.

This Contingency Plan will be implemented under the following circumstances:

1. Fire/Explosion
   a. Fire causes release of a significant amount of toxic fumes.
   b. Fire spreads beyond area of ignition.
   c. Fire threatens offsite area.
   d. Firefighting agents result in contaminated runoff.
   e. Imminent threat of explosion exists.
2. Spills/Leaks
   a. Fire hazard exists due to spilled material.
   b. Toxic vapor/mist hazard exists.
   c. Groundwater or surface water may be threatened.
   d. Spill threatens property.
   e. Spill threatens navigable waters.

1. EMERGENCY COORDINATOR CONTACT INFORMATION

Primary:
John Phillips, Environmental Protection Specialist

Office: 361-961-3760; Cell: 210-667-0687

Alternate:
Tracy Faulkner, Environmental Protection Specialist
Office: 361-961-4089; Cell: 210-409-9935

The Emergency Coordinator is responsible for coordinating the emergency response measures in the event of an incident requiring implementation of this Contingency Plan. The Emergency Coordinator shall:

- Notify facility personnel and the appropriate government agencies about the incident.
- Identify the character, source, amount, and physical extent of any released materials.
- Assess possible direct and indirect hazardous effects to human health and the environment.
- Provide the appropriate authorities with information about the release. Such information includes time of incident, name and quantity of materials involved, extent of injuries, and resulting hazards to human health and the environment.
- During the emergency, take reasonable measures necessary so that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility or outside the facility.
- Immediately after the emergency, provide for treatment, storage, and/or disposal of recovered waste that results from the incident. Unless it can be shown by approved methods that the waste is not hazardous, it will be managed in accordance with RCRA requirements.
- Segregate waste generated by the incident that is treated, stored, or disposed of from incompatible waste at the Hazardous Waste Storage Facility.
- Clean emergency equipment listed in the contingency plan and check that it is fit for its intended use before operations are resumed. Notification that these activities have been achieved will be sent to the EPA regional administrator and state and local authorities.
- Monitor for leaks, pressure buildup or gas generation.
- Document contingency plan implementation in the operating record and provide a written report to the EPA Regional Administrator within 15 days per the requirements of 40 CFR 264.56(i).

The Emergency Coordinator is authorized to commit the resources needed to carry out this Contingency Plan.

Arrangements have been made to familiarize the NAS Corpus Christi Fire Department with the facility layout; properties of hazardous waste managed at the facility; possible injuries from fires, explosions, or releases of hazardous waste; facility personnel work areas; facility entrances; and evacuation routes.

A copy of this plan and any subsequent revisions are maintained at the facility and submitted to the NASCC Fire Department, NASCC Security, Spohn Hospital, and Doctor's Regional Hospital.

2. PLAN CHANGES

This plan will be reviewed periodically and after an incident that causes this plan to be implemented. Also, the plan will be reviewed and changed, if necessary, whenever:

- The facility permit is revised;
- The plan fails in an emergency;
- The facility changes - in its design, construction, operation, maintenance, or other circumstances - in a way that materially increases the potential, for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;
- The list of emergency coordinators changes; or
- The list of emergency equipment changes.

3. FIRE SAFETY PLAN

A. Equipment

The Hazardous Waste Storage Facility is equipped with a fire alarm and high-expansion foam fire suppression system. Safety equipment includes:

- Manual pull handles – north, south, and west walls of building east of each standard door.
- Foam system manual release/abort stations – north wall east of Bay 3B overhead door, and south wall west of Bay 4A overhead door.
- Heat and smoke detectors throughout.
- Four 10 pound ABC type fire extinguishers hung on the north and south walls inside the building.
- Knox Box recessed emergency responder key boxes located on the north outside wall of the building, east of the equipment storage bay door and on the south outside wall, west of the fire suppression equipment bay door.

Safety equipment locations are provided in Figure 1.

Emergency response is initiated by smoke or heat detection or manually at a pull down station or foam system manual release station. When activated, the alarm system will sound a building alarm (horn and white strobe, and 30 second pre-discharge blue beacon). The alarm system contacts base central station, closes overhead doors and ventilation louvers, and starts foam flow after a 30 second warning.

A wind sock is located at the north end of the Hazardous Waste Storage Facility.

B. Building Construction

The frame of the building is constructed with concrete masonry walls, steel exterior wall panels, and a pre-engineered steel structure. Two-hour rated fire walls are provided in two locations: between the permitted bays of the building and the remainder of the building; and along the inside walls of the southwest fire suppression bay. The electrical/compressor room in the back of the northwest equipment storage bay has a one-hour rated fire wall.

The north and south outside walls of the building each have three overhead coiling doors and one standard flush panel door. The roof is constructed with metal roof panels. The floor is impervious concrete and slightly pitched so spills flow towards sumps located along the back wall and along the entrance to each storage bay.

C. Evacuation Procedures

1. Individual who identifies a fire within the Hazardous Waste Storage Facility should try to extinguisher the fire using a fire extinguisher, unless immediate danger to health is present. IF IMMEDIATE DANGER TO LIFE IS PRESENT, EVACUATE.
2. Identifying Individual will pull the handle at a manual pull down station while evacuating the Hazardous Waste Storage Facility.
3. Identifying Individual will notify employees and Emergency Coordinator of a fire in the Hazardous Waste Storage Facility and all employees will evacuate the facility.
4. Route of evacuation will be upwind from the Hazardous Waste Storage Facility and be determined by wind direction. Several safe staging areas have been identified (Figure 2).
5. Conduct a head count of all employees assigned to the facility and remain at the safe staging area until accountability is complete.
6. Notify the Regional Dispatch Center by dialing 911 and identify the location as NAS Corpus Christi with specific building number and street address. The Regional Dispatch Center is notified by dialing 911 on the NAS Corpus Christi communication system. The Regional Dispatch Center will then notify the NAS Corpus Christi Fire Department, who will mobilize as the First Responder to secure the area, contain the emergency, and ensure that health and safety of personnel in the immediate area are protected.

4. EXPLOSION PLAN

A. Evacuation Procedures

1. Individual who identifies an explosion within the Hazardous Waste Storage Facility will pull the handle at a manual pull down station while evacuating the Hazardous Waste Storage Facility.
2. Identifying Individual will notify employees and Emergency Coordinator of an explosion in the Hazardous Waste Storage Facility and all employees will evacuate the facility.
3. Route of evacuation will be upwind from the Hazardous Waste Storage Facility and be determined by wind direction. Several safe staging areas have been identified (Figure 2).
4. Conduct a head count of all employees assigned to the facility and remain at the safe staging area until accountability is complete.
5. Notify the Regional Dispatch Center by dialing 911 and identify the location as NAS Corpus Christi with specific building number and street address. The Regional Dispatch Center is notified by dialing 911 on the NAS Corpus Christi communication system. The Regional Dispatch Center will then notify the NAS Corpus Christi Fire Department, who will mobilize as the First Responder to secure the area, contain the emergency, and ensure that health and safety of personnel in the immediate area are protected.

5. SPILL RESPONSE PLAN

A. Spill Response Equipment

Hazardous Waste Storage Facility will have two general purpose spill kits located inside the facility.

B. Decontamination Equipment

Emergency shower and eye wash stations are located at the northwest corner of the building and on the south side wall near Bay 3A. Fire Department personnel have separate decontamination equipment which is transported on site by Fire Department personnel.

C. Building Construction

The frame of the building is constructed with concrete masonry walls, steel exterior wall panels, and a pre-engineered steel structure. Two-hour rated fire walls are provided in two locations: between the permitted bays of the building and the remainder of the building; and along the inside walls of the southwest fire suppression bay. The electrical/compressor room in the back of the northwest equipment storage bay has a one-hour rated fire wall.

The north and south outside walls of the building each have three overhead coiling doors and one standard flush panel door. The roof is constructed with metal roof panels. The floor is impervious concrete and slightly pitched so spills flow towards sumps located along the back wall and along the entrance to each storage bay.

D. Evacuation Procedures

1. Individual who identifies a spill within the Hazardous Waste Storage Facility should try to contain the spill, unless immediate danger to life/health is present. IF IMMEDIATE DANGER TO LIFE/HEALTH IS PRESENT, EVACUATE.
2. Identifying individual will pull the handle at a manual pull down station while evacuating the Hazardous Waste Storage Facility.
3. Identifying Individual will notify employees and Emergency Coordinator of a spill in the Hazardous Waste Storage Facility and all employees will evacuate the facility.
4. Route of evacuation will be upwind from the Hazardous Waste Storage Facility and be determined by wind direction. Several safe staging areas have been identified (Figure 2).
5. Conduct a head count of all employees assigned to the facility and remain at the safe staging area until accountability is complete.
6. Notify the Regional Dispatch Center by dialing 911 and identify the location as NAS Corpus Christi with specific building number and street address. The Regional Dispatch Center is notified by dialing 911 on the NAS Corpus Christi communication system. The Regional Dispatch Center will then notify the NAS Corpus Christi Fire Department, who will mobilize as the First Responder to secure the area, contain the emergency, and ensure that health and safety of personnel in the immediate area are protected.

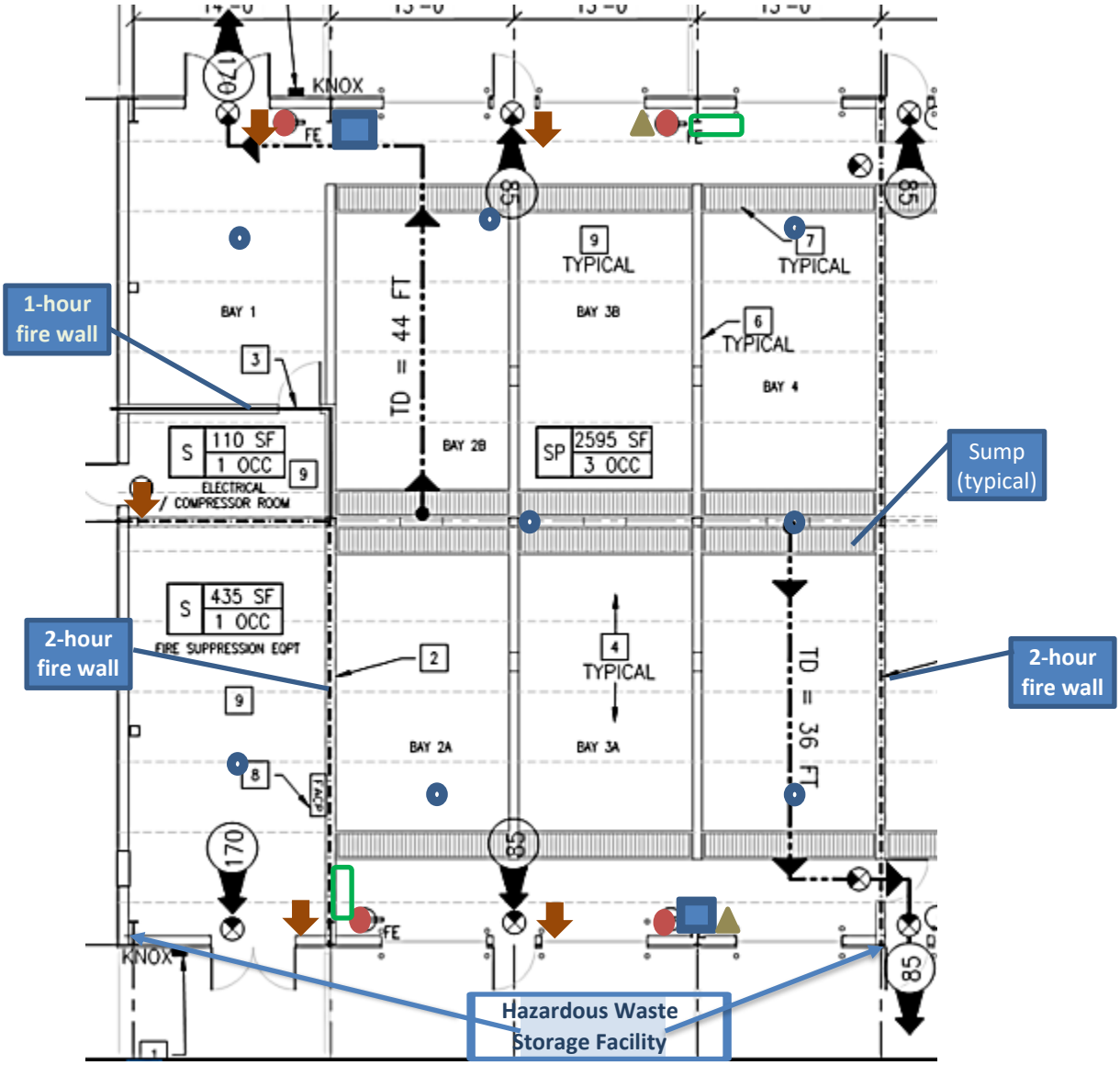
6. STORAGE AND TREATMENT OF RELEASED MATERIAL

The Emergency Coordinator will monitor for leaks and direct the cleanup, containerization, and storage of all spilled material, wastewater, cleanup debris, and contaminated media. The primary methods in use for cleanup involve the application of absorbent materials to absorb spill materials, use of shovels or gloved hands to pick up and containerize the used absorbent, use of brooms and mops for cleaning of floors, and applying water and surfactant as necessary for interior spills.

Following the containerization of wastes, incompatible wastes will be segregated and temporarily stored pending any required laboratory analysis or characterization. All waste materials will be disposed offsite by a properly permitted facility based on the results of waste characterization. Depending on the results of analysis and approval of the plant engineer, recovered water may be evaluated for disposal at a wastewater treatment facility.

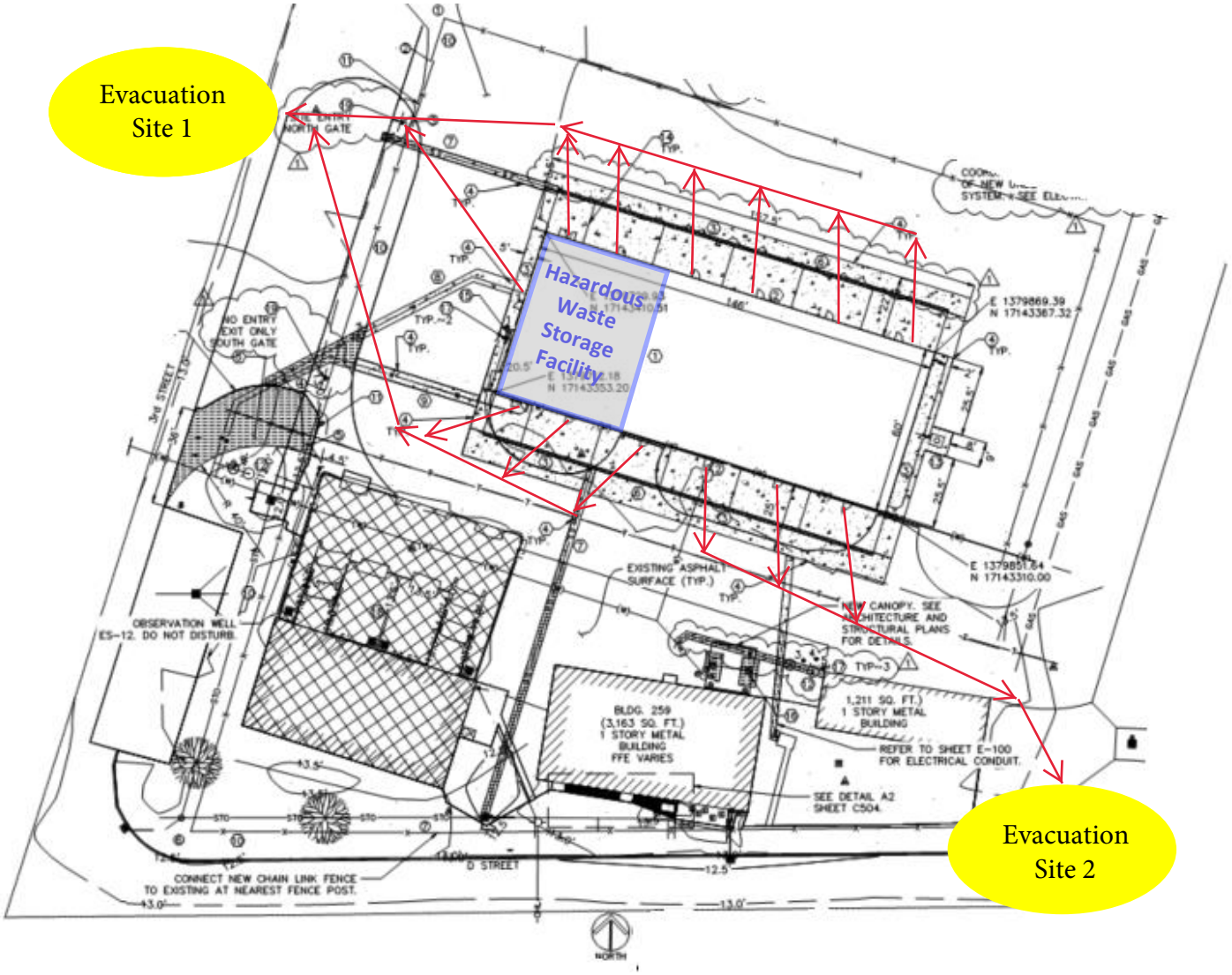
Hazardous wastes are not stored or handled over the soil surface surrounding the Hazardous Waste Storage Facility, so soil contamination around the building is not likely. However, should unprotected soil become contaminated it will be promptly removed to prevent the migration of hazardous constituents to groundwater.

FIGURE 1: LOCATION OF SAFETY EQUIPMENT and EGRESS ROUTES in HAZARDOUS WASTE STORAGE FACILITY



LEGEND	
	Shower/Eye Wash Station
	Fire Extinguisher
	Manual Pull-Down Station
	Foam System Manual Release /Abort Station
	Heat/Smoke Detector
KNOX	Knox Key Box
	Spill Equipment
	Egress Route

FIGURE 2: EVACUATION ROUTES AND MUSTER AREAS for the HAZARDOUS WASTE STORAGE FACILITY



LEGEND

→ Exit Route

Part B
Attachment F
Waste Analysis Plan

Waste Analysis Plan

Purpose and Introduction

This Waste Analysis Plan describes the sampling and analytical procedures which will be followed by the Naval Air Station Corpus Christi (NASCC) Environmental at NAS Corpus Christi to identify the hazardous wastes produced at the station as required to ensure their management in an environmentally appropriate manner.

The plan has been developed to comply with Federal regulations contained in 40 CFR 264.13 and State regulations in 30 TAC 335.501 - 335.515 and updated based on EPA's Federal Guidance on Waste Analysis Plans (April, 2015). These regulations require a detailed initial chemical and physical analysis of a representative sample of waste to facilitate proper treatment, storage, and disposal of the waste. The regulations require that the detailed analyses be repeated as necessary to ensure that the waste characteristics remain accurately described and current with any process changes.

Waste Acceptance and Characterization Processes

This section describes the rationale and criteria used to characterize and accept each waste stream from onsite generators and to manage these wastes appropriately within the permitted storage facility.

Initial Waste Characterization: The Waste Identification Form (Figure WAP-1) is used to provide the following information on the wastes handled at NAS Corpus Christi:

- Generator information
- Source of waste generation
- Process generating waste
- Estimated quantity, in pounds, of waste generated annually
- Area where the waste is generated and initially stored
- Physical characteristics
- Chemical composition of waste

The information presented on the Waste Identification Form is based on visual observation and knowledge of the processes generating the waste. The form is maintained by the generator of the waste and NASCC Environmental. The updated form will be submitted to NASCC Environmental by the generating department or activity annually or whenever the process generating the waste stream changes.

Hazardous Waste Determination: A person who generates a solid waste must determine if that waste is hazardous using the following method:

- Determine if the material is excluded from being a solid waste or hazardous waste per TAC 335.1.
- If the material is a solid waste, determine if the waste is listed as, or mixed with, or derived from a listed hazardous waste identified in 40 CFR 261, Subpart D.
- If the material is a solid waste, determine whether the waste exhibits any characteristic of a hazardous waste as identified in 40 CFR 261, Subpart C.

Figure WAP-1

A. GENERAL INFORMATION			
Command / Activity:		Building No:	
Work Center/Shop:		Work Center Phone No.:	
Work Center Contact (Name):		Email address:	
Waste Stream Name:			
B. PROCESS INFORMATION	☐ New Process	☐ Process Change	☐ Process Review
Process Description (include any storage requirements):			
Physical Property of Waste:	☐ Solid	☐ Liquid	☐ Gas ☐ Other: _____
Generation Rate: **200** **Units:** ☐ Gallons OR ☐ Pounds		**Rate:** ☐ Month OR ☒ Year	

MATERIAL(S) used in the process

Material Name (include NSN if available)	**Range or Concentration**	**MSDS No.**

C. EXEMPTIONS AND EXCLUSIONS		
1. Is the waste a "solid waste" according to §CFR 261.2?	☐ Yes	☐ No
If no, provide the regulatory exclusion or exemption citation.		
If No, A HW CHARACTERIZATION IS NOT REQUIRED - SKIP TO SECTION F		
2. Is the waste a solid waste excluded or exempted from hazardous waste regulations?	☐ Yes	☐ No

C. EXEMPTIONS AND EXCLUSIONS continued		
If yes, provide the regulatory citation and justification:		
If Yes, A HW CHARACTERIZATION IS NOT REQUIRED - SKIP TO SECTION F		
3. Is this Used Oil **OR** an off specification petroleum fuel managed under §CFR 279?	☐ Yes	☐ No
If Yes, A HW CHARACTERIZATION IS NOT REQUIRED - SKIP TO SECTION F		
4. Is the waste a Universal Waste managed under §CFR 273?	☐ Yes	☐ No
If Yes, A HW CHARACTERIZATION IS NOT REQUIRED - SKIP TO SECTION F		

D. HAZARDOUS WASTE CHARACTERIZATION		
Based on: ☒ User Knowledge ☒ Analytical	Sample ID: WSMPL-MS-15-	
	Analytical Date: 9/15/15	
LISTED HAZARDOUS WASTE		
Is this an **F-listed** waste?	☐ Yes	☐ No
1. Are solvents listed 40 CFR 261.31 (a) present at 10% or more and used as a solvent? If yes, identify the solvents.	☐ Yes	☐ No
Solvent:	Percent Before Use:	**Waste Code:**
Solvent:	Percent Before Use:	**Waste Code:**
Solvent:	Percent Before Use:	**Waste Code:**
1a. Is this an F-listed waste from a specific process? If yes, identify the process.	☐ Yes	☐ No
		Waste Code:
2. Is this a **K-listed** waste from a specific source as listed in §261.32?	☐ Yes	☐ No
If yes, what is the process?		**Waste Code:**
3. Is this a **P-listed** commercial chemical product; (i.e. a pure chemical or sole active ingredient) listed in §261.33(e)?	☐ Yes	☐ No
Provide the name of the listed chemical and its CAS number:		**Waste Code:**
4. Is this a **U-listed** commercial chemical product; (i.e. a pure chemical or sole active ingredient) listed in §261.33(f)?	☐ Yes	☐ No
Provide the name of the listed chemical and its CAS number:		**Waste Code:**
Generators must determine if a waste exhibits any of the characteristics of a HW.		
HAZARDOUS WASTE CHARACTERISTICS		
Is the waste Ignitable per §261.21? **D001**	**Waste Code**:	☐ Yes ☐ No

1. Is the waste a liquid with a flash point less than 140°F? **Flash Point:**	☐ Yes	☐ No
2. Is the waste a **non-liquid** capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture, or spontaneous chemical changes; and when ignited, burns so vigorously and persistently that it creates a hazard?	☐ Yes	☐ No
3. Is the waste an ignitable compressed gas as defined in 49 CFR 173.300?	☐ Yes	☐ No
4. Is the waste an oxidizer as defined by 49 CFR 173.151 (such as a chlorate or peroxide)?	☐ Yes	☐ No
Is the waste Corrosive per §261.22? **Waste Code**: **D002**	☐ Yes	☐ No
1. Is the waste an aqueous solution with a pH ≤ to 2 or ≥ 12.5?	☐ Yes	☐ No
2. Is the waste a liquid that corrodes steel at a rate of at least 0.25 inches per year?	☐ Yes	☐ No
Is the waste Reactive per §261.23? **Waste Code**: **D003**	☐ Yes	☐ No
1. Is the waste normally unstable and readily undergoes violent change without detonating?	☐ Yes	☐ No
2. **Water Reactive**: Does the waste react violently with water? **OR** Forms potentially explosive mixture with water? **OR** When mixed with water does the waste generate toxic gases, vapors, or fumes in a quantity dangerous to human health or the environment?	☐ Yes	☐ No
3. Is the waste a cyanide or sulfide compound that could react at a pH between 2 and 12.5 releasing toxic gases?	☐ Yes	☐ No
4. Is the waste capable of detonation or explosive reaction if subjected to strong ignition sources or when heated under confinement?	☐ Yes	☐ No
5. Is the waste readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure?	☐ Yes	☐ No
6. Is the waste a forbidden, Class A, **or** Class B explosive as defined in 49 CFR 173.51, 173.53 or 173.88?	☐ Yes	☐ No
Is the waste Toxic per §261.24? **Waste code(s): D004-D043**	☐ Yes	☐ No
Is the waste a characteristic waste?	☐ Yes	☐ No

E. TREATMENT AND DISPOSAL REQUIREMENTS

1. Is the waste	☐ Recycled (Includes UW)? ☐ Non hazardous?	☐ Burned for Energy Recovery (Includes Used oil)? ☐ Discharged to CWA regulated unit?

If non Hazardous / Recycled (includes UW) or* Burned for Energy Recovery *Skip to Section F

2. Is the required one time LDR completed for HW discharged to a CWA unit?	☐ NA	☐ Yes	☐ No
3. Is an exemption claimed from Land Disposal Restrictions (LDR), §268?		☐ Yes	☐ No

If ***yes***, explain and cite the exemption:

Treatment Group: ☐ Wastewater (Contains <1% Total Organic Compounds and <1.0% Suspended Solids)

☐ Non-wastewater (Not Wastewater)

EPA Code	Constituent	Concentration (Toxicity Characteristic Only)	Regulatory Limit	Subcategory	LDR Treatment Standard (from §268.40)

UHCs apply only to characteristic HW (UHCs requirements do not apply to high TOC Ignitable only waste)

4. Are there any Underlying Hazardous Constituents (UHC)? (**Characteristic Waste Only)**	☐ Yes	☐ No

Constituent	Universal Treatment Standard (from §268.48)		Constituent	Universal Treatment Standard (from §268.48)

F. WASTESTREAM SUMMARY

Waste Stream Name:

Waste Profile Number and Name:

Shipping Information:

Emergency Guide Book Number:	Emergency Guide Year:

EPA Waste Codes:

Comments:

Signature of HW Program Manager Date

Waste Classification

All industrial solid and municipal hazardous waste generated, stored, processed, transported or disposed of in the state shall be classified according to the provisions of TAC 335, Subchapter R.

Waste Classification (A). All industrial solid and municipal waste shall be classified as either:

- Hazardous
- Class 1
- Class 2
- Class 3

Waste Classification (B). The generator of a solid waste shall first determine if that waste is hazardous pursuant to TAC 335.504 (relating to Hazardous Waste Determination).

Waste Classification (C). After making the hazardous waste determination as required by TAC 335.504, if the waste is determined to be nonhazardous, the generator shall then classify the waste as Class 1, Class 2, or Class 3, pursuant to TAC 335.505 - 335.507 using one of the following methods:

- Use the criteria for waste classification as provided in TAC 335.505 - 335.507.
- Use process knowledge as provided in TAC 335.511 (relating to Use of Process Knowledge).
- Classify the waste as directed under TAC 335.508 (relating to Classification of Specific Industrial Waste).
- Choose to classify a nonhazardous waste as Class 1 without any analysis to support that classification. However, documentation is necessary to classify a waste as Class 2 or Class 3.

Waste Analysis, Waste Sampling Strategies, Analytical Test Methods, Analytical Quality Assurance, and Sampling Procedures/Frequencies

This section describes how waste analysis will be performed, how NASCC Environmental selects the appropriate analysis and sampling procedures, and the process for determining both initial sampling frequency and subsequent waste re-evaluation.

Waste Analysis: Waste analysis will be conducted or directed by NASCC Environmental to characterize each waste adequately for prudent management. The waste generator will initiate a Waste Identification Form (Figure WAP-1), which provides a physical description and serves as a request for analysis. The following three levels of waste analysis are in use:

- Initial characterization and analysis
- Periodic partial analysis and re-evaluation
- Detailed analysis for specific components

Sampling Strategy for Initial Characterization and Analysis of Frequently Generated Wastes: Unless process knowledge, Safety Data Sheet (SDS) information, waste history, and/or product specification is sufficient to properly identify waste, each frequently generated waste will be subjected to an initial analysis the first time that its disposal is requested to meet all data requirements of Federal and State regulations. The parameters for the initial analysis, along with their rationale for selection, are listed in Table 1-1. The analytical methods listed in Table 1-1 (or alternate methods approved by NASCC Environmental) shall be used by the laboratory to quantify the selected analytical parameters.

Table 1-1: Waste Analysis Parameters and Analytical Methods					
Physical Characteristic or Parameter	**Liquid**	**Sludge**	**Solid**	**Method**	**Rationale for Selection**
Color	X	X	X	Visual	
Layers	X	X		Visual	
Physical State	X	X	X	Visual	
Density or Specific Gravity	X	X	X	D1298 (ASTM)	
pH	X	X		150.1 (EPA-600)	Indicator of corrosivity
pH (1:1 in water) or (1% in water)			X	9040/9045 (SW-846)	Indicator of corrosivity. If required by waste acceptor
Flashpoint	X	X		EPA 1010	Ignitability
Toxic Characteristic Leaching Procedure (TCLP) for Metals*, Volatiles, and Semi- volatiles	X	X	X	1311, 6010, 7060A, 7470, 7421, 7080A, 7741, 8270, 8260 (SW-846)	Toxicity characteristic; TCLP required for two (2) phase liquids
Total Organic Halogens TOX (Aqueous)	X	X	X	9022 (SW-846) 9020 (SW-846)	Measure of halocarbon content
Reactivity† Sulfide Cyanide	X	X	X	9010 9030 (SW-846)	Potential for release of toxic fumes; for solid wastes, required only on alkaline wastes
Total Metals*	X	X	X	200/7000 Series (SW-846)	Toxicity characteristic
Total Nickel (Ni) and Thallium (Th)	X	X		6010 (SW-846)	Measure for Land ban quantity
Total Organic Carbon (TOC)	X			EPA 415.1 9063 (SW-846)	Total Organic Carbon
Dry Weight	X	X		31 TAC 335.332	Measure of total solids
BTUs	X	X		For recycling as fuel	For recycling as fuel
Reid Vapor Pressure Test	X			ASTMD-519 (EPA-600)	To determine DOT Packing Group
Free Cyanides	X				To provide information necessary for possible deep well
Total Cyanide	X			EPA 335.2	
Paint Filter Test		X	X	9095A (SW-846)	Free liquid indicator; if a solid waste has any free
Total Suspended Solid	X			EPA 160.2	Wastewater or non-wastewater determination
Boiling Point	X			ASTM D-86	Determine PG for Class 3 material
Additional Items for Initial Waste Analysis					
Steel Corrosion (oil solution)	X			1110A Water (SW-846)	Indicator of corrosivity

Notes:

•Antimony (Sb), Arsenic (As), Barium (Ba), Beryllium (Be), Cadmium (Cd), Chromium (Cr), Lead (Pb), Mercury (Hg), Nickel (Ni); Selenium (Se), Silver (Ag), Thallium (Tl).

† These methods measure total cyanides and sulfides, respectively. It has been proposed that concentrations of 100 to 200 ppm of cyanide be considered possibly reactive, while greater than 250 ppm is definitely reactive. Wastes with a total releasable sulfides greater than or equal to 500 ppm, are considered hazardous waste.

References:

SW-846: BPA Test Method for Evaluating Solid Waste, Physical/Chemical Methods (most recent edition or equivalent of EPA approval)
ASTM: American Society for Testing and Materials
UOP: Universal Oil Providers Company

In addition, if insufficient information is available, initial aqueous waste samples may be subjected to the steel corrosion and DOT corrosivity tests outlined in 40 CFR 261.22(a)(2) and 49 CFR 173.136 and 173.137 to determine the appropriate type of storage container. Appropriate test methods include Method 1110 in EPA Publication SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," and NACE Standard TM-01-69.

Periodic Analysis of Frequently Generated Wastes: If warranted, periodic analysis will be conducted every 3 years. Analysis will also be conducted as follows:

- When the generator notifies NASCC, or NASCC has reason to believe that the process or operation generating the hazardous wastes has changed.
- When the gross physical properties of the waste stream are observed to be different during the course of handling.
- As required by the disposal facility.
- As requested by NASCC Environmental to verify waste certification.

One third of recurring waste streams will be sampled annually resulting in every recurring waste stream being sampled every three years, unless it is a user knowledge profile.

The parameters for the periodic analysis are generally the same as those for the initial analysis. However, the DOT corrosivity analysis may not be required. The parameters for the periodic analysis are repeated in Table 1-1. The periodic analysis concentrates on gross properties of the waste and characteristic hazards as found in 40 CFR 261, including corrosivity, reactivity, ignitability, and toxicity, and in 49 CFR 172 and 173 for the determination of hazard class.

Sampling Strategy for Detailed Analysis of Frequently Generated Wastes: The detailed analysis is a directed analysis for specific volatile, or halocarbon or other compounds present in many NAS Corpus Christi wastes. The detailed analysis will be performed if any one of the following conditions is met:

- An initial analysis for Total Organic Halogens (TOX) indicates that the waste is greater than or equal to
- 1,000 parts per million (0.1 percent) halogen.
- A periodic analysis for TOX indicates the waste is greater than 1,000 parts per million (0.1 percent)
- halogen.
- It is known or suspected that a PCB-containing waste has been introduced.
- For potential reclassification to Class II waste.
- The disposal facility requires additional information.
- The flash point is less than or equal to 140 degrees Fahrenheit (60° C) and low flash constituents have not been declared through generator knowledge.
- Specific analysis is required to comply with the Land Disposal Restrictions (LDR) given in 40 CFR 268.

Based on the process, the identified substances are those which are expected to appear in the wastes, since no others are introduced as process reagents. For the same reason, the waste streams are not expected to contain dioxins. Analysis for this class of compounds will not be performed unless expressly required by the off-site waste disposal facility.

Land Disposal Restricted Waste: Hazardous waste that is to be land disposed has special analytical requirements. Adequate analysis or process knowledge is required to provide a generator certification that the waste complies with the LDRs in 40 CFR 268.40. Specific analysis is required based on EPA waste code.

Sampling Strategy for Infrequently Generated Wastes: Wastes that are generated infrequently, new wastes that are expected to be generated only once, or waste residuals in containers will undergo initial waste characterization each time they are generated. In these cases, waste characterization will depend primarily

on the knowledge of personnel from the generating department or command. When such a waste is generated, department or command personnel will fill out the Waste Identification Form and submit it to NASCC Environmental. Personnel will indicate on the form that this is a one-time-only or infrequently generated waste, or a waste residual in a container. A current SDS or other pertinent data will be submitted, along with a description of the waste and any potential hazards associated with the waste.

If NASCC Environmental determines that enough is known of the waste based on the above description and consultation with generating department or command personnel, transportation of the waste to the appropriate accumulation area will be authorized. Wastes that are shipped off-site may need to be analyzed for all parameters or, if sufficient information is available through SDSs or other sources, NASCC Environmental personnel may use "Process Knowledge" to characterize the waste for the receiving disposal facility. NASCC Environmental personnel in consultation with generating department or command personnel will determine the appropriate parameters for analysis.

Unknown Waste Analysis:

Occasionally there may be containers of unidentifiable waste at NAS Corpus Christi. The waste may be unknown due to loss of container markings or to other causes. The following procedures should be followed by the Hazardous Waste Program Manager to classify the waste as a hazardous or industrial waste. Extreme caution will be used when handling unknown waste. Unknowns will be considered hazardous waste until proven otherwise. The following steps will be taken to identify unknown wastes:

1. Marks on the container will be recorded, particularly NSN, product, name, or chemical name.
2. If a NSN is found, the NSN will be located in the Hazardous Material Information System (HMIS) database. The database record should detail specific information (color, appearance, pH, and specific gravity), which would be compared to the unknown material. This may eliminate the need for chemical analysis. For instance, if the data records indicate the material should have a pH of 4.0 and a specific gravity of 1.3, a laboratory can inexpensively and quickly check these parameters. If they match, then the unknown should be considered to be the same as the NSN on the drum. If no NSN is present, but a product name is located on the drum, the same procedure will be used to cross-reference the product to the HMIS. If the material can be reasonably identified based on physical characteristics (i.e., color or matrix) or location of the container (i.e., unmarked container was found with other like containers that are properly labeled), then waste sampling may not need to be performed. If only a chemical name is present, information on chemicals can be found in a chemical reference book
3. If in Step 2 the waste was identified to be the same as the drum markings, the HMIS or other sources will be used to decide the following (a yes answer to any one question means the waste is hazardous waste):
    - Is the pH less than 2.0?
    - Is the pH greater than 12.5?
    - Is the flashpoint less than 140°F?
    - Is the waste an oxidizer?
    - Does the waste react violently with water?
    - Does the waste contain arsenic, barium, cadmium, chromium, lead, mercury, selenium, or silver? (Laboratory tests may be needed for TCLP to determine whether waste is hazardous.)
    - Is the waste generated from any process in 40 CFR 261.31 or 261.32?
    - Is the waste a pure form of any chemical listed in 40 CFR 261.33?

4. If the waste does not match the container markings, the container will undergo a series of qualitative tests to assess appearance, physical state, homogeneity, color, pH, and miscibility. A preliminary Texas waste code will be assigned to the container based on qualitative results. The container will be marked with an accumulation start date and managed in a less-than-90 day accumulation area authorized for that waste code. A “Hazardous Waste, Analysis Pending" label will be attached. Waste will be characterized per the procedures described in this section before placing inside the permitted Hazardous Waste Storage Facility. The waste will be sampled and analyzed to determine if it is hazardous. A certified lab will be used to analyze the waste by conducting the standard EPA SW-846 test methods for ignitability, corrosivity, and toxicity. There is currently no standard EPA test method for reactivity. If the waste exceeds the regulatory thresholds for one or more of the characteristic tests, it is a hazardous waste. If the analytical results indicate the waste does not exceed the regulatory thresholds, the waste is classified as industrial waste.

5. For containers that contain residues of unknown materials that are considered “RCRA empty” per 40 CFR 261.7, the analytical protocol will consist of:
    - A check for DOT hazardous material definitions of flammability and corrosivity.
6. For containers with residues of unknown materials that are **NOT** considered “RCRA empty” per 40 CFR 261.7, the analytical protocol is:
    - A test for the four EPA characteristics of hazardous waste (ignitability, corrosivity, reactivity, and toxicity).
    - A test for DOT hazardous material definitions of flammability and corrosivity.

It is possible that additional tests may be required for some waste. For instance, a check for polychlorinated biphenyls (PCBs) may be necessary on unknown oily waste before disposal. Testing may be reduced based on reasonable knowledge that one or more parameters are not relevant to the waste stream. In either case, the rationale for additional or reduced testing, from that described above, will be documented in a waste stream determination.

Analytical Methods: Table 1-1 summarizes the analytical methods to be used to develop the data required for the listed parameters.

Analytical Quality Assurances: The quality of the waste analyses will be assured by performing appropriate laboratory testing procedures. NASCC Environmental will ensure that the laboratory performing the analyses follows the quality control (QC) procedures listed below:

- Use EPA-approved sample preparation and analytical methods, as specified by the procedures listed in the table.
- Calibrate laboratory instruments to within acceptable limits according to EPA's or manufacturer's specifications before, after, and during use (reference standards must be used when necessary).
- Conduct periodic inspection, maintenance, and servicing of all laboratory instruments and equipment.
- Use reference standards and QC samples (e.g., checks, spikes, laboratory blanks, duplicates, splits) as necessary to determine the accuracy and precision of procedures, instruments, and operators.
- Use adequate statistical procedures, such as QC charts, to monitor the precision and accuracy of the data and to establish acceptable limits.
- Continuously review results to identify and correct problems within the measurement system (e.g., instrumentation problems, inadequate operator training, inaccurate measurement techniques).

- Document the performance of systems and operators.
- Regularly participate in laboratory evaluations such as the EPA Performance Audit Program to determine the accuracy and overall performance of the laboratory.
- Maintain and store complete records, charts, and logs of all pertinent laboratory calibration, analytical and QC activities, and data.
- Ensure all data outputs are presented in the prescribed format.

Sampling Procedures: Many waste streams are heterogeneous. Care must be taken to obtain a representative sample. Samples will be taken from drums and portable tanks once they are designated for disposal.

Sampling Liquid Wastes: Liquid waste samples will be obtained by using an EPA-approved method, such as a COLIWASA, as described in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846 3rd Edition. This device collects liquid throughout the depth of waste in a container. The COLIWASA is constructed of plastic or glass. It consists of a tube open at both ends and a solid rod that slides down the middle of the tube to plug the bottom opening. A glass COLIWASA should be used for sampling all waste streams except those that contain hydrofluoric acid and concentrated alkali solutions. Hydrofluoric acid and concentrated alkali solutions should be sampled using a plastic COLIWASA. The sample should be collected through the top of the drum or portable tank using the following procedure:

- Choose the plastic or glass COLIWASA for the liquid waste to be sampled.
- Clean the sampler before sampling, if necessary, using soap and water or an appropriate solvent.
- Put the sampler in the open position by pulling up on the solid rod.
- Lower the COLIWASA into the container slowly (at a rate where the level of the waste outside and inside the COLIWASA remain the same) to ensure that a representative sample is caught.
- After the COLIWASA reaches the bottom of the container, push the solid rod slowly downward to plug the opening on the bottom end of the tube.
- Slowly withdraw the sampler from the waste container with one hand while wiping the sampler tube with a disposable cloth or rag with the other hand, while continuing to press on the top end of the rod to keep the hole at the bottom plugged.
- Discharge the sample into a 1-liter glass or plastic (whichever is appropriate) sample bottle by pulling up on the rod while the lower end of the sampler tube is positioned in the sample container. Several grab samples may be required to fill a 1-liter sample bottle. A glass container with a Teflon-lined septum or cap may be required for samples anticipated to contain volatile organic compounds.
- For aqueous waste, collect 2 liters of sample as needed for analysis.
- Hydrocarbon samples shall be filled to the top to reduce loss of volatile vapors.
- After a 1-liter sample has been obtained, cap the sample bottle, attach a label as described in Section 6.6, and record appropriate information in the field logbook.
- After the sample of the waste stream has been collected, dispose of the COLIWASA in an approved satellite storage area or properly decontaminate.
- Deliver the sample to the laboratory for analysis along with a chain-of-custody form as described in the Chain-of-Custody and Sample Labeling Section below.

Sampling Frequencies for Multiple Containers: If there are a number of containers of the same waste stream, random containers will be sampled until a 1-liter composite sample is obtained. The number of containers to be sampled will be as indicated in Table 1-2.

Table 1-2: Number of Containers to be Sampled	
Containers in Lot	**Containers to be Sampled**
2–8	2
9–27	3
28–64	4
65–125	5
126–216	6

Sampling Solid Wastes: Solid or granular waste materials will be sampled using a scoop as described in SW-846. The scoop will be inserted at an angle from top to bottom into the container to remove a core sample of waste. The sample procedures for selecting the number of containers to be sampled is the same as described in Sampling Multiple Containers section above.

A 1-liter sample of solid waste will be collected in a glass or plastic bottle. Several grab samples may need to be composited to obtain the required amount. Be sure the scoop is clean before and after sampling to prevent contamination of samples.

Sampling Sludges: Sludge samples may be collected using either the COLIWASA method described in the Sampling Liquid Waste Section above or the scoop method described in Sampling Solid Waste Section above, depending on the consistency of the sludge waste stream.

Sample Preservation: Representative samples will be collected and handled by means that will preserve their original physical form and composition, as well as prevent outside contamination. Samples will be obtained under procedures consistent with 40 CFR 264.13. These procedures maintain sample quality during transport and holding times.

Chain-Of-Custody and Sample Labeling: Tracking the custody of samples is extremely important to ensure that correct and accurate analyses are done for each waste sample. The chain-of-custody form will accompany each sample submitted for analysis and the label that will be attached to each sample container. NASCC Environmental is responsible for completing the chain-of-custody form, shipping the samples, and receiving all data from the laboratory performing the sample analysis.

Sampling Quality Assurance: The quality of the sampling program has a direct bearing on how representative the samples are of the waste stream. In order to ensure sampling integrity, the procedures previously outlined will be strictly followed. A person thoroughly familiar with the sampling techniques will supervise sampling operations. Special care should be taken to ensure selection of an appropriate sampling device and to prevent cross-contamination of samples.

Recordkeeping

Land disposal restriction, waste determination, and analytical records will be maintained at the facility until closure of the facility.

Part B
Attachment G
Engineering Reports – Hazardous Waste Storage Facility

NAS Corpus Christi Hazardous Waste Storage Facility
Engineering Report Summary

1. Engineering Reports

All movement of hazardous waste within the Hazardous Waste Storage Facility will be performed with the palletized waste secured to a forklift (forklift is dedicated for the Hazardous Waste Storage Facility use only). Forklift access to the Hazardous Waste Storage Facility is via ramps to each bay from the surrounding paving. The ramps are continuous from the paving to the bay entrances on the north side and south side of the building.

Storm water run-on is prevented from entering the building by:
(1) elevated slab
(2) adjacent storm water control devices
(3) new Hazardous Waste Storage Facility roof and walls

Release of hazardous waste to the environment is primarily controlled by sumps located at the ends of each bay.

Fans and lighting in the Hazardous Waste Storage Facility are explosion proof. Sufficient aisle space is maintained in the Hazardous Waste Storage Facility to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment in an emergency.

Off-site disposal operations are directly managed by Hazardous Waste Storage Facility personnel, along with contractor support. Off-site disposal operations do not occur during adverse weather conditions, and these operations are restricted to mid-morning or mid-afternoon times so as to avoid heavy vehicular traffic. Traffic during mid-morning and mid-afternoon does not typically exceed 30 cars/light trucks per hour.

The off-site disposal vehicle will turn north on to Crecy Street from D Street and enter the site access north gate. The truck will park facing south on the asphalt road inside the gate and near the west side of the building. Upon completion of the off-site loading operation (including a pre-transport inspection), the off-site transport vehicle will exit through the exit-only south gate to Crecy Street and turn right to continue northward on Crecy Street to exit the installation. During off-site transport operations, vehicular traffic is restricted to 20 mph along Crecy Street.

2. General Engineering Reports

The Hazardous Waste Storage Facility plan view is located in this attachment. The Hazardous Waste Storage Facility is the only Part B permitted facility at NAS Corpus Christi. Incompatible, ignitable and reactive wastes are segregated and are not stored immediately adjacent to other waste types and a small berm is built around the base of each drum storing such waste and the berm is typically constructed of absorbent boom material.

3. Container Storage Areas

The Hazardous Waste Storage Facility has six bays and each bay has two sumps. The sumps are located across the entrance to each bay and along the back inside wall of each bay.

The building is completely enclosed and storm water run-on can neither enter nor collect in the secondary containment sumps. The Hazardous Waste Storage Facility foundation is elevated above ground level and accessed by ramps, eliminating storm water from entering the building.

Sump Containment System Capacity Calculations:

Dimensions:	2 feet x 2 feet x 12.33 feet (each)
Containment:	2 feet x 2 feet x 12.33 feet = 49.32 ft^3 49.32 ft^3 x 7.48 gallon /ft^3 = 368.91 gallons per sump 368.91 gallons x 2 = 737.82 gallons per bay 6 bays: 6 x 737.82 gallons = 4,426.92 gallons total secondary containment in sumps

Total Containment Capacity: 4,426.92 gallons

All waste containers in the new Hazardous Waste Storage Facility are required to be on pallets. This helps to ensure integrity of the waste containers and, in the event of a spill, would help mitigate the combining of incompatible wastes. If containers holding hazardous waste are not in good condition (e.g., severe rusting, apparent structural defects), or begin to leak, hazardous waste personnel will transfer the hazardous waste from containers in poor condition to other containers that are in good condition. Containers made of or lined with non-reactive materials and are otherwise compatible with the hazardous waste to be stored will be used. These precautions prevent reactions which:

- Generate extreme heat or pressure, fire of explosions, or violent reactions;
- Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;
- Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
- Damage the structural integrity of the device or facility; and
- Through other like means threaten human health or the environment.

The floors in the Hazardous Waste Storage Facility are sloped towards to the sumps to ensure flow of any significant spillage into the sumps. Containers holding hazardous waste will always be closed during storage, except when it is necessary to add or remove waste. Containers holding hazardous waste will not be opened, handled, or stored in a manner which may rupture the container or cause it to leak. These operation and design characteristics help minimize the risk of incompatible waste mixing and help maintain container integrity.

Wastes stored in the Hazardous Waste Storage Facility are segregated and protected from sources of ignition or reaction. Sources of ignition include open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks, spontaneous ignition, and radiant heat. While ignitable or reactive waste is being handled, smoking and open flame is confined to specially designated locations. “No smoking” signs in both English and Spanish are conspicuously placed wherever there is a hazard from ignitable or reactive waste.

Detailed plans and specifications are included in this Attachment.

NAS CORPUS CHRISTI, TX

HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

VICINITY MAP

NORTH

PROJECT SITE

NORTH

SYM	DESCRIPTION	DATE	APPR
1	AMENDMENT 0001	07/27/18	RAD
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HAZ WASTE FACILITY B257/B259

CORPUS CHRISTI, TX

HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

TITLE SHEET

SCALE: AS SHOWN

EPROJECT NO.: .

CONSTR. CONTR. NO. .

NAVFAC DRAWING NO. 15122431

SHEET 01 OF 91

G-000

DRAWFORM REVISION: 7 AUGUST 2009

GENERAL SCOPE – HAZARDOUS WASTE STORAGE FACILITY

THIS PROJECT INVOLVES THE CONSTRUCTION OF A NEW ONE-STORY HAZARDOUS WASTE FACILITY AT THE CORPUS CHRISTI NAVAL AIR STATION. THE BUILDING WILL BE PROTECTED THROUGHOUT THE STORAGE AREAS BY AN AUTOMATIC HIGH EXPANSION FOAM SYSTEM. THE FIRE EQUIPMENT ROOM AND ELECTRICAL\COMPRESSOR ROOM WILL BE PROTECTED WITH A WET-PIPE FIRE SPRINKLER SYSTEM. A NEW FIRE ALARM SYSTEM, INTERFACED WITH THE HIGH EXPANSION FOAM SYSTEM, WILL BE INSTALLED THROUGHOUT THE FACILITY.

CODE REFERENCES

BUILDING CODE: 2015 INTERNATIONAL BUILDING CODE (IBC) PER UFC-1-200-01 FOR GENERAL BUILDING REQ'S

-ALL REFERENCES TO THE IBC IN THE INTERNATIONAL ELECTRIC CODE SHALL BE CONSIDERED REFERENCES TO NFPA 70 (NEC)

-ALL REFERENCES TO THE IBC IN THE INTERNATIONAL FUEL GAS CODE SHALL BE CONSIDERED REFERENCES TO NFPA 54 & NFPA 58

-ALL REFERENCES TO THE IBC IN THE INTERNATIONAL FIRE CODE SHALL BE CONSIDERED REFERENCES TO UFC 3-600-01

ELECTRICAL CODE: 2014 NATIONAL ELECTRIC CODE & NFPA 70

LIFE SAFETY: 2015 NFPA 101 LIFE SAFETY CODE

FIRE ALARM: 2016 NFPA 72 NATIONAL FIRE ALARM CODE

CODE REFERENCE AND REQUIREMENTS

CHAPTER 1 – ADMINISTRATION

PER UFC 1-200-01: USE SECTIONS 101, 102, 110 & 112 OF IBC CHAPTER 1

CHAPTER 3 – USE AND OCCUPANCY CLASSIFICATION

PER UFC 1-200-01: IF CONFLICT OCCURS BETWEEN IBC CHAPTER 3 AND UFC 3-600-01, THE REQUIREMENTS OF UFC 3-600-01 TAKE PRECEDENCE

OCCUPANCY TYPES (IBC 304): H-3 & H-4; HAZARDOUS OCCUPANCY (STORAGE) (NFPA 101, HIGH HAZARD STORAGE OCCUPANCY

CHAPTER 4 – SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

PER UFC 1-200-01: USE UFC 3-600-01 INSTEAD OF IBC CHAPTER 4

CHAPTER 5 – GENERAL BUILDING HEIGHTS AND AREAS

GENERAL BUILDING HEIGHT & AREA LIMITATIONS (IBC 503):	ALLOWABLE BUILDING HEIGHT:	55'-0" / 2 STORIES
(BASED ON H-3, WORST CASE)	ACTUAL BUILDING HEIGHT:	APPROX. 17'-0"
	TABLE 506.2, BUILDING AREA PER FLOOR:	14,000 SF (H-3)
	ACTUAL TOTAL BUILDING AREA PER FLOOR:	8,600 SF
REQUIRED SEPARATION OF OCCUPANCIES (IBC TABLE 508.4):	N/A	

CHAPTER 6 – TYPES OF CONSTRUCTION

PER UFC 1-200-01: IF CONFLICT OCCURS BETWEEN IBC CHAPTER 6 AND UFC 3-600-01, THE REQUIREMENTS OF UFC 3-600-01 TAKE PRECEDENCE

CONSTRUCTION CLASSIFICATION: TYPE IIB (IBC 602)

FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (IBC TABLE 601):

PRIMARY STRUCTURAL FRAME:	0 HOURS
BEARING WALLS – EXTERIOR:	0 HOURS
BEARING WALLS – INTERIOR:	0 HOURS
NONBEARING WALLS – EXTERIOR:	0 HOURS
NONBEARING WALLS – INTERIOR:	0 HOURS
FLOOR CONSTRUCTION & SECONDARY MEMBERS:	0 HOURS
ROOF CONSTRUCTION & SECONDARY MEMBERS:	0 HOURS

CHAPTER 7 – FIRE RATED CONSTRUCTION

PER UFC 1-200-01: IF CONFLICT OCCURS BETWEEN IBC CHAPTER 7 AND UFC 3-600-01, THE REQUIREMENTS OF UFC 3-600-01 TAKE PRECEDENCE

PER UFC 3-600-01: COMPLY WITH NFPA 101 FOR BUILDING CONSTRUCTION RELATED TO EGRESS & LIFE SAFETY

FIRE SEPARATION DISTANCE: GREATER THAN 50'-0" (TO ADJACENT BUILDINGS). PER UFC 3-600-01, SECTION 4-16.3.1, FIRE SEPARATION TO ADJACENT BUILDINGS MUST BE MINIMUM 50'-0" WHEN NON-COMBUSTIBLE EXTERIOR WALLS ARE NON-RATED WALLS.

MAX. AREA OF EXTERIOR WALL OPENINGS (IBC): NO LIMIT

REQUIRED FIRE PARTITION RATING (IBC & NFPA 101): N/A

CHAPTER 8 – INTERIOR FINISHES

PER UFC 1-200-01: USE UFC 3-600-01 INSTEAD OF IBC CHAPTER 8 IN CONJUNCTION & COORDINATION WITH UFC 3-120-10

PER UFC 3-600-01: USE NFPA 101 FOR INTERIOR FINISHES

INTERIOR WALL & CEILING FINISH REQUIREMENTS (NFPA 101 30.3.3.2): EXIT ENCLOSURES: CLASS A
LOBBIES AND CORRIDORS: CLASS A OR B
OTHER SPACES: CLASS A, B, OR C

CHAPTER 9 – FIRE PROTECTION SYSTEMS

FIRE SUPPRESSION SYSTEM: HIGH-EXPANSION FOAM SYSTEM (STORAGE AREAS)
FIRE SPRINKLER SYSTEM: WET PIPE SYSTEM (FIRE EQUIPMENT ROOM & ELEC/COMPRESSOR ROOM)
FIRE ALARM SYSTEM: NEW ADDRESSABLE FIRE ALARM SYSTEM

PORTABLE FIRE EXTINGUISHERS: ABC TYPE, 10 LB, SURFACE MOUNTED.

CHAPTER 10 – MEANS OF EGRESS

PER UFC 1-200-01: USE UFC 3-600-01 INSTEAD OF IBC CHAPTER 10

PER UFC 3-600-01: USE NFPA 101 EXCEPT AS MODIFIED BY UFC 3-600-01

DESIGN OCCUPANT LOAD (NFPA 101 TABLE 7.3.1.2): STORAGE AREA
500 GROSS SF PER OCCUPANT (SPECIAL PURPOSE)

SEE THE LIFE SAFETY FLOOR PLAN FOR OCCUPANT LOAD TOTAL

MIN. REQUIRED EGRESS CAPACITY : 0.4" PER OCCUPANT FOR LEVEL COMPONENTS & RAMPS MUST BE PROVIDED;

REQUIRED NUMBER OF EXITS (NFPA 101 & IBC): MINIMUM 2 PER STORY

MAX. COMMON PATH OF EGRESS TRAVEL: 0 FT. (NOT ALLOWED) (HAZARDOUS OCCUPANCY)

MAX. EXIT TRAVEL DISTANCE: 75'-0" (MAX TRAVEL DISTANCE PER NFPA 101)

MAX. DEAD END CORRIDOR LENGTH: 0 FT. (NOT ALLOWED) (HAZARDOUS OCCUPANCY)

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SYM	DESCRIPTION	DATE	APPR
1	AMENDMENT 0001	07/27/18	RAD
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SATISFACTORY TO DATE

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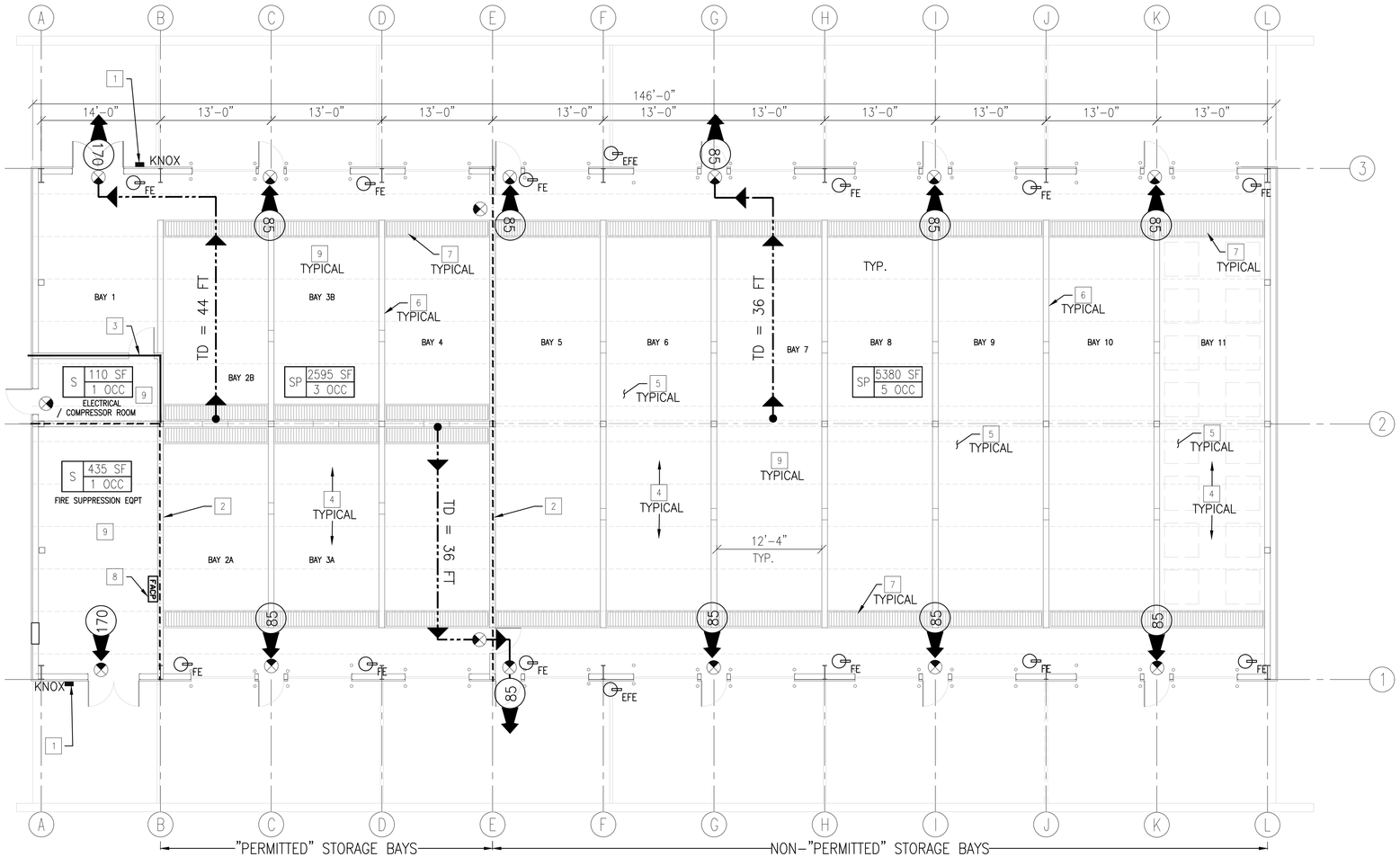
CORPUS CHRISTI, TX
HAZ WASTE FACILITY B257/B259
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
LIFE SAFETY PLAN CODE ANALYSIS

SCALE: AS NOTED
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 15122436
SHEET 06 OF 91

LS-C001

DRAWFORM REVISION: 7 AUGUST 2009



LIFE SAFETY PLAN

LEGEND

- PROVIDED EGRESS CAPACITY
- TD = XX FT — TRAVEL DISTANCE
- TRAVEL DIRECTION
- EXIT SIGN. SEE ELECTRICAL PLANS FOR DETAILS.
- KNOX — KNOX BOX – RECESSED EMERGENCY RESPONDER KEY BOX
- FE — 10 LB., ABC TYPE, SURFACE WALL MOUNTED FIRE EXTINGUISHER
- EFE — EXTERIOR 10 LB., ABC TYPE, SURFACE WALL MOUNTED FIRE EXTINGUISHER (MOUNTED IN WEATHER PROOF CABINET)
- 2 HOUR FIRE BARRIER WALL
- 1 HOUR FIRE BARRIER WALL

S | 500 SF | 1 OCC — USE CLASSIFICATION SYMBOL; AREA OF ROOM; NUMBER OF OCCUPANTS; LIFE SAFETY CODE USE (NFPA 101 TABLE 7.3.1.2)

S = STORAGE / UTILITY

SP = SPECIAL (STORAGE PURPOSE). OCCUPANT LOAD SHOWN BASED ON MAXIMUM ANTICIPATED EMPLOYEES PRESENT.

KEY NOTES

1. PROVIDE FIRE DEPARTMENT ACCESS KEY BOXES AT LOCATION INDICATED ON THE PLAN.
2. 2– HOUR FIRE BARRIER WALL.
3. 1– HOUR FIRE BARRIER WALL.
4. MINIMUM 36" EXIT ACCESS WIDTH BETWEEN PALLET STORAGE ROWS, PER NFPA 101 FOR NEW FACILITIES. ACTUAL WIDTH PROVIDED IS 38".
5. MAXIMUM 2–PALLET HIGH STORAGE TO APPROXIMATELY 8'–0" AFF.
6. TYPICAL LOW HEIGHT SEPARATION WALL BETWEEN STORAGE BAYS. SEE ARCHITECTURAL PLANS FOR DETAILS.
7. GRATE COVERED TRENCH ASSOCIATED WITH BAY SPILL CONTAMINANT. SEE ARCHITECTURAL PLANS FOR DETAILS.
8. FIRE ALARM CONTROL PANEL LOCATION. SEE THE "FA" SERIES PLANS FOR DETAILS.
9. THE HAZARDOUS MATERIAL STORAGE AREAS WILL BE PROTECTED WITH A HIGH EXPANSION FOAM SUPPRESSION SYSTEM. THE FIRE EQUIPMENT ROOM AND ELEC\COMPRESSOR ROOM WILL BE PROTECTED BY A WET PIPE FIRE SPRINKLER SYSTEM. SEE THE "FX" SERIES PLANS FOR DETAILS.

OCCUPANT LOAD TOTALS

HAZARDOUS MATERIAL STORAGE AREA:	8 PERSONS
ELECTRICAL \ COMPRESSOR ROOM:	1 PERSON
FIRE EQUIPMENT ROOM:	1 PERSON
TOTAL:	10 PERSONS

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PLOT: 07\26\18

NATHANIEL J. HATCHER, TX #110657

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LIFE SAFETY PLAN

SCALE: AS NOTED
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SHEET 07 OF 91

LS-C101

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FENCE AND GATE LOCATIONS (10) (11)

POSITION	NORTHING	EASTING
①	17143487.00	1379693.82
②	17143471.62	1379688.94
③	17143449.89	1379681.93
④	17143353.82	1379651.24
⑤	17143333.75	1379644.88
⑥	17143195.85	1379603.10
⑦	17143195.27	1379691.43

BOLLARD LOCATIONS (15)

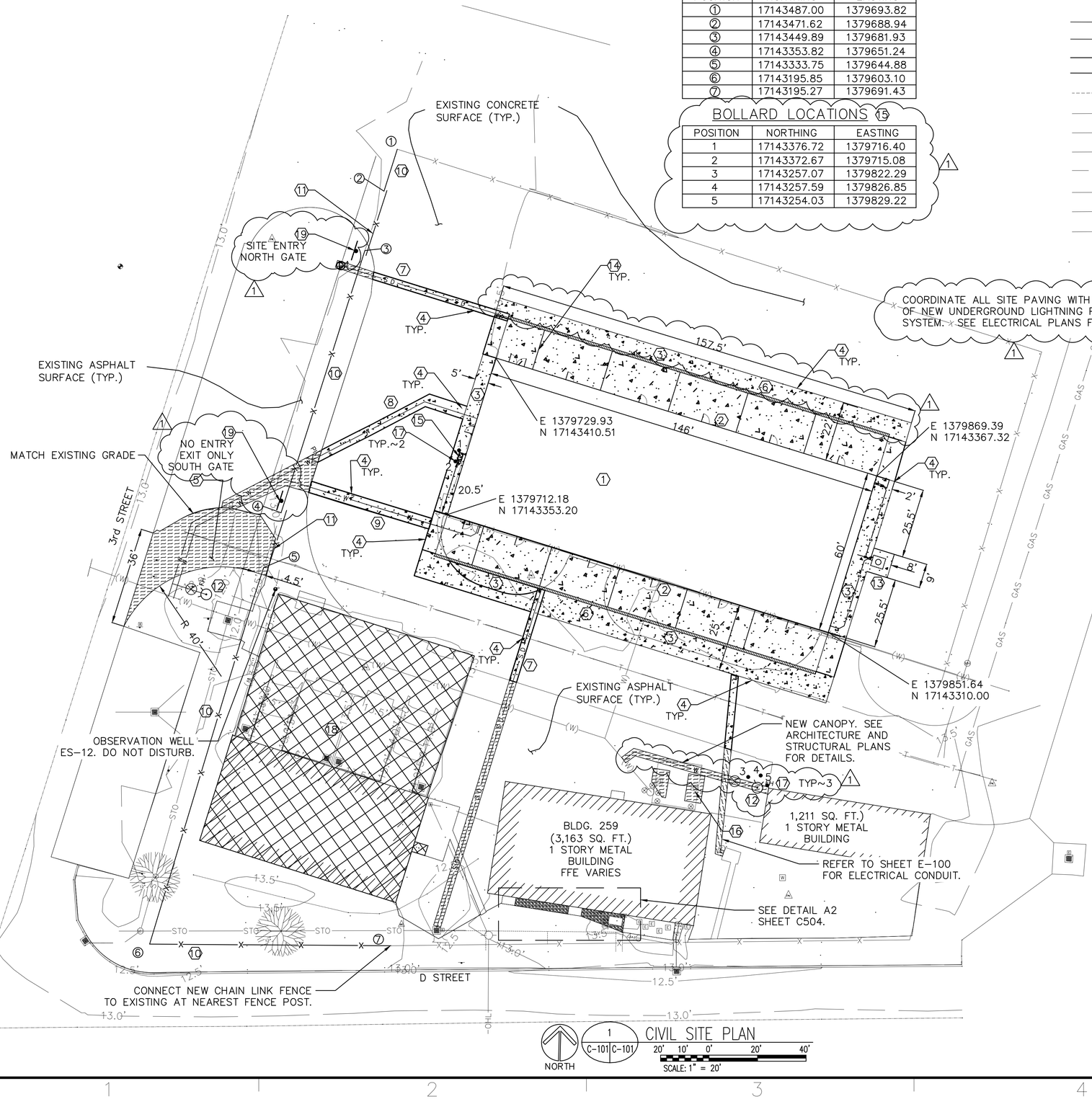
POSITION	NORTHING	EASTING
1	17143376.72	1379716.40
2	17143372.67	1379715.08
3	17143257.07	1379822.29
4	17143257.59	1379826.85
5	17143254.03	1379829.22

LEGEND:

- NEW WATER LINE
- NEW STORM DRAIN
- NEW SANITARY EYEWASH DRAIN
- NEW CHAIN LINK FENCE W/ BARBED WIRE
- UNKNOWN LINE (AS MARKED)
- STORM LINE (AS MARKED)
- WATER LINE (AS MARKED)
- TELEPHONE LINE (AS MARKED)
- ELECTRIC LINE (AS MARKED)
- GAS LINE (AS MARKED)
- CHAINLINK FENCE
- OVERHEAD UTILITY LINE
- BOLLARD
- STORM WATER MANHOLE
- ELECTRIC MANHOLE
- ELECTRIC BOX
- CLEAN OUT
- POWER POLE
- WATER VALVE
- SITE BENCHMARK
- ELECTRIC METER
- WATER METER
- FIRE HYDRANT
- SIGN
- MESQUITE TREE
- GAS VALVE
- GRATE INLET
- CONCRETE PAVEMENT REPLACEMENT. SEE DETAIL 1 SHEET C–501.
- ASPHALT PAVEMENT REPLACEMENT. SEE UTILITY TRENCH DETAIL SHEET C–501.
- LIMITS OF BLDG. 257 DEMOLITION.

CODED NOTES:

1. NEW HAZWASTE STORAGE BUILDING. SEE ARCHITECTURAL PLANS FOR DETAILS.
2. NEW CONCRETE ACCESS RAMPS FOR FORKLIFTS. SEE DETAILS B3 AND C3 SHEET C–501 FOR DETAILS.
3. NEW CONCRETE PAVEMENT 3,025 SF. SEE PAVEMENT DETAIL 1 SHEET C–501.
4. NEW CONCRETE PAVEMENT EXPANSION JOINT. SEE DETAIL 2 SHEET C–501.
5. NEW ASPHALT PAVEMENT DRIVE 1,005 SF. SEE DETAIL 1 SHEET C–501.
6. NEW 12–INCH TRENCH DRAIN. SEE SHEET C–102.
7. NEW STORM DRAINS FROM TRENCH DRAINS. SEE SHEET C–102.
8. NEW 8–INCH FIRE SUPPRESSION WATER SUPPLY. SEE SHEET C–102.
9. NEW 2–INCH WATER SUPPLY. SEE SHEET C–102.
10. NEW CHAIN LINK FENCE WITH BARBED WIRE, 350 LF. SEE DETAIL 1 SHEET C–505.
11. NEW 24–FOOT WIDE SLIDING GATE. SEE DETAIL 2 SHEET C–505.
12. NEW FIRE HYDRANT. SEE SHEET C–102.
13. NEW EYEWASH STATION HOLDING TANK. SEE SHEET C–102.
14. NEW ROOF DOWNSPOUT. SEE SHEET AC–101.
15. NEW CONCRETE MECHANICAL PAD. SEE DETAIL C3 SHEET C–503.
16. REPLACE 110 SF OF ASPHALT PAVEMENT WITH 6" THICK CONCRETE PAVEMENT OVER 6" THICK AGGREGATE BASE. SEE DETAIL 1 SHEET C–501.
17. NEW BOLLARD. SEE DETAIL 8 SHEET C–503.
18. DEMOLITION OF BLDG. 257. SEE SITE PHASING PLANS FOR DEMOLITION SCHEDULE. SEE DETAIL B1 SHEET C–500 FOR SLAB DEMOLITION AND DETAIL B1 SHEET C–502 FOR PAVEMENT RESTORATION DETAILS.
19. NEW ENTRY/EXIT SIGNS. SEE DETAIL 3 SHEET C–505.



1 C–101 | C–101 CIVIL SITE PLAN

NO.	DESCRIPTION	DATE	APPR
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SATISFACTORY TO DATE

DES WDB | DRW WDB | CHK GAS

PROJECT MANAGER R PENARANDA

IPT TECH. BRANCH HEAD T FRAZIER

CHIEF ENG/ARCH (CORE)

NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX

HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

CIVIL SITE PLAN

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
IPT SOUTH ATLANTIC
HAZ WASTE FACILITY B257/B259

SCALE: AS SHOWN

EPROJECT NO.:

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122440

SHEET 10 OF 91

C-101

DRAWFORM REVISION: 7 AUGUST 2009

2" WATER LINE LOCATIONS

DESCRIPTION	STATION	NORTHING	EASTING
CORPORATION STOP	10+00	17143322.45	1379611.85
45° HORIZ BEND	10+27.70	17143348.84	1379620.10
45° HORIZ BEND	10+64.42	17143366.06	1379652.59
45° HORIZ BEND	11+35.60	17143345.26	1379720.71
45° HORIZ BEND	11+37.70	17143346.25	1379722.59
CONNECT TO BLDG.	11+41.30	17143349.65	1379723.64

8" WATER LINE LOCATIONS

DESCRIPTION	STATION	NORTHING	EASTING
8" T.S. & V.	0+00	17143323.13	1379609.97
8 X 6 TEE	0+05	17143327.90	1379611.46
HYDRANT W/ 6" VALVE	0+05 13' RT	17143323.91	1379623.86
45° HORIZ BEND	0+28.40	17143350.23	1379618.44
POST IND. VALVE	0+78.30	17143373.26	1379662.70
45° HORIZ BEND	1+24.30	17143394.50	1379703.85
CONNECT TO BLDG.	1+44.20	17143388.41	1379722.79
NEW FIRE HYDRANT W/6" VALVE NW OF BLDG. 259		17143253.12	1379825.65
8X6 TEE FOR HYDRANT CONNECTION		17143263.26	1379776.20

NORTH SD STA. 20+64.30
CONNECT TO NEW TRENCH DRAIN
INVERT = 11.25
N 17143425.32
E 1379734.51

STORM DRAIN MANHOLE.
SEE DETAIL C2 SHEET C-200.
T/CASTING = 13.00
INVERT AT EX. DRAIN = 10.00
N 17143444.34
E 1379673.10

EXISTING CONCRETE SURFACE (TYP.)

3rd STREET

8-INCH WATER LINE
STA. 1+24.30
45° HORIZ BEND RT

8-INCH WATER LINE
STA. 0+78.30
POST INDICATOR VALVE

2-INCH WATER LINE
STA. 10+64.42
45° HORIZ BEND RT

2-INCH WATER LINE
STA. 10+27.70
45° HORIZ BEND RT

8-INCH WATER LINE
STA. 0+28.40
45° HORIZ BEND RT

RESTORE GRASSED SURFACE IN THIS AREA TO EQUAL OR BETTER CONDITION. SEE UTILITY TRENCH DETAIL SHEET C-503.

8-INCH WATER LINE
STA. 0+05.00
8X6 TEE

8-INCH WATER LINE STA. 0+00
CONNECT TO EXISTING WM
8" TAPPING SLEEVE AND VALVE.
TAP SHALL BE "WET" TAP.

2-INCH WATER LINE STA. 10+00
CONNECT TO EXISTING WM
2" CORP STOP

OBSERVATION WELL
ES-12. DO NOT DISTURB.

14.16 T/RAMP (TYP.)

13.60 T/CASTING

13.70 T/CASTING

14.16 T/RAMP

8-INCH WATER LINE
STA. 1+44.20
CONNECT TO BUILDING
SEE PLUMBING PLAN.

2-INCH WATER LINE
STA. 11+41.30
CONNECT TO BUILDING
SEE PLUMBING PLAN.

2-INCH WATER LINE
STA. 11+37.70
45° HORIZ BEND RT

2-INCH WATER LINE
STA. 11+35.60
45° HORIZ BEND RT

MATCH EXISTING CONCRETE GRADE.

10 TYP.~10.

NEW CONCRETE PAVEMENT LIMITS. MATCH EXISTING GRADE. TYP ALL SIDES.

NEW CANOPY. SEE ARCHITECTURE AND STRUCTURAL PLANS FOR DETAILS.

8 NEW EYEWASH STATION HOLDING TANK N 17143260.32 E 1379827.47

SOUTH SD STA. 30+29.80
CONNECT TO NEW TRENCH DRAIN
INVERT ELEV. = 11.50
N 17143325.78
E 1379746.61

MATCH EXISTING CONCRETE GRADE.

8X6 TEE FOR HYDRANT CONNECTION

BLDG. 259
(3,163 SQ. FT.)
1 STORY METAL BUILDING
FFE VARIES

1,211 SQ. FT.)
1 STORY METAL BUILDING

SEE DETAIL A2 SHEET C504.

REGRADE THIS AREA TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING. SEED AREA TO EQUAL OR BETTER CONDITION AFTER GRADING.

SOUTH SD STA. 30+00
CONNECT TO EX MANHOLE.
INVERT ELEV. = 9.90

D STREET

1 C-102 | C-102 NORTH

UTILITY AND DRAINAGE PLAN

20' 10' 0' 20' 40'
SCALE: 1" = 20'

LEGEND:

- NEW WATER LINE
- NEW STORM DRAIN
- NEW SANITARY EYEWASH DRAIN
- NEW CHAIN LINK FENCE W/ BARBED WIRE
- UNKNOWN LINE (AS MARKED)
- STORM LINE (AS MARKED)
- WATER LINE (AS MARKED)
- TELEPHONE LINE (AS MARKED)
- ELECTRIC LINE (AS MARKED)
- GAS LINE (AS MARKED)
- CHAINLINK FENCE
- OVERHEAD UTILITY LINE
- BOLLARD
- STORM WATER MANHOLE
- ELECTRIC MANHOLE
- ELECTRIC BOX
- CLEAN OUT
- POWER POLE
- WATER VALVE
- SITE BENCHMARK
- ELECTRIC METER
- WATER METER
- FIRE HYDRANT
- SIGN
- MESQUITE TREE
- GAS VALVE
- GRATE INLET
- NEW STORM MANHOLE
- NEW CONTOUR
- DRAINAGE FLOW
- 13.69 EX EXISTING ELEVATION
- 13.69 NEW ELEVATION

CODED NOTES:

1. NEW HAZWASTE STORAGE BUILDING
2. NEW CONCRETE ACCESS RAMPS FOR FORKLIFTS. SEE DETAILS B3 AND C3, SHEET C-501.
3. 292 LF OF NEW CONCRETE 12-INCH TRENCH DRAIN WITH HEAVY DUTY GRATE. SEE DETAIL B3 AND C3, SHEETS C-501 AND C-504.
4. 195 LF OF NEW 8-INCH PVC STORM DRAINS FROM TRENCH DRAINS. SEE DETAILS 2 AND 3 SHEET C-200.
5. 145 LF OF NEW 8-INCH DUCTILE IRON FIRE SUPPRESSION WATER SUPPLY. CONNECT TO EXISTING 8-INCH WATER LINE WITH TAPPING SLEEVE AND VALVE. SEE DETAIL 1 SHEET C-200.
6. 138 LF OF NEW 2-INCH TYPE "K" COPPER WATER SUPPLY. CONNECT TO EXISTING 8-INCH WATER LINE WITH 2-INCH CORPORATION STOP. SEE DETAIL 1 SHEET C-200.
7. NEW FIRE HYDRANT. SEE DETAIL 3 SHEET C-503.
8. NEW EYEWASH STATION HOLDING TANK. SEE DETAILS B4 AND 3 SHEET C-504.
9. 63 LF OF NEW 4-INCH PVC SANITARY DRAIN FROM EYEWASH STATIONS TO HOLDING TANK. SEE DETAIL B4 SHEET C-504.
10. NEW ROOF DOWNSPOUT. SEE SHEET AC-101. SEE DETAILS B3 AND C3, SHEETS C-501 AND C-504 FOR INVERTS AT TRENCH DRAIN.
11. DEMOLITION OF BLDG. 257. SEE SITE PHASING PLANS FOR DEMOLITION SCHEDULE. SEE DETAIL B1 SHEET C-500 FOR SLAB DEMOLITION AND DETAIL B1 SHEET C-502 FOR PAVEMENT RESTORATION DETAILS.

APPR	DATE	DESCRIPTION	STM
RAD	07/27/18	AMENDMENT 0001	1
RAD	06/25/18	ISSUED FOR BID	0

NAVFAC

STATE OF TEXAS
SELVAKUMAR BUVANENDIRAN
104375
LICENSED PROFESSIONAL ENGINEER

STATE OF OHIO
WILLIAM D. BOGGS
E-73937
REGISTERED PROFESSIONAL ENGINEER
SEAL

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2510 West Cervantes Street
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC / B.L.T.L.

ACTMTY

SATISFACTORY TO DATE

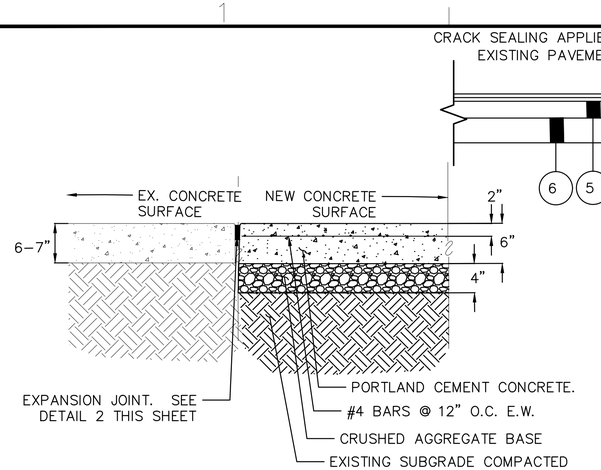
DES WDB	DRW WDB	CHK GAS
PROJECT MANAGER	R PENARANDA	
IPT TECH. BRANCH HEAD	T FRAZIER	
CHIEF ENG/ARCH (CORE)		

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
IPT SOUTH ATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR STATION CORPUS CHRISTI
HAZ WASTE FACILITY B257/B259
CORPUS CHRISTI, TX
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
UTILITY AND DRAINAGE PLAN

SCALE: AS SHOWN
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 15122441
SHEET 11 OF 91

C-102

DRAWFORM REVISION: 7 AUGUST 2009



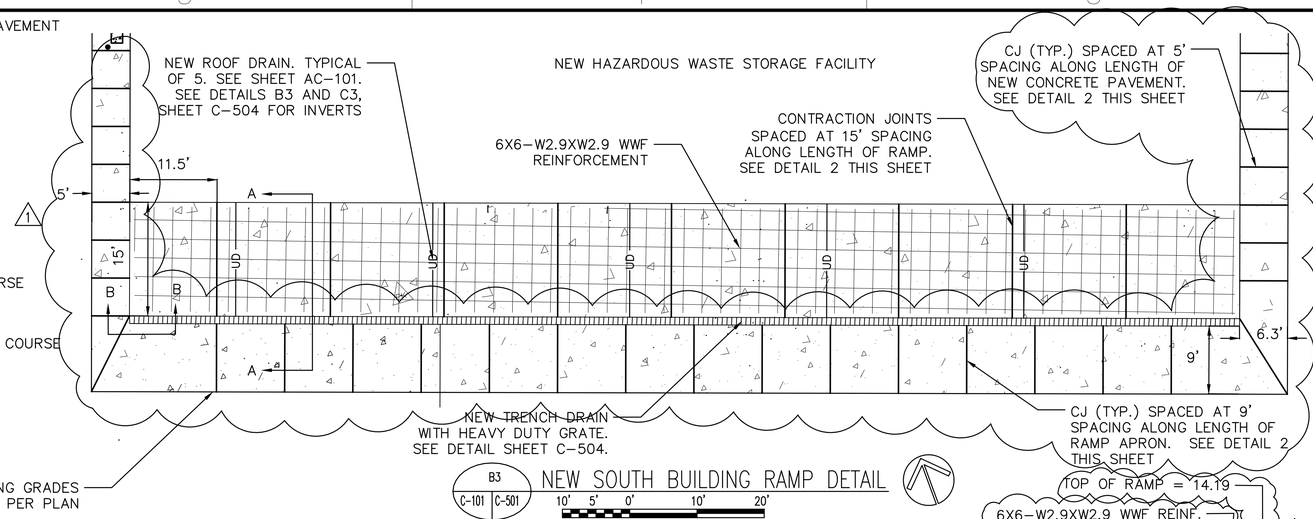
NEW CONCRETE PAVEMENT

NEW ASPHALT PAVEMENT

PAVEMENT LEGEND

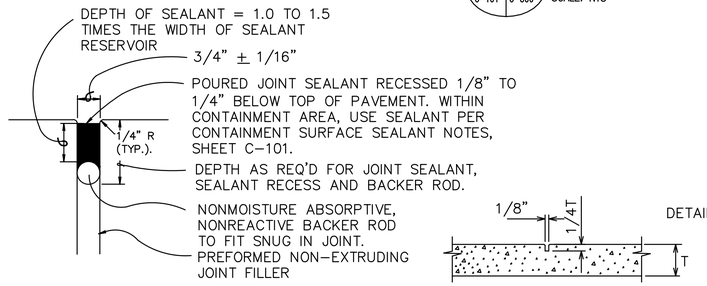
1. 1 ½" ASPHALT CONCRETE WEARING COURSE
2. TACK COAT
3. 1 ½" ASPHALT CONCRETE INTERMEDIATE COURSE
4. PRIME COAT
5. 4.5" AGGREGATE BASE
6. COMPACTED SUBGRADE COMPACTED TO 95% DENSITY PER ASTM D1557

1 | C-101 | C-500 — NEW PAVEMENT DETAILS — SCALE: NTS



B3 | C-101 | C-501 — NEW SOUTH BUILDING RAMP DETAIL — SCALE: 1" = 10'

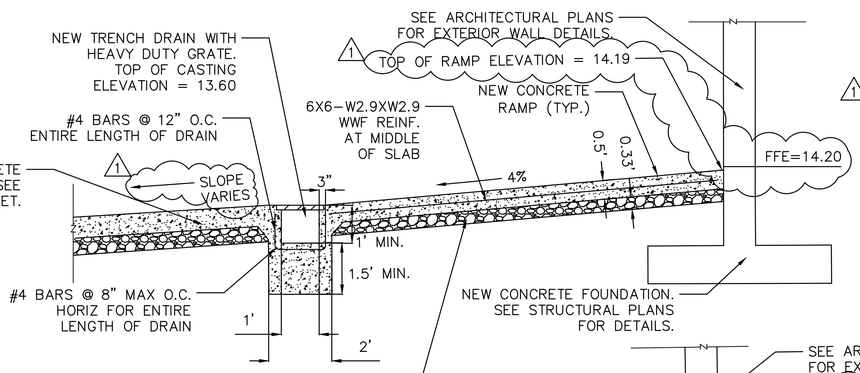
NORTH



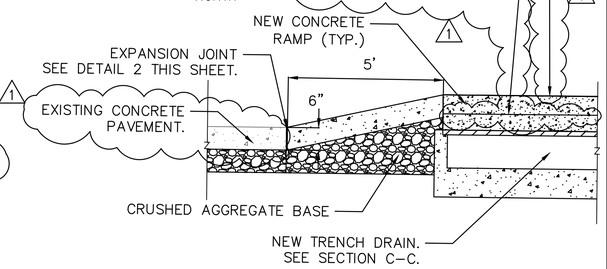
EXPANSION JOINT TYPICAL

CONTRACTION JOINT TYPICAL

2 | C-101 | C-500 — CONCRETE JOINT DETAILS — SCALE: NTS



SECTION A-A
N.T.S.



SECTION B-B
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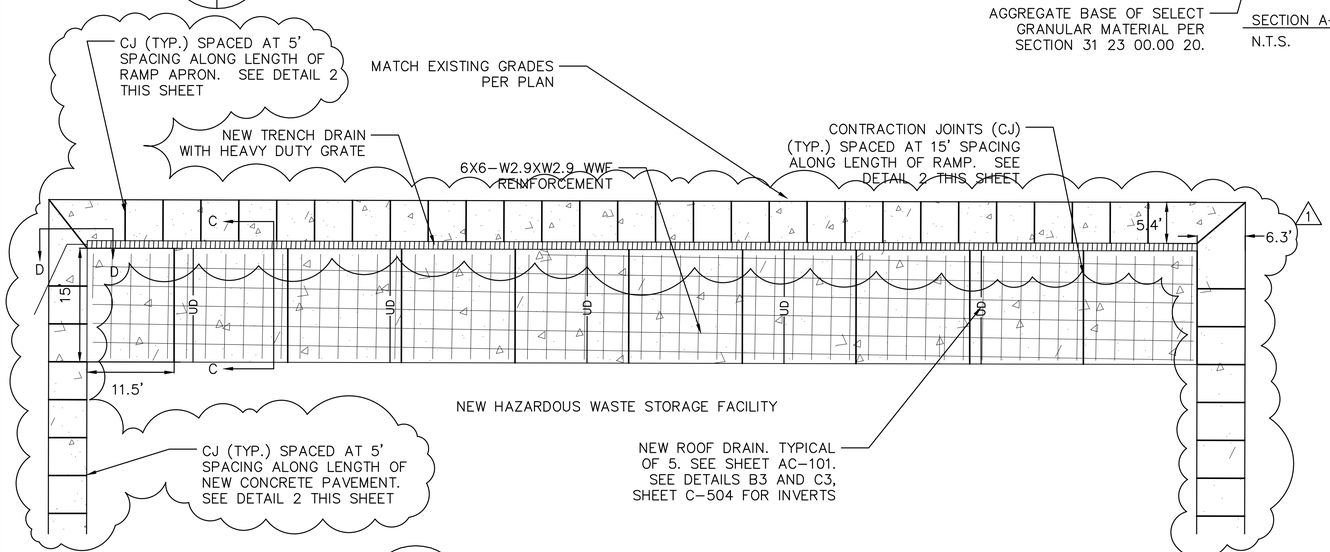
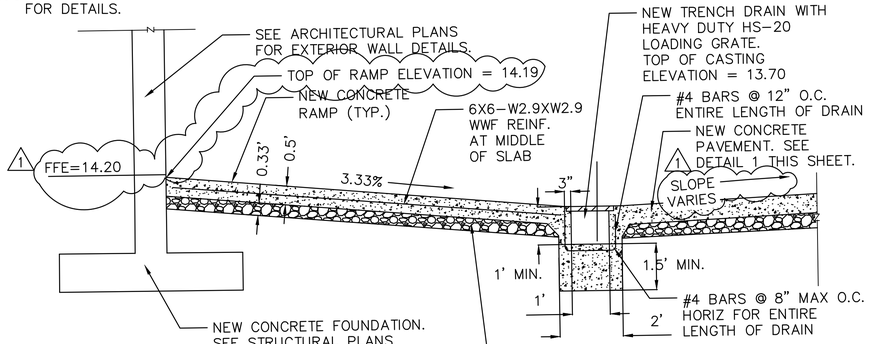
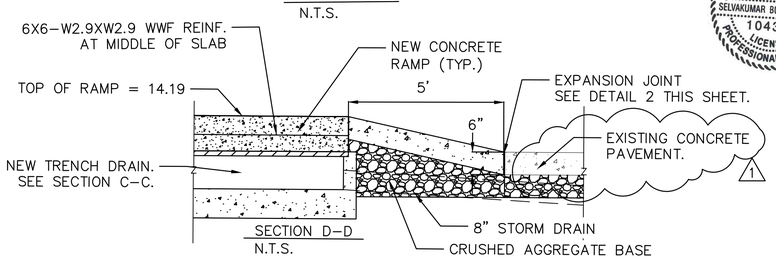


B3 | C-101 | C-501 — NEW NORTH BUILDING RAMP DETAIL — SCALE: 1" = 10'

NORTH



SECTION C-C
N.T.S.



SECTION D-D
N.T.S.

1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD
STM	DESCRIPTION	DATE	APPR

NAVFAC

STATE OF OHIO — WILLIAM D. BOGGS — E-73937 — REGISTERED PROFESSIONAL ENGINEER — SEAL

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2510 West Cervantes Street
Pensacola, Florida 32505
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A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES	WDB	DRW	WDB	CHK	DJS

PROJECT MANAGER R PENARANDA
IPT TECHL BRANCH HEAD T FRAZIER
CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
IPT SOUTH ATLANTIC

NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX
HAZ WASTE FACILITY B257/B259

HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

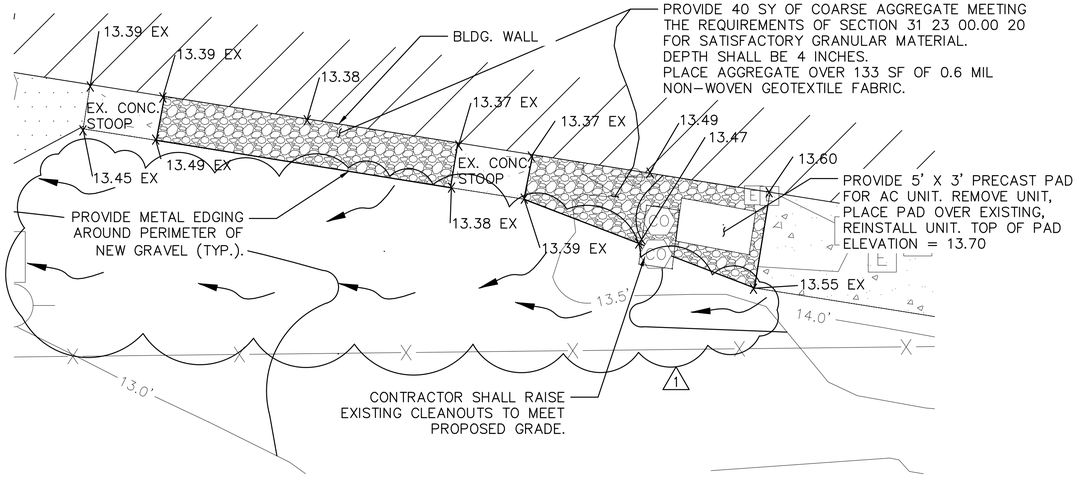
PAVEMENT DETAILS

SCALE: AS SHOWN
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 15122444
SHEET 14 OF 91

C-501

DRAWFORM REVISION: 7 AUGUST 2009

STATE OF TEXAS — SELVAKUMAR BUVANENDARAN — 104375 — LICENSED PROFESSIONAL ENGINEER



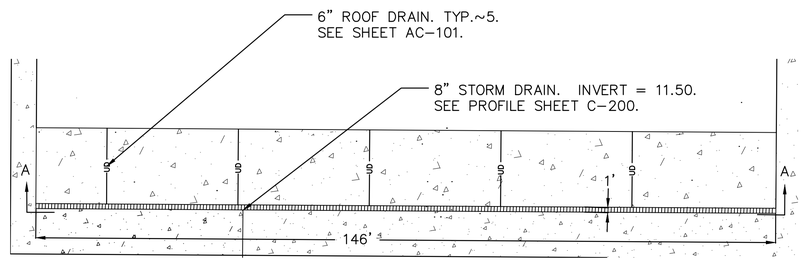
A2 | C-101 | C-504

BLDG 259 GRADING DETAIL

5' 2.5' 0' 5' 10'

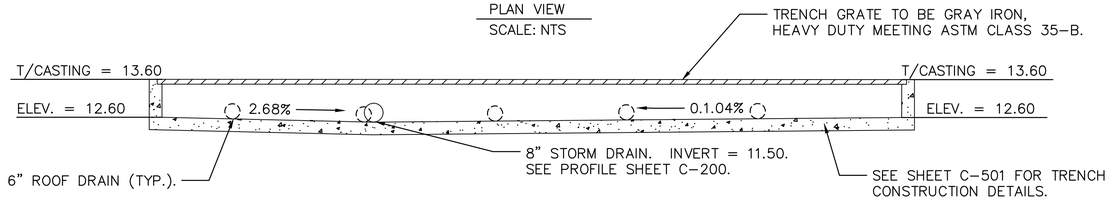
SCALE: 1" = 5'

NORTH



PLAN VIEW

SCALE: NTS

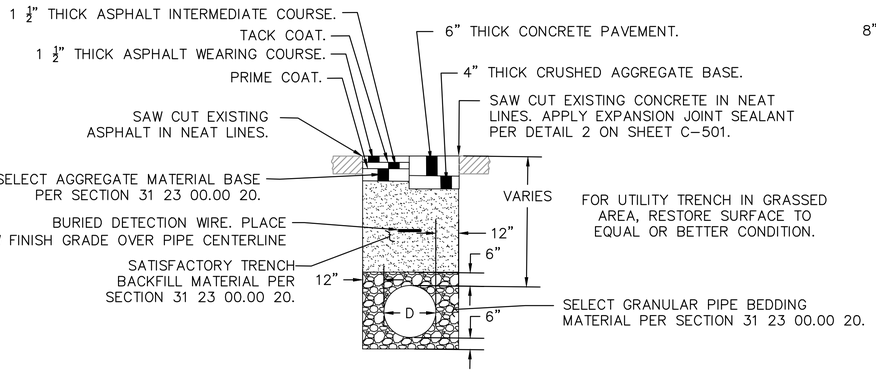


SECTION A-A

SCALE: NTS

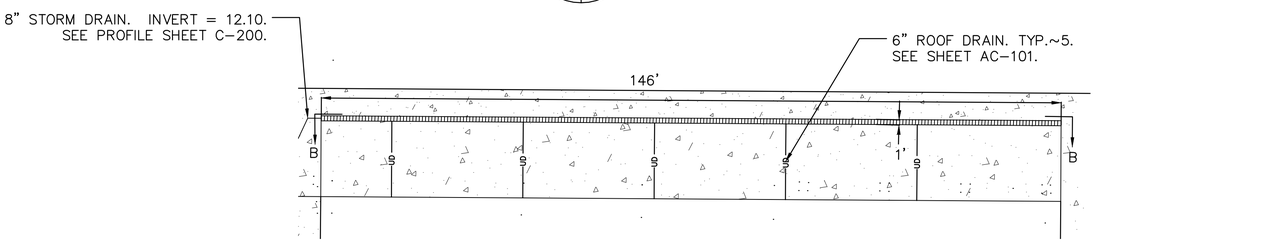
B3 | C-102 | C-504 SOUTH TRENCH DRAIN DETAIL

SCALE: NTS



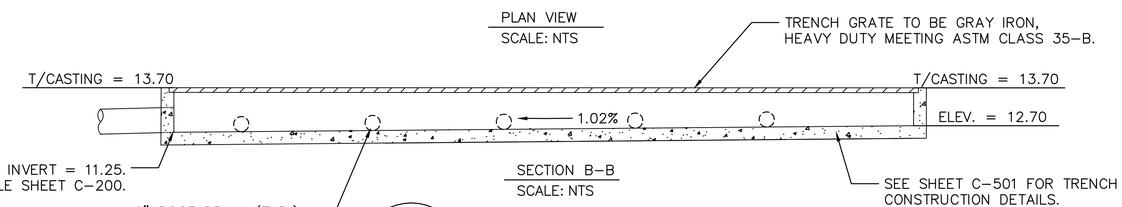
1 | C-102 | C-504 STORM AND SANITARY TRENCH DETAIL

SCALE: NTS



PLAN VIEW

SCALE: NTS

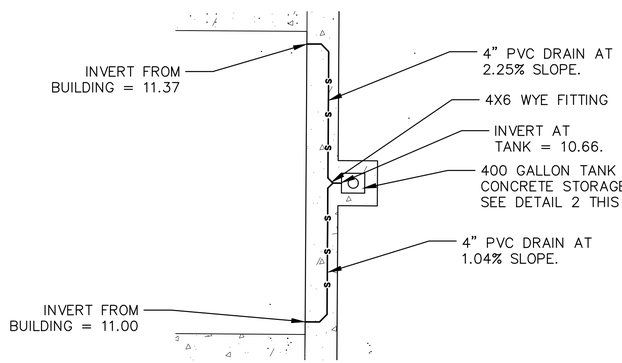


SECTION B-B

SCALE: NTS

C3 | C-102 | C-504 NORTH TRENCH DRAIN DETAIL

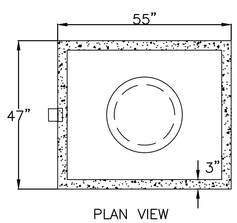
SCALE: NTS



B4 | C-102 | C-504 EYEWASH DRAIN DETAIL

SCALE: NTS

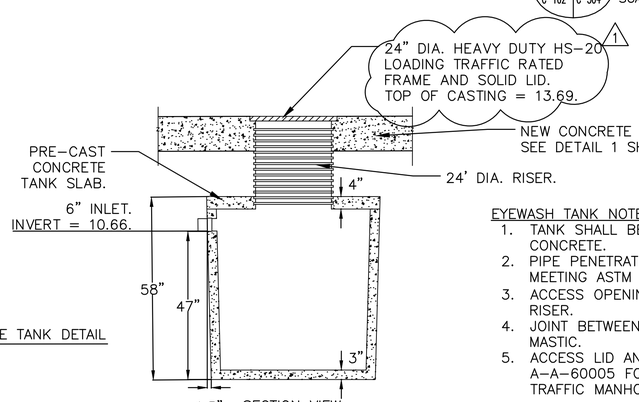
NORTH



PLAN VIEW

2 | C-102 | C-504 EYEWASH STORAGE TANK DETAIL

SCALE: NTS



EYEWASH TANK NOTES:

1. TANK SHALL BE PRE-CAST, 5000 PSI IN 28 DAYS CONCRETE.
2. PIPE PENETRATIONS INTO TANK SHALL BE PRE-CAST SEALS MEETING ASTM C 1644.
3. ACCESS OPENINGS SHALL BE PRE-CAST 24" DIAMETER FOR RISER.
4. JOINT BETWEEN TANK AND TOP SLAB SHALL BE BUTYL MASTIC.
5. ACCESS LID AND FRAME SHALL MEET FED SPEC. A-A-60005 FOR STYLE A, TYPE II FRAME AND TYPE A TRAFFIC MANHOLE COVER.

1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD
STM	DESCRIPTION	DATE	APPR

STATE OF TEXAS — SELVAKUMAR BUVANENDRAN — 104375 — LICENSED PROFESSIONAL ENGINEER

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STATE OF OHIO — WILLIAM D. BOGGS — E-73937 — REGISTERED PROFESSIONAL ENGINEER

SEAL

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A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

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PROJECT MANAGER R PENARANDA

IPT TECH. BRANCH HEAD T FRAZIER

CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
IPT SOUTH ATLANTIC

NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
NAVAL AIR STATION CORPUS CHRISTI

HAZ WASTE FACILITY B257/B259 — CORPUS CHRISTI, TX

HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

DRAINAGE AND GRADING DETAILS

SCALE: AS SHOWN

EPROJECT NO.:

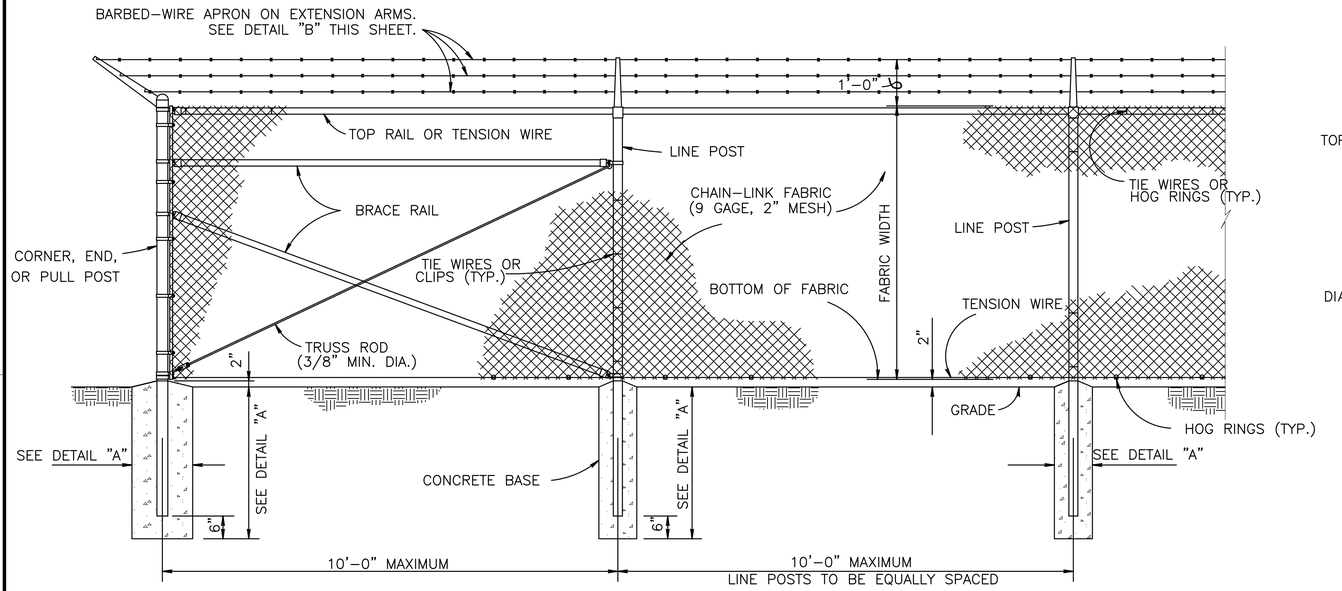
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122447

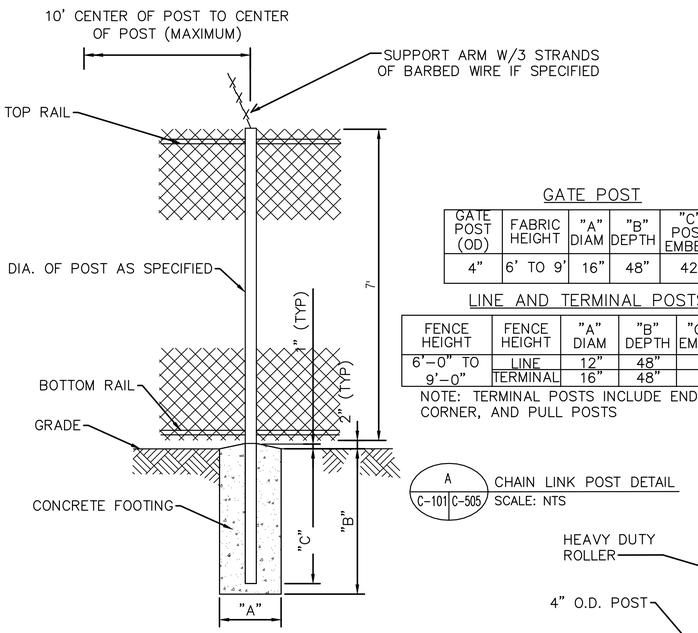
SHEET 17 OF 91

C-504

DRAWFORM REVISION: 7 AUGUST 2009



1 C-101 C-505 NEW CHAIN LINK FENCE DETAIL
SCALE: NTS



GATE POST

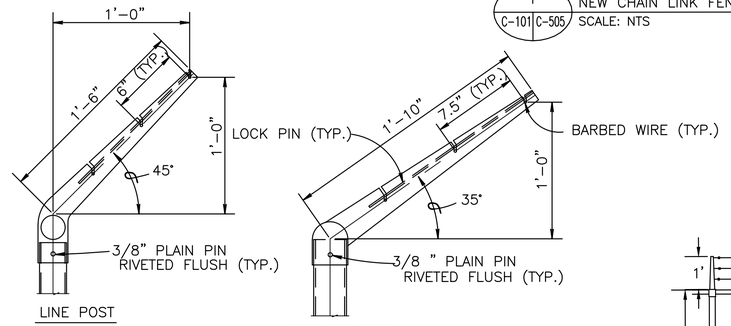
GATE POST (OD)	FABRIC HEIGHT	"A" DIAM	"B" DEPTH	"C" POST EMBED.
4"	6' TO 9'	16"	48"	42"

LINE AND TERMINAL POSTS

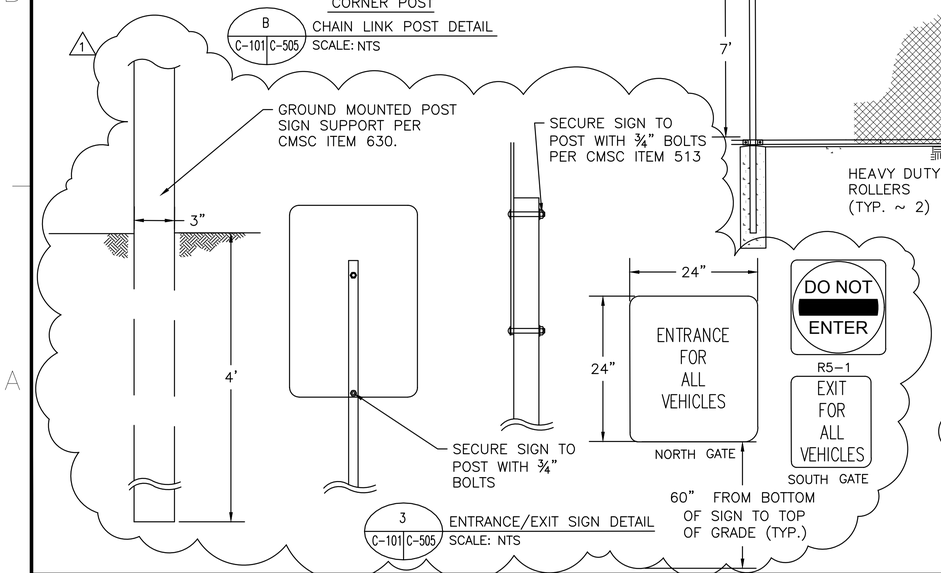
FENCE HEIGHT	FENCE HEIGHT	"A" DIAM	"B" DEPTH	"C" POST EMBEDMENT
6'–0" TO 9'–0"	LINE	12"	48"	46"
	TERMINAL	16"	48"	46"

NOTE: TERMINAL POSTS INCLUDE END, CORNER, AND PULL POSTS

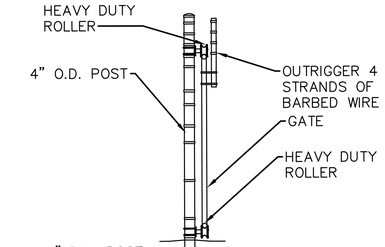
A C-101 C-505 CHAIN LINK POST DETAIL
SCALE: NTS



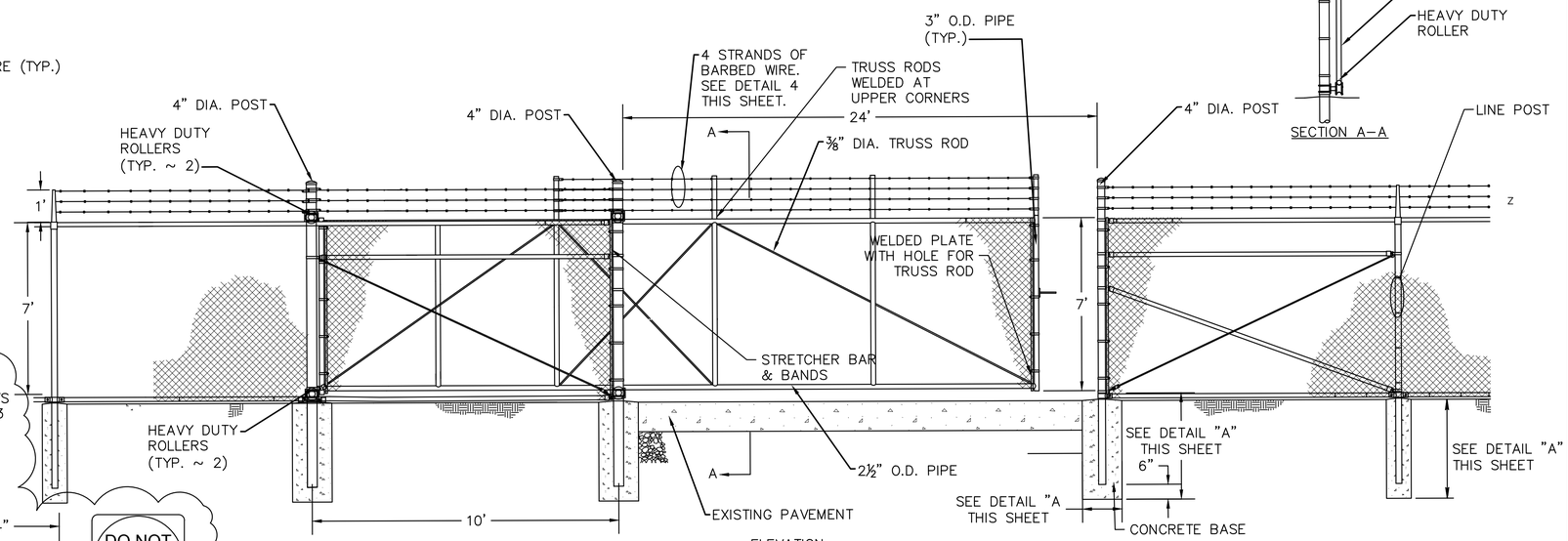
B C-101 C-505 CHAIN LINK POST DETAIL
SCALE: NTS



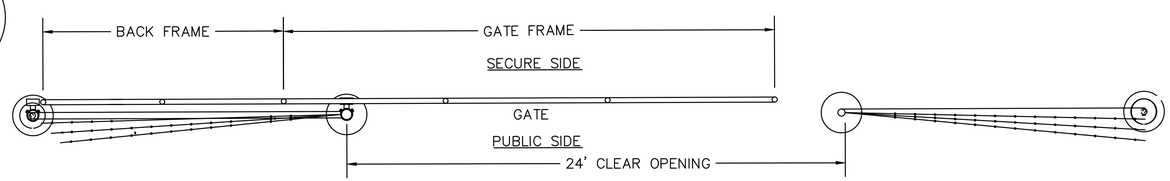
3 C-101 C-505 ENTRANCE/EXIT SIGN DETAIL
SCALE: NTS



SECTION A–A



ELEVATION



2 C-101 C-505 NEW 24' SLIDING GATE DETAIL
SCALE: NTS

1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD
STM	DESCRIPTION	DATE	APPR

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SEAL

Gulf Coast Architectural Group
2510 West Cervantes Street
Pensacola, Florida 32505
p 850.607.7328
www.gcarchgroup.com

A/E INFO

APPROVED

FOR COMMANDER NAVFAC / B.L.T.L.

ACTIVITY

SATISFACTORY TO DATE

DES WDB | DRW WDB | CHK DBS

PROJECT MANAGER R PENARANDA

IPT TECH. BRANCH HEAD T FRAZIER

CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
IPT SOUTH ATLANTIC

NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
NAVAL AIR STATION CORPUS CHRISTI

CORPUS CHRISTI, TX
HAZ WASTE FACILITY B257/B259

HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

SECURITY FENCE AND GATE DETAILS

SCALE: AS SHOWN

EPROJECT NO.:

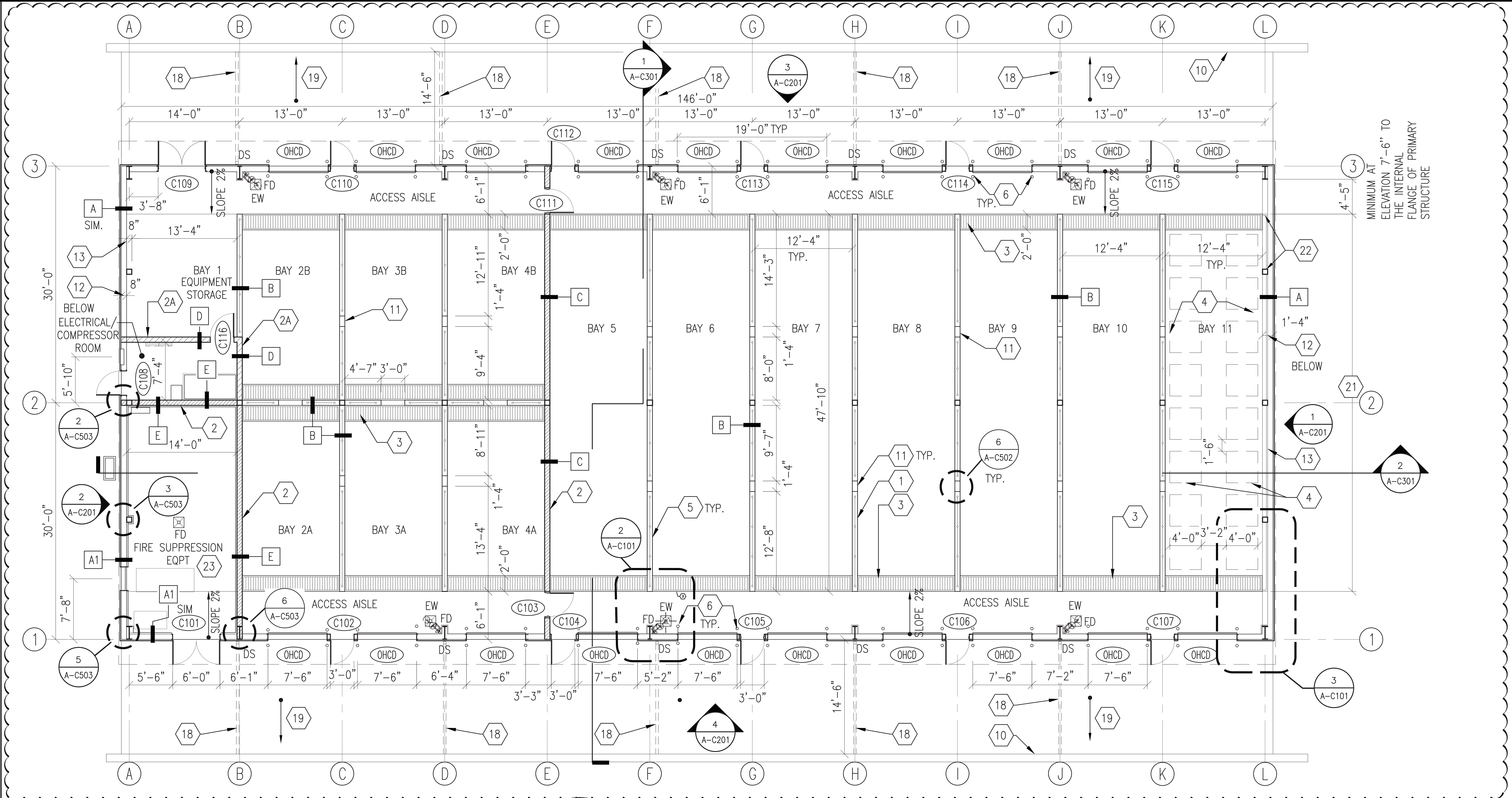
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122448

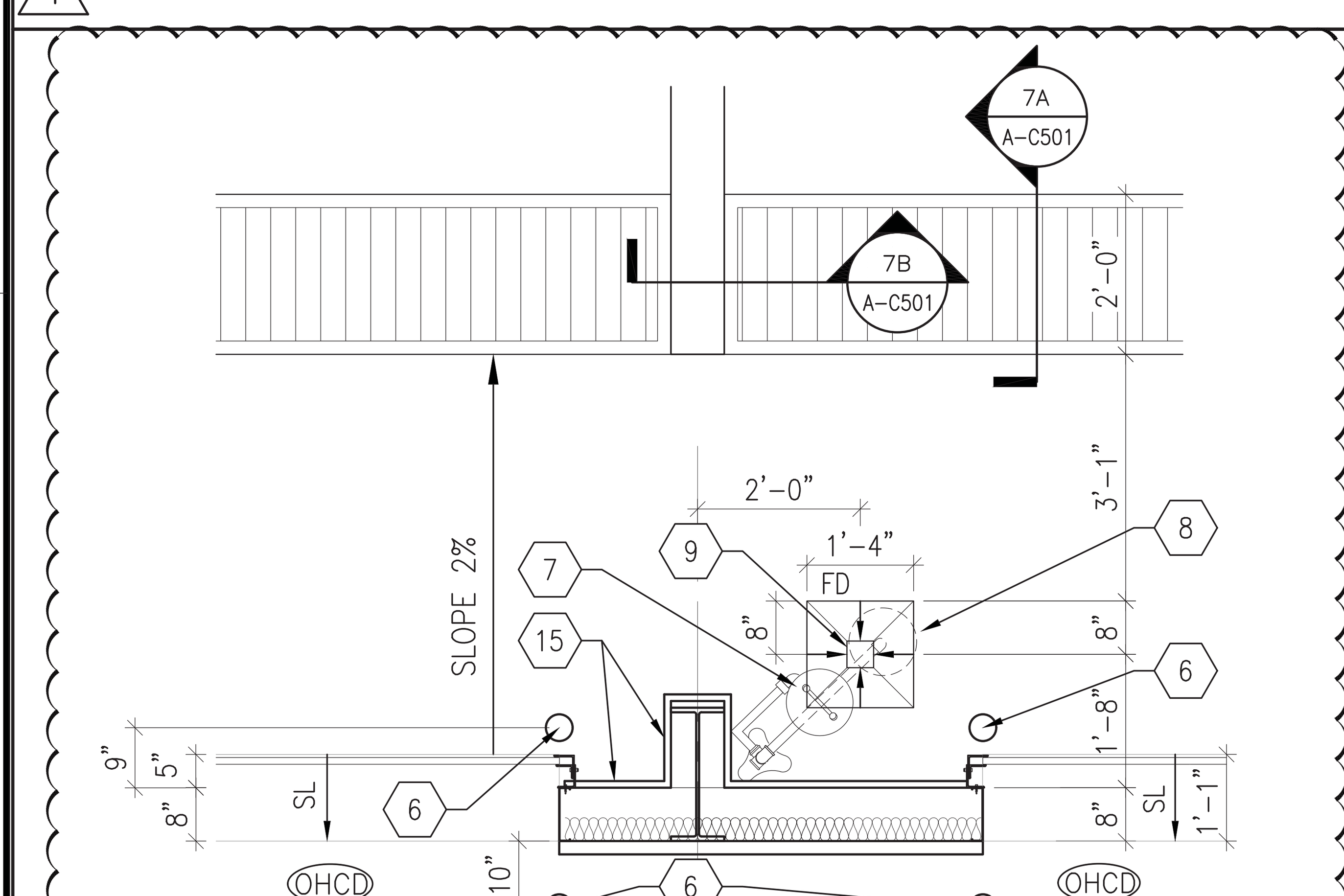
SHEET 18 OF 91

C-505

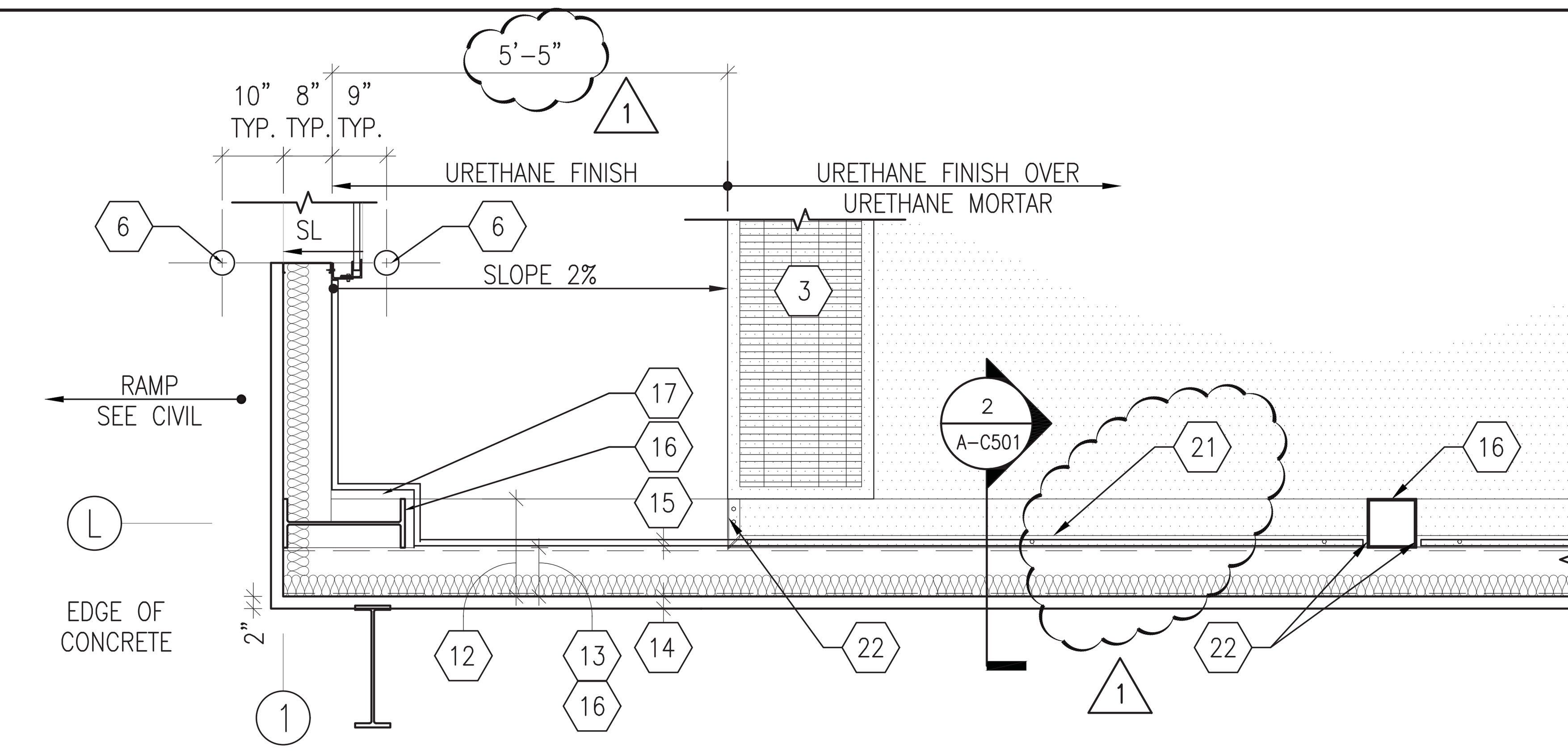
DRAWFORM REVISION: 7 AUGUST 2009



1 A-C101 | A-C101 HWSF – FLOOR PLAN
8' 4' 0' 8' 16'



2 A-C101 | A-C101 HWSF – EMERGENCY EYEWASH DETAIL
2' 1' 0' 2' 4'



3 A-C101 | A-C101 HWSF – FLOOR PLAN ENLARGEMENT
2' 1' 0' 2' 4'

KEYNOTES

1. CMU WALL; HEIGHT 6'
2. PAINTED GYPSUM BOARD WALL – 2H FIRE RATED ON TOP OF CMU WALL
2A. PAINTED GYPSUM BOARD WALL – 1H FIRE RATED ON TOP OF CMU WALL
3. CONTAINMENT SUMP WITH GRATE
4. STORAGE PALLETS (NOT IN CONTRACT)
5. CHAIN LINK PARTITION ABOVE CMU WALL
6. BOLLARDS, PAINT YELLOW – 4 AT EACH OVERHEAD DOOR
7. EYEWASH BOWL
8. SHOWER HEAD ABOVE
9. FLOOR DRAIN, SIT FLOOR DRAINS ½" BELOW FINISH FLOOR AND PROVIDE 16"x16" SUMP TO DRAIN, SEE PLUMBING
10. TRENCH STORM DRAIN. SEE CIVIL
11. HVAC POCKET
12. CONCRETE CURB AT FLOOR LEVEL
13. STEEL GIRT
14. EXTERIOR WALL PANEL
15. INTERIOR WALL LINER PANEL
16. PAINTED STEEL STRUCTURE
17. FURRING CHANNEL
18. 6'' STORM WATER CONNECTION TO TRENCH DRAIN
19. CONCRETE ACCESS RAMP. SEE CIVIL
20. REMOVE FACTORY APPLIED PRIMER AND PREPARE AS REQUIRED FOR URETHANE MORTAR AND FINISH APPLICATION FROM FINISH FLOOR TO 4' AFF.
21. 2X2X1/8" GALV STEEL ANGLE SET IN TWO ROWS OF CONTINUOUS SEALANT. ANCHOR TO SLAB AT 48" OC
22. TACK WELD TO COLUMN. PROVIDE FULLY WELDED AND RETURN AT EACH END TO ALIGN W/ SUMP EDGE.

LEGEND

DS – DOWNSPOUT AND DOWNSPOUT BOOT FOR CONNECTION TO STORM WATER DRAINAGE SYSTEM.
EW – EMERGENCY EYE WASH AND SHOWER STATION. SEE 2/A-C101
FD – FLOOR DRAIN. SEE PLUMBING

D WALL TYPE. SEE SHEET A-C301

FLOOR FINISH SCHEDULE

ROOM NAME	FLOOR FINISH
FIRE SUPPRESSION EQUIPMENT ROOM	URETHANE FINISH
EQUIPMENT STORAGE	URETHANE FINISH URETHANE MORTAR
ELECTRICAL/ COMPRESSOR ROOM	URETHANE FINISH
ACCESS AISLE	URETHANE FINISH
BAYS 1 THRU 10 *INCLUDING A AND B SUBDIVISIONS *INCLUDING WALLS AND FLOOR OF ASSOCIATED CONTAINMENT SUMPS	URETHANE FINISH URETHANE MORTAR
EXTERIOR RAMP– NORTH AND SOUTH	URETHANE FINISH

GENERAL NOTES

1. REFER TO ELEVATIONS FOR LOUVER LOCATIONS, REFER TO A-601 FOR LOUVER SIZES
2. PAINT STRUCTURAL STEEL PRIOR TO THE INSTALLATION OF POCKET GROUT SO ALL AREAS OF STEEL ARE COATED.
3. FIRE STOP ALL RATED WALL PENETRATIONS AND ENDS AT PERIMETER WALLS.

SYM	DESCRIPTION	DATE	APPR
1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD

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ACTIVITY

SATISFACTORY TO DATE

DES EP | DRW EP | CHK DC

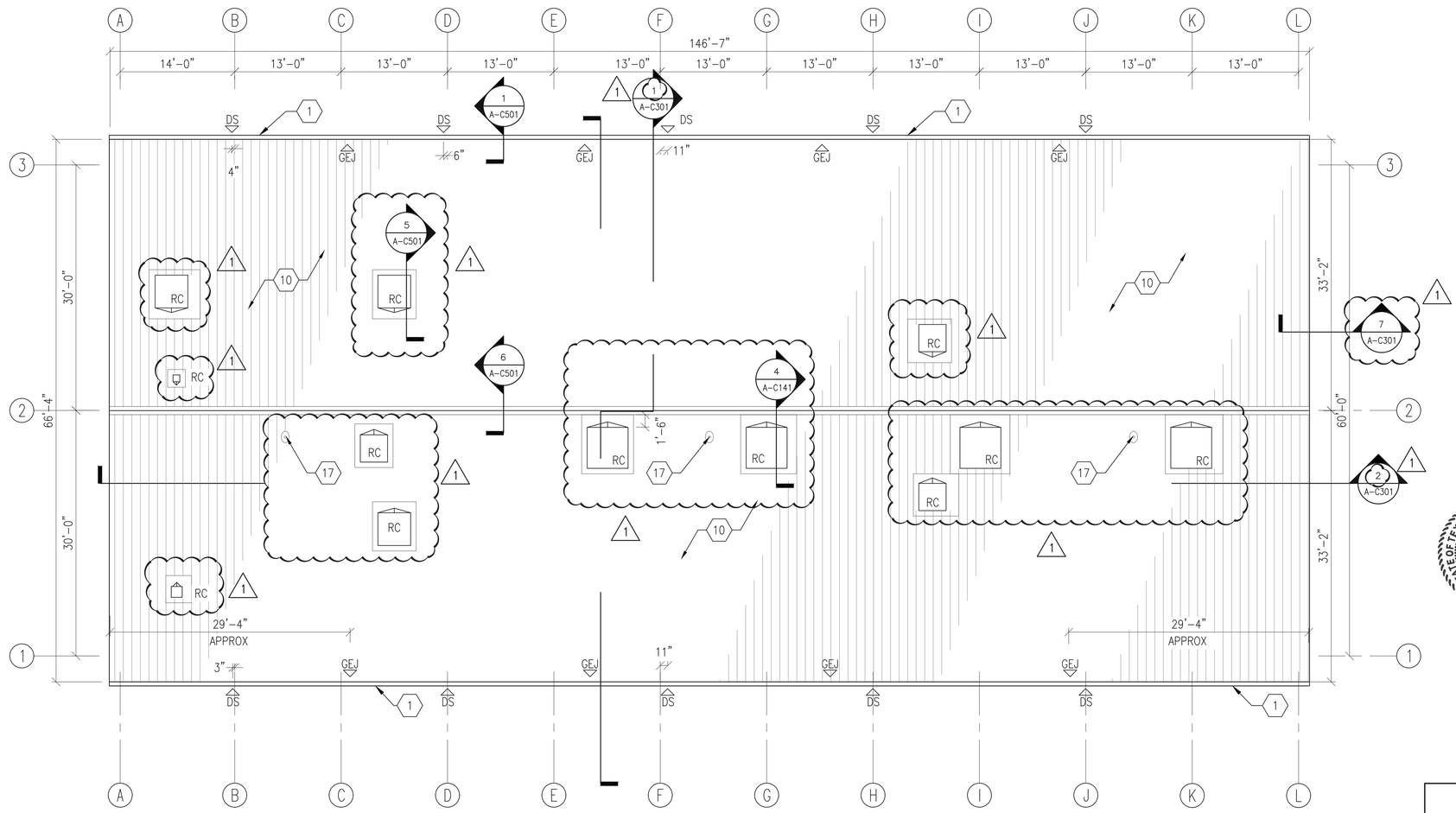
PROJECT MANAGER R PENARANDA
IPT TECH. BRANCH HEAD T FRAZIER
CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
IPT SOUTH ATLANTIC
NAVAL AIR STATION CORPUS CHRISTI
HAZ WASTE FACILITY B257/B259
CORPUS CHRISTI, TX
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
HWSF – FLOOR PLAN

SCALE: AS SHOWN
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 15122464
SHEET 34 OF 91

A-C101

DRAWFORM REVISION: 7 AUGUST 2009



1 A-C101 | A-C101 HWSF – ROOF PLAN

8' 4' 0' 8' 16'

ABBREVIATION LEGEND

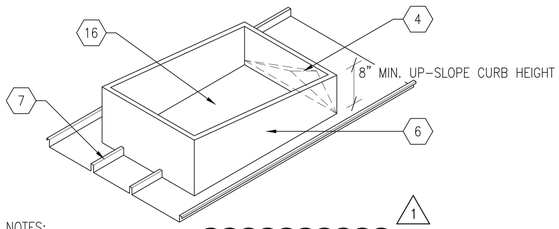
DS – DOWNSPOUT
GEJ– GUTTER EXPANSION JOINT. SEE 4/A–B503
RC – ROOF CURB. SEE 2, 3 & 4/AC141 & 5/AC501 FOR WATERPROOFING.

KEYNOTES

1. ROOF GUTTER
2. SET IN FULL BEAD OF NON–CURYNG BUTYL SEALANT
3. FRAME AROUND CURB OPENING WITH SECONDARY STRUCTURAL SUB–FRAMING BARS. SEE STRUCTURAL.
4. INTEGRATED CRICKET
5. PANEL CLIPS
6. PREFABRICATED, FULLY WELDED, MIN 18–GA ONE PIECE METAL ROOF CURB. ATTACH WITH GASKETED STAINLESS STEEL FASTENERS AT 1.5" O.C. MAX.
7. PROVIDE INTEGRATED RIBS TO SIT ABOVE STANDING SEAM METAL PANELS, SEAL ALL PERIMETER WATERTIGHT.
8. SST FLASHING, MIN 24–GA, ATTACH TO ROOF TOP EQUIPMENT
9. ROOF TOP EQUIPMENT, SEE MECHANICAL & FIRE SUPPRESSION
10. ROOF PANELS
11. STEEL STRUCTURE
12. VINYL FACED BATT INSULATION – 3.5" THICK;
13. PREFINISHED Z–CLOSURE, MIN 20–GA
14. BUTYL SEALANT TAPE
15. PRE–FINISHED METAL ROOF CAP, MIN 24 GA
16. OPENING CLEARANCE DETERMINED BY EQUIP., SEE MECH. & FP DWGS
17. PENETRATION FOR CONVENIENCE OUTLETS, SEE ELECTRICAL AND DETAIL 4/AB–501 SIMILAR FOR FLASHING.

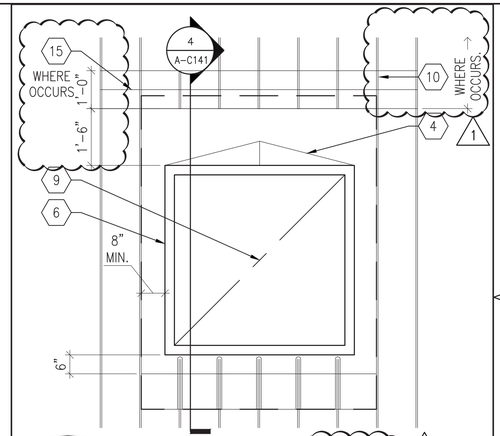
GENERAL NOTE

PROVIDE MIN. OF 1/2" THERMAL SPACER BLOCK AT ALL ROOF PANEL CLIP CONNECTIONS



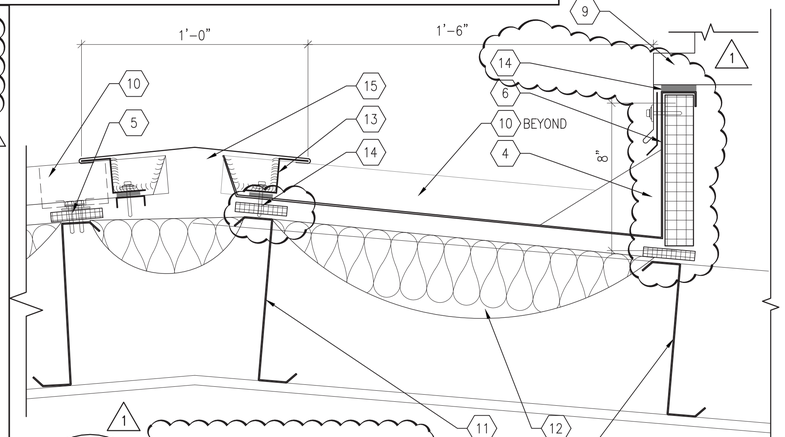
NOTES:
1. MIN. 18 GAUGE INSULATED STRUCTURAL GALVALUME STEEL OR ALUMINUM ALL WELDED ONE PIECE CONSTRUCTION, 8" MINIMUM HEIGHT, WITH BUILT–IN CRICKET TO DIVERT WATER.
2. PROVIDE OVER UNDER CURB W/ SIDES FORMED TO INTEGRATE INTO PANEL.
3. CORRUGATION SIZE, SHAPE, PANEL, COLOR AND SPACING TO MATCH METAL ROOF PANELS.

2 A-C141 | A-C141 TYPICAL ROOF CURB DETAIL



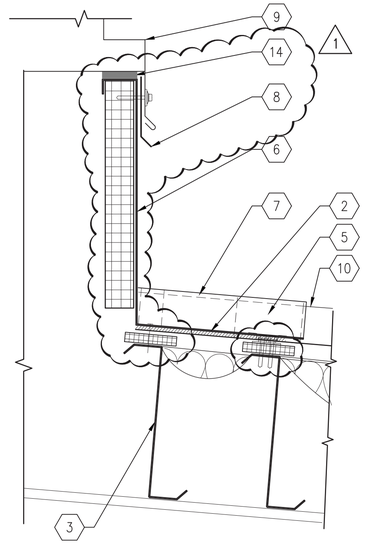
3 A-C141 | A-C141 HWSF – ROOF CURB

2' 1' 0' 2' 4



4 A-C141 | A-C141 CURB DETAIL @ RIDGE

4 2 0 4 8



HWSF – ROOF PLAN

APPR	DATE	DESCRIPTION	STM
RAD	07/27/18	AMENDMENT 0001	1
RAD	06/25/18	ISSUED FOR BID	0

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ACTIVITY

SATISFACTORY TO DATE

DES EP	DRW EP	CHK DC

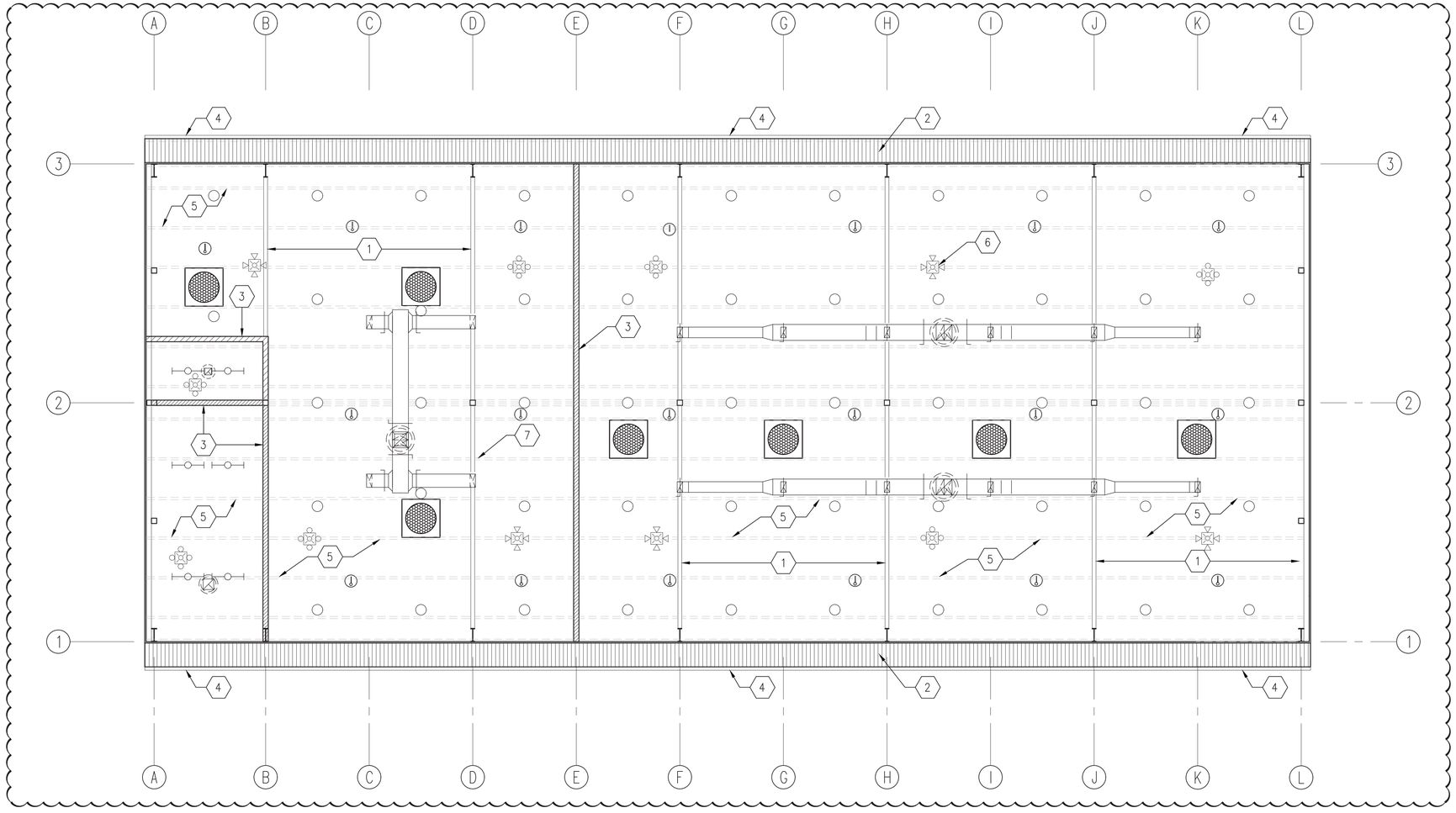
PROJECT MANAGER R PENARANDA
IPT TECH. BRANCH HEAD T FRAZIER
CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
IPT SOUTH ATLANTIC
HAZ WASTE FACILITY B257/B259
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
HWSF – ROOF PLAN

SCALE: AS SHOWN
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 15122465
SHEET 35 OF 91

A-C141

DRAWFORM REVISION: 7 AUGUST 2009



KEYNOTES

1. PRIMARY STRUCTURAL FRAMES
2. METAL SOFFIT PANELS
3. FIRE RATED WALLS. SEE FLOOR PLAN
4. ROOF GUTTER. SEE ROOF PLAN
5. ROOF PURLINS AND VINYL PERFORATED FACE BATT INSULATION
6. CEILING MOUNTED STOBE / HORN – SEE FIRE ALARM TYP.
7. CEILING MOUNTED STOBE / HORN – SEE FIRE ALARM TYP.
8. HEAT DETECTOR – SEE FIRE ALARM TYP.

1

1 A-C141 | A-C141

HWSF – REFLECTED CEILING PLAN

8' 4' 0' 8' 16'

STM	DESCRIPTION	DATE	APPR
1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD

NAVFAC

STATE OF TEXAS
SELVAKUMAR BUVANENDARAN
104375
LICENSED PROFESSIONAL ENGINEER

RELEASED FOR CONSTRUCTION
SEAL

Gulf Coast Architectural Group
2510 West Cervantes Street
Pensacola, Florida 32505
p 850.607.7328
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A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES EP *	DRW EP*	CHK DC *
PROJECT MANAGER	R PENARANDA	
IPT TECH. BRANCH HEAD	T FRAZIER	
CHIEF ENG/ARCH (CORE)		

DEPARTMENT OF THE NAVY
IPT SOUTH ATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX
HAZ WASTE FACILITY B257/B259
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
HWSF – REFLECTED CEILING PLAN

SCALE: AS SHOWN

EPROJECT NO.:

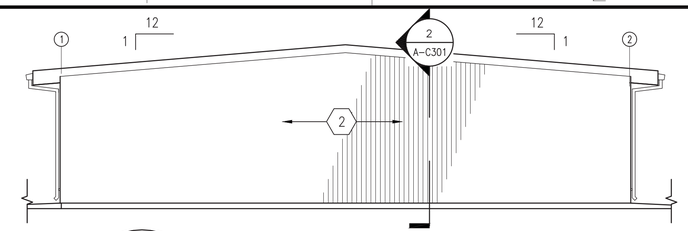
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122466

SHEET 36 OF 91

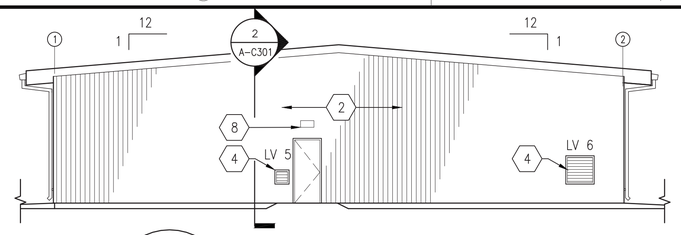
A-C151

DRAWFORM REVISION: 7 AUGUST 2009



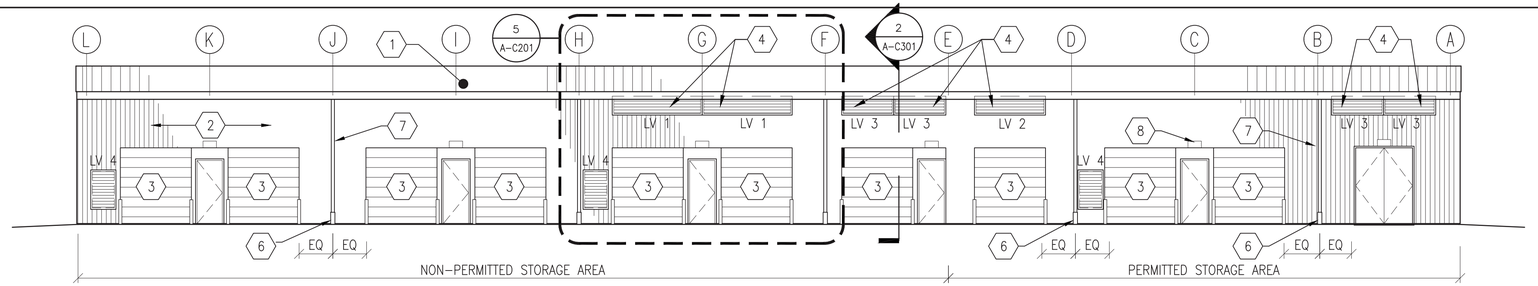
1 A-C101 | A-C201 — HWSF – EAST ELEVATION

8' 4' 0' 8' 16'



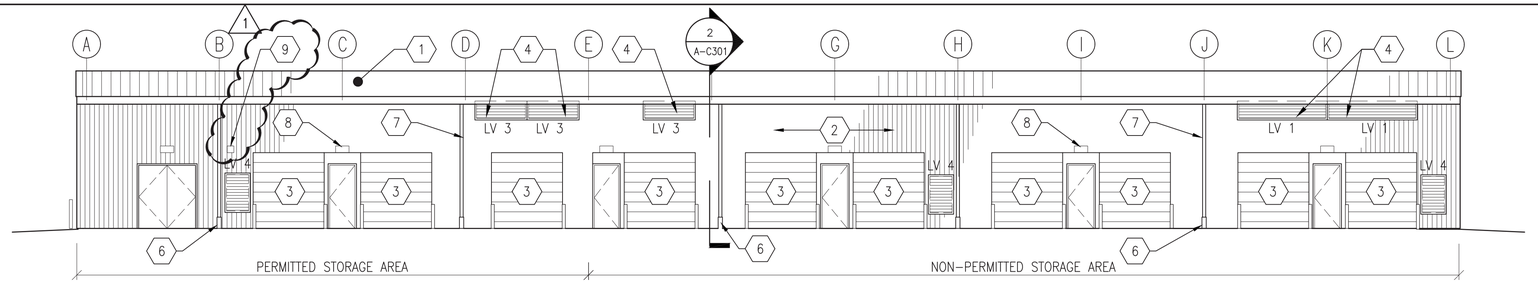
2 A-C101 | A-C102 — HWSF – WEST ELEVATION

8' 4' 0' 8' 16'



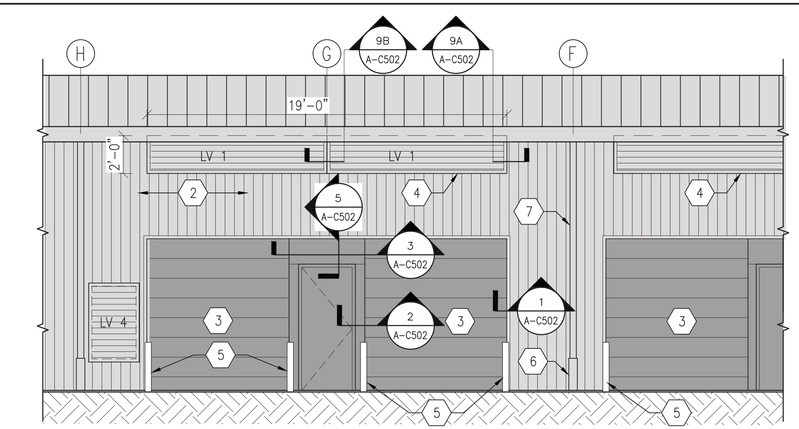
3 A-C101 | A-C201 — HWSF – NORTH ELEVATION

8' 4' 0' 8' 16'



4 A-C101 | A-C201 — HWSF – SOUTH ELEVATION

8' 4' 0' 8' 16'



TIPICAL COLOR PATTERNS

BODY COLOR

ACCENT COLOR

5 A-C201 | A-C201 — HWSF – TYPICAL ELEVATION FRAGMENT

4' 2' 0' 4' 8'

KEYNOTES

1. STANDING SEAM METAL ROOF PANELS
2. STEEL WALL PANELS
3. OVERHEAD COILING DOOR
4. LOUVER, SEE SCHEDULE ON A–601, COORDINATE W/ MECHANICAL
5. BOLLARDS, PAINT YELLOW – SEE CIVIL
6. CAST IRON DOWNSPOUT BOOT
7. DOWNSPOUT
8. LIGHT – SEE ELECTRICAL
9. FIRE ALARM STROBE / HORN – SEE FIRE ALARM

1

ABBREVIATION LEGEND

1

LV – LOUVER, SEE A–601 FOR LOUVER SCHEDULE

STM	DESCRIPTION	DATE	APPR
1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD

NAVFAC

SEAL

STATE OF TEXAS — SELVAKUMAR BUVANENDARAN — 104375 — LICENSED PROFESSIONAL ENGINEER

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HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

HWSF – ELEVATIONS

SCALE: AS SHOWN

EPROJECT NO.:

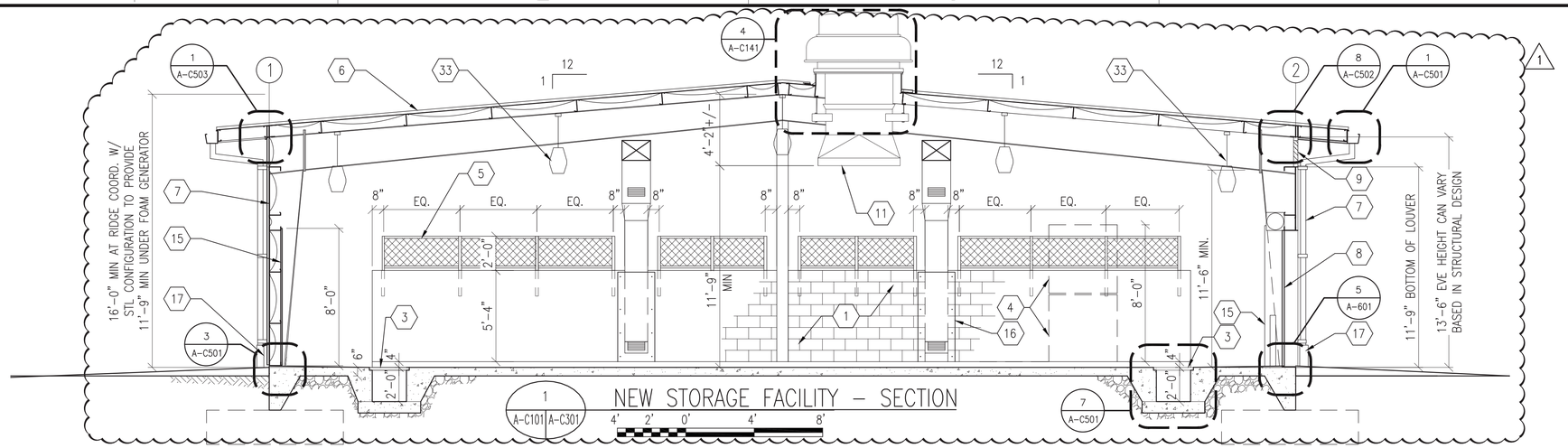
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122467

SHEET 37 OF 91

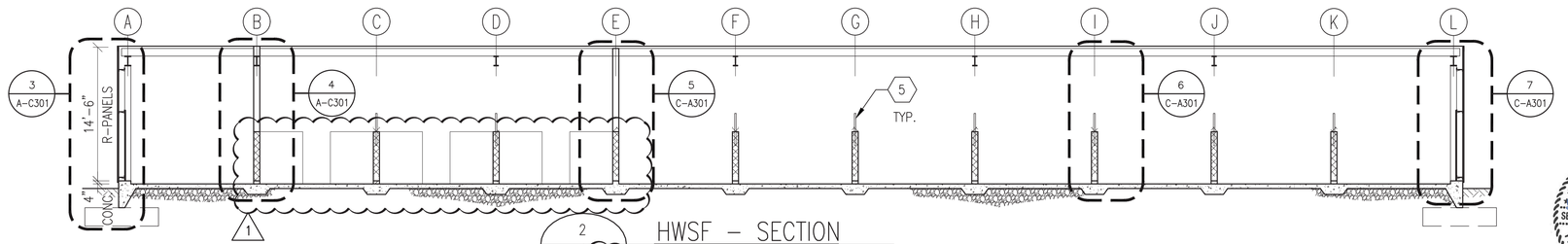
A-C201

DRAWFORM REVISION: 7 AUGUST 2009



1 A-C101 A-C301 — NEW STORAGE FACILITY – SECTION

4' 2' 0' 4' 8'



2 A-C101 A-C301 — HWSF – SECTION

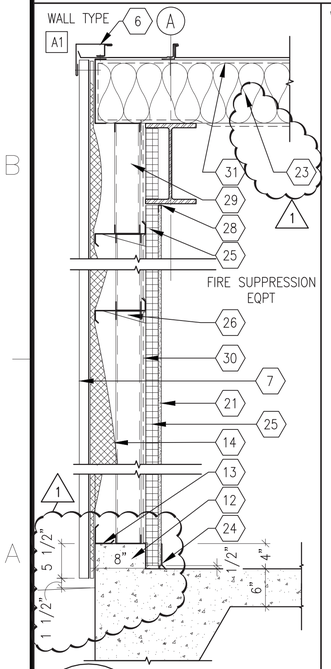
8' 4' 0' 8' 16'

STATE OF TEXAS
SELVAKUMAR BUVANENDARAN
104375
LICENSED
PROFESSIONAL ENGINEER

KEYNOTES

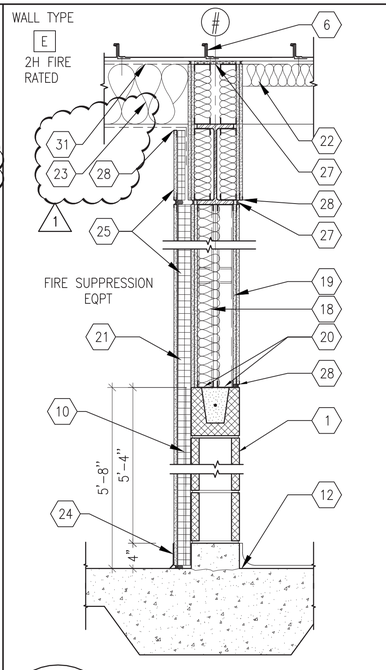
1. CMU WALL
2. GYPSUM BOARD WALL – 2H FIRE RATED ON TOP OF 6' TALL CMU WALL
3. CONTAINMENT SUMP WITH GRATE
4. STORAGE PALLETS (NOT IN CONTRACT)
5. CHAIN LINK FENCE PARTITION ABOVE CMU WALL, PROVIDE EMBEDDED 18" SLEEVE IN CMU PARTITION TO RECEIVE POST
6. STANDING SEAM METAL ROOF PANELS OVER THERMAL SPACERS
7. STEEL EXTERIOR WALL PANELS
8. OVERHEAD COILING DOOR
9. LOUVER
10. R-10 RIGID INSULATION AND 2" Z CLIPS @ 24" OC SPANNING VERTICALLY AT CMU.
11. FOAM GENERATOR
12. CONCRETE SLAB ON GRADE WITH 4" CURB. SLOPE AS INDICATED – SEE STRUCTURAL AND CIVIL
13. FLOOR LINE ANGLE
14. R-13 VINYL FACED BATT INSULATION
15. INTERIOR WALL LINER PANELS
16. STEEL PROTECTIVE PLATE AT EACH SIDE. SEE 6/A-C502
17. CAST IRON DOWNSPOUT BOOT
18. R-13 UN-FACED BATT INSULATION
19. 5/8" GYPSUM BOARD TYPE X SHEATHING: 1 LAYER PER SIDE FOR 1H FIRE RATED ASSEMBLIES; 2 LAYERS PER SIDE FOR 2H FIRE RATED ASSEMBLIES;
20. MIN 20-GA TOP/BOTTOM TRACKS AND STUDS @ 16" O.C.
21. 1/2" MOISTURE RESISTANT GWB
22. R-13 PERFORATED VINYL FACED BATT INSULATION.
23. R-30 PERFORATED VINYL FACED BATT INSULATION AT FIRE SUPPRESSION EQUIPMENT ROOM.
24. 4" VINYL BASE
25. R-10 RIGID INSULATION ATTACHED TO 4" STUDS AND FACE OF GIRTS
26. PEMB STEEL GIRT, EXTERIOR FACE FLUSH WITH EXTERIOR FACE OF STEEL FRAME
27. FIRESTOPPING, FILL VOID WITH MINERAL WOOL OR FIRE RATED PACKING MTL THAT MEETS PARTITION FIRE RATING
28. "J" BEAD
29. 4" GMS @ 16" OC SPANNING VERTICALLY BETWEEN GIRTS.
30. AIR / VAPOR BARRIER OF WALL ASSEMBLY WHERE OCCURS. ATTACH TO STEEL STUDS INTEGRATE W/ BY LAPPING AND TAPPING JOINTS / SEAMS AT FIRE SUPPRESSION EQUIPMENT ROOM.
31. ROOF AIR/ VAPOR BARRIER ATTACHED TO STEEL PURLINS INTEGRATE W/ WALLS BY LAPPING AND TAPPING JOINTS & SEAMS AT FIRE SUPPRESSION EQUIPMENT ROOM.
32. BACKER ROD AND SEALANT
33. LIGHT FIXTURE, SEE ELECTRICAL

WALL TYPE A1



3 A-C301 A-C301 — WALL DETAIL

WALL TYPE E 2H FIRE RATED

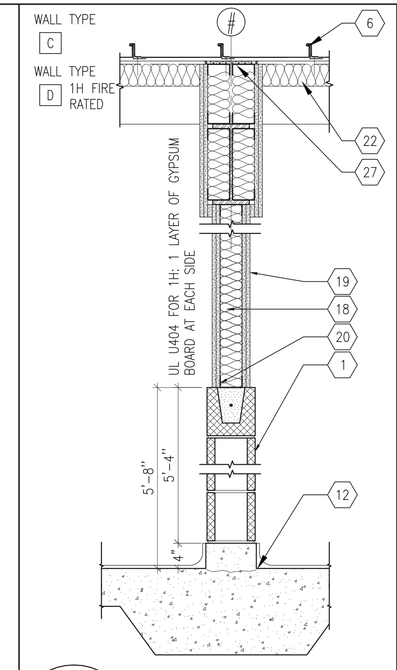


4 A-C301 A-C301 — HWSF WALL DETAIL

1' 6" 0' 1' 2'

WALL TYPE C

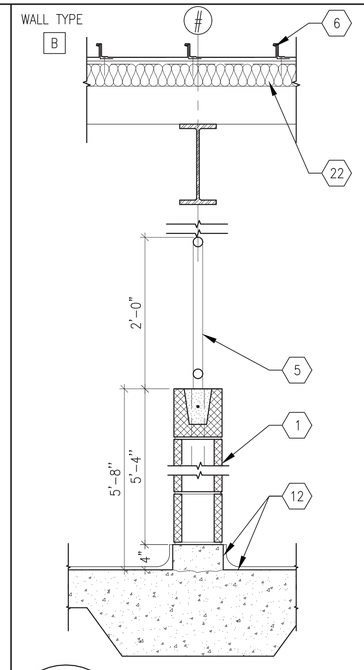
WALL TYPE D 1H FIRE RATED



5 A-C301 A-C301 — HWSF – WALL DETAIL

1' 6" 0' 1' 2'

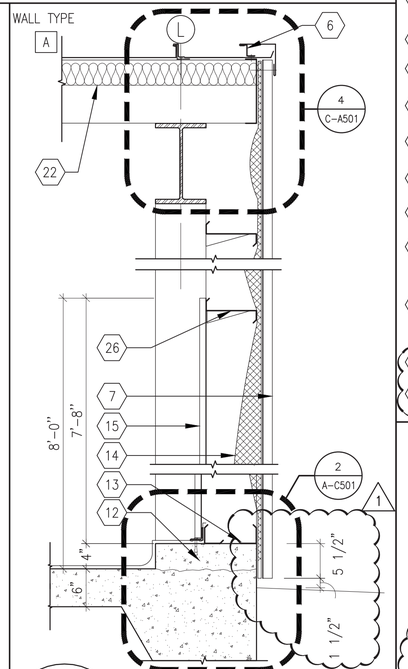
WALL TYPE B



6 A-C301 A-C301 — HWSF – WALL DETAIL

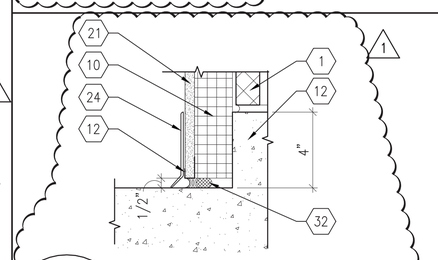
1' 6" 0' 1' 2'

WALL TYPE A



7 A-C301 A-C301 — HWSF WALL DETAIL

1' 6" 0' 1' 2'



8 A-C301 A-C301 — TYP. BASE DETAIL

4" 2" 0' 4" 8"

1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD
STM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

Gulf Coast Architectural Group
2510 West Cervantes Street
Pensacola, Florida 32505
p 850.607.7328
www.gcarchgroup.com

A/E INFO

APPROVED

FOR COMMANDER NAVFAC / B.L.T.L

ACTIVITY

SATISFACTORY TO DATE

DES EP '	DRW EP'	CHK DC '
PROJECT MANAGER	R PENARANDA	
IPT TECH. BRANCH HEAD	T FRAZIER	
CHIEF ENG/ARCH (CORE)	-	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
IPT SOUTH ATLANTIC
HAZ WASTE FACILITY B257/B259

NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX

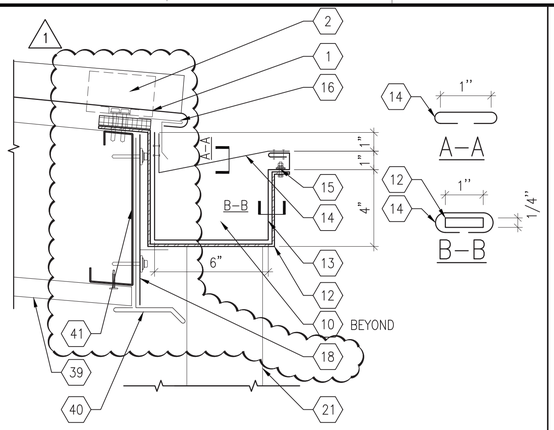
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

HWSF – SECTIONS

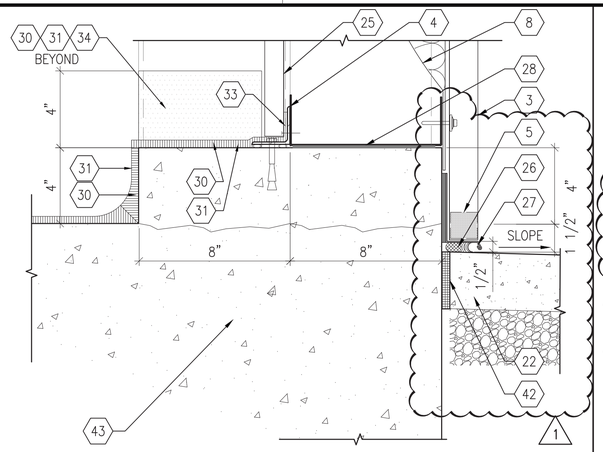
SCALE: AS SHOWN
EPROJECT NO.: -
CONSTR. CONTR. NO. -
NAVFAC DRAWING NO. 15122468
SHEET 38 OF 91

A-C301

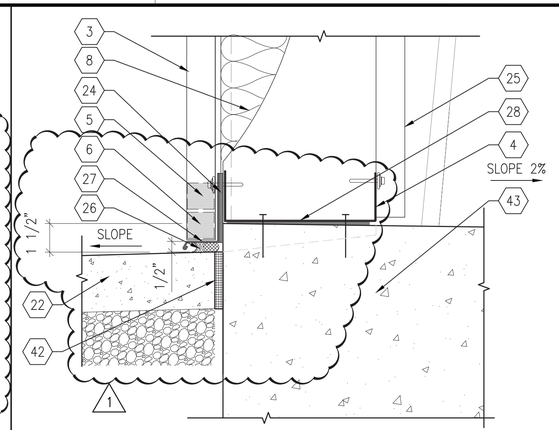
DRAWFORM REVISION: 7 AUGUST 2009



1 GUTTER DETAIL
SCALE: 3":1'-0"



2 WALL PANELS SILL
SCALE: 3":1'-0"



3 WALL PANELS SILL
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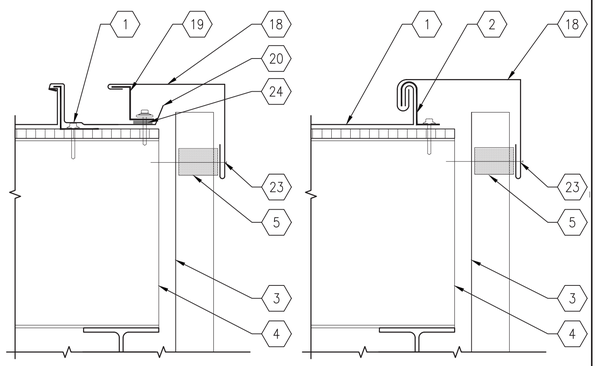
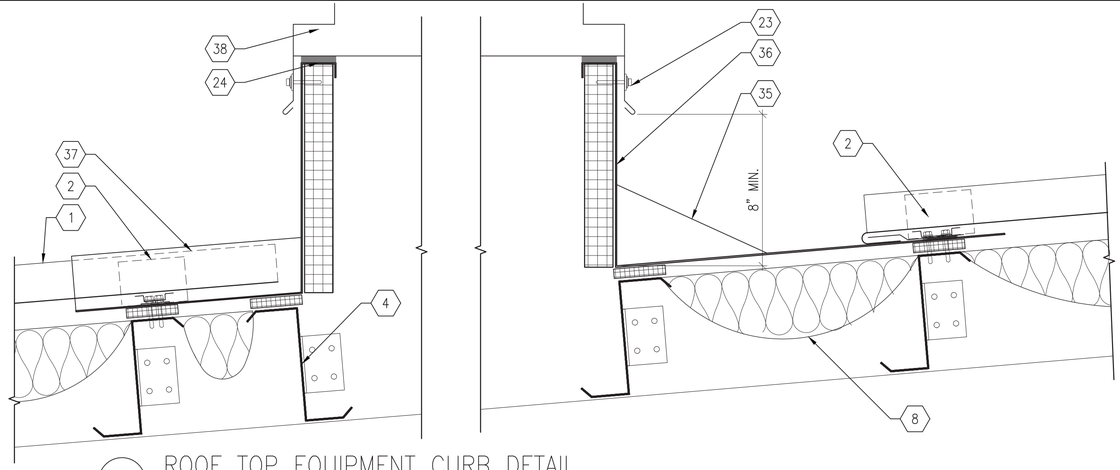
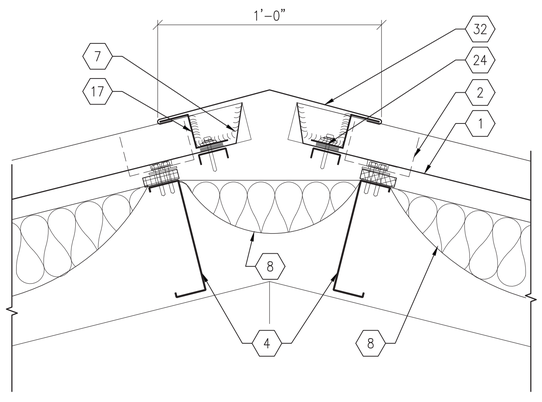


OPTION 1 OPTION 2

4 RAKE FLASHING DETAIL
SCALE: 3":1'-0"

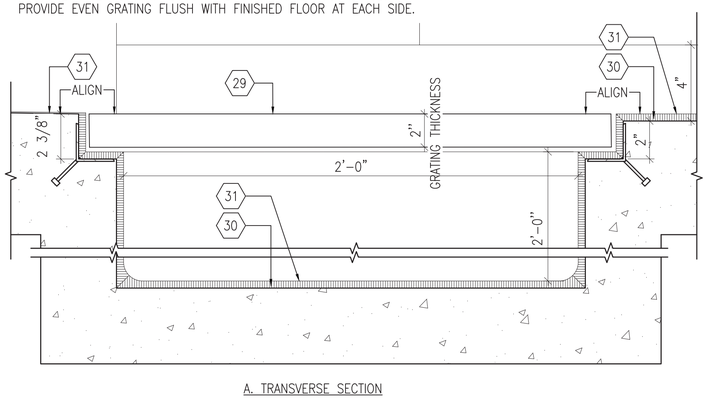


5 ROOF TOP EQUIPMENT CURB DETAIL
SCALE: 3":1'-0"

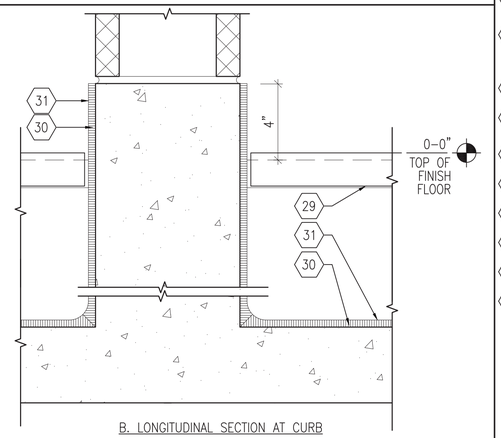


6 RIDGE FLASHING DETAIL
SCALE: 3":1'-0"

NOTE: 2-2/8" DIMENSION IS BASED ON 3/8" THICKNESS OF POLYURETHANE MORTAR. ADJUST AND COORDINATE ACCORDINGLY TO PROVIDE EVEN GRATING FLUSH WITH FINISHED FLOOR AT EACH SIDE.



A. TRANSVERSE SECTION



B. LONGITUDINAL SECTION AT CURB

7 CONTAINMENT SUMP DETAIL
SCALE: 3":1'-0"

KEYNOTES

1. ROOF PANELS
2. PANEL CLIP
3. WALL PANELS
4. STEEL STRUCTURE BY PEMB MANUFACTURER. (1)
5. FOAM CLOSURE – MATCH WALL PANELS PROFILE.
6. SET FOAM GASKET W/ FULL SEALANT BED AT PANEL AND FLASHING FACES
7. SEALANT – CONTINUOUS BUTYL OR URETHANE
8. R-13 VINYL FACED BATT INSULATION
9. PREFINISHED METAL EXPANSION CAP
10. PREFINISHED METAL GUTTER END. PROVIDE STAINLESS STEEL POP RIVETS AND SEAL ALL JOINTS WATER TIGHT.
11. SPLICE PLATE, FINISH TO MATCH GUTTER
12. GUTTER HANGERS – 1/8" X 1" STAINLESS STEEL. INSTALL AT 24" MAX
13. ROOF GUTTER – MIN 24-GA, PRE-FINISHED GALVALUME.
14. GUTTER STRAP – MATCH GUTTER MATERIAL. ATTACH WITH 2 SS POP RIVETS AT EACH CONNECTION.
15. BOLT WITH GASKETED WASHER – STAINLESS STEEL AT EACH HANGER.
16. CONTINUOUS CLEAT – PRE-FINISHED, MIN 20-GA, ATTACH BY EACH PANEL CLIP.
17. PREFINISHED Z-CLOSURE, MIN 20-GA
18. PRE-FINISHED FASCIA – MIN 24-GA
19. PRE-FINISHED ZEE-BAR – ATTACH AT 6" MAX THROUGH BUTYL SEALANT TAPE.
20. 1" TURN-UP
21. DOWNSPOUT
22. CONCRETE PAVING
23. GASKETED FASTENER @ 6" OC MAX
24. BUTYL SEALANT TAPE
25. INTERIOR WALL LINER PANELS
26. BACKER ROD AND SEALANT
27. SST SILL FLASHING, MIN. 24 GA
28. SET CHANNEL IN FULL BED OF SEALANT
29. FLOOR GRATE. SEE STRUCTURAL.
30. POLYURETHANE FLOOR MORTAR
31. POLYURETHANE FLOOR FINISH
32. PRE-FINISHED METAL METAL ROOF CAP, MIN 24 GA
33. 2x2x1/8" GALV STEEL ANGLE SET IN TWO ROWS OF CONTINUOUS SEALANT. ANCHOR TO SLAB AT 48" OC
34. STEEL COLUMN BEYOND. REMOVE FACTORY APPLIED PRIMER AND PREPARE AS REQUIRED FOR URETHANE MORTAR AND FINISH APPLICATION.
35. BUILT-IN CRICKET TO DIVERT WATER
36. ONE PIECE METAL, INSULATED ROOF CURB; 8" MIN. UP-SLOPE CURB HEIGHT
37. FILL RECEIVERS WITH SEALANT
38. MECHANICAL ROOFTOP EQUIPMENT
39. MIN. 24 GA PRE-FINISHED SOFFIT PANELS.
40. SOFFIT / EAVE TRIM ATTACHED AT 12" OC
41. EAVE CHANNEL
42. EXPANSION JOINT MATERIAL FULL DEPTH OF SLAB

GRAPHIC SCALE:

6" 0 3" 6"

SCALE: 3" = 1'-0"

STATE OF TEXAS
SELVAKUMAR BUVANENDARAN
104375
LICENSED
PROFESSIONAL ENGINEER

1	AMENDMENT 0001	07/27/18	RAD	
0	ISSUED FOR BID	06/25/18	RAD	
STM	DESCRIPTION	DATE	APPR	

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IPT TECH. BRANCH HEAD T FRAZIER
CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
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IPT SOUTH ATLANTIC
HAZ WASTE FACILITY B257/B259
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NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX

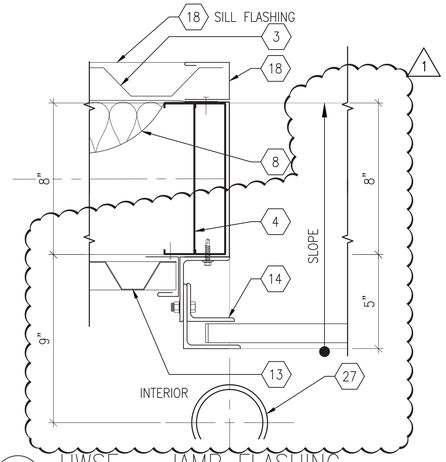
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

HWSF – DETAILS

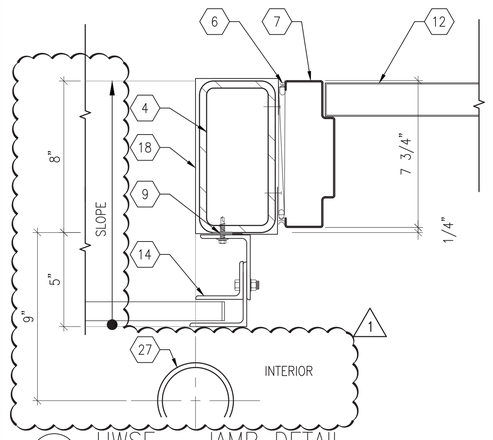
SCALE: AS SHOWN
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 15122469
SHEET 39 OF 91

A-C501

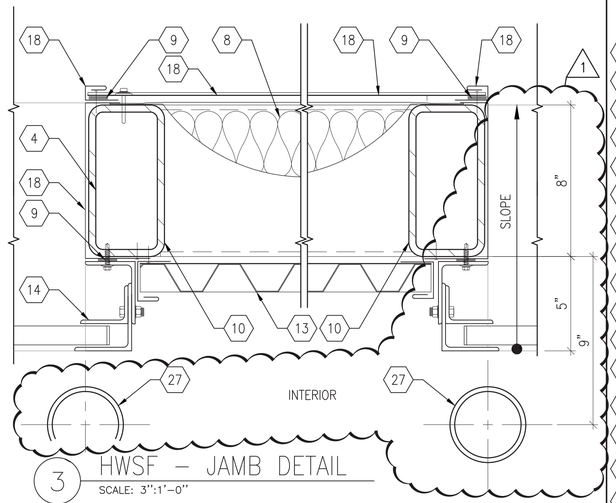
DRAWFORM REVISION: 7 AUGUST 2009



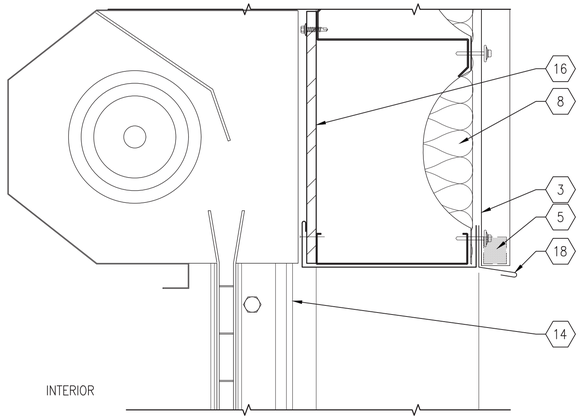
1 HWSF – JAMB FLASHING
SCALE: 3":1'–0"



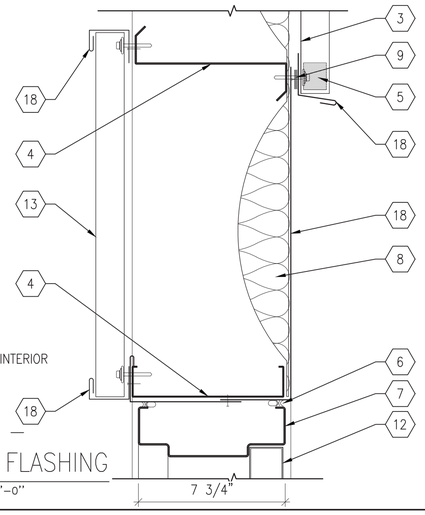
2 HWSF – JAMB DETAIL
SCALE: 3":1'–0"



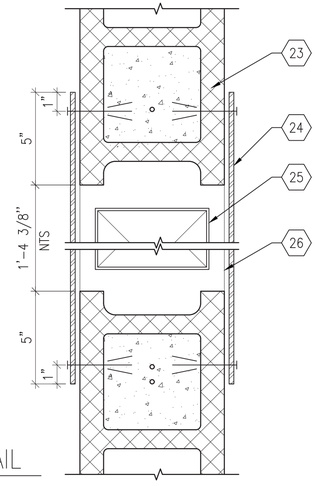
3 HWSF – JAMB DETAIL
SCALE: 3":1'–0"



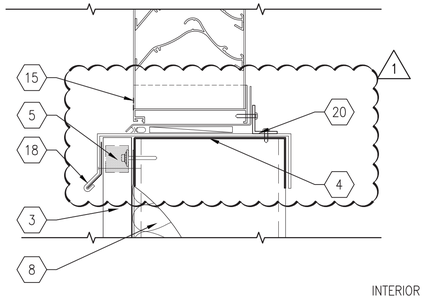
4 HWSF – HEAD FLASHING
SCALE: 3":1'–0"



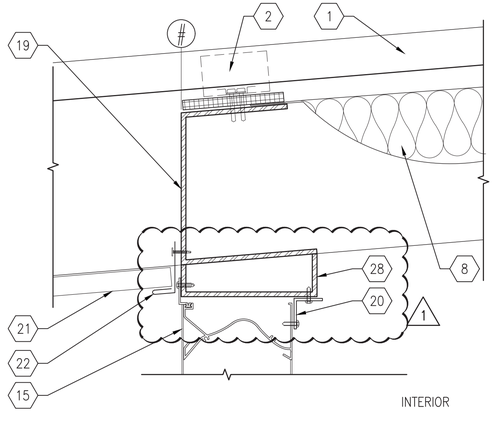
5 HWSF – HEAD FLASHING
SCALE: 3":1'–0"



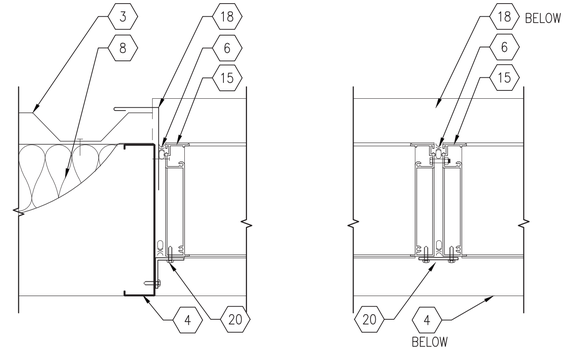
6 MECHANICAL CHASE DETAIL
SCALE: 3":1'–0"



7 HWSF – SILL FLASHING
SCALE: 3":1'–0"



8 HWSF – HEAD FLASHING
SCALE: 3":1'–0"



A. LOUVER TO WALL CONDITION

B. LOUVER TO LOUVER CONDITION

INTERIOR

9 HWSF – LOUVER JAMB FLASHING
SCALE: 3":1'–0"

KEYNOTES

1. ROOF PANELS
2. PANEL CLIP
3. WALL PANELS
4. STEEL STRUCTURE BY PEMB MANUFACTURER. (1)
5. FOAM CLOSURE – MATCH WALL PANELS PROFILE.
6. CONTINUOUS BACKER ROD AND SEALANT
7. HOLLOW METAL DOOR FRAME W/ ANCHORS
8. R–13 VINYL FACED BATT INSULATION
9. SEALANT TAPE
10. PAINT STEEL MEMBER PRIOR TO FLASHING/TRIM INSTALLATION
11. PRE–FINISHED TRIM
12. HOLLOW METAL DOOR
13. INTERIOR WALL LINER PANELS
14. OVERHEAD DOOR ASSEMBLY
15. LOUVER – COLOR TO MATCH WALL PANELS
16. PROVIDE REQUIRED SUPPORT PLATE OR BLOCKING FOR OVERHEAD COILING DOOR
17. PRE–FINISHED SHOP–FABRICATED PANEL – MIN 22–GA
18. PRE–FINISHED FLASHING – MIN 24–GA
19. PURLIN
20. SECURE LOUVER W/ MANUFACTURERS RECOMMENDED MOUNTING CLIPS
21. SOFFIT PANELS
22. PRE–FINISHED SOFFIT PANEL CLOSURE TRIM
23. CMU MASONRY. SEE STRUCTURAL
24. MIN 14–GA GALVANIZED, PAINTED STEEL PLATE. ATTACH WITH GALVANIZED STEEL OR STAINLESS STEEL ANCHORS AT 16" O.C. MAX, PROVIDE OPENINGS FOR MECHANICAL GRILLS – SEE MECHANICAL.
25. MECHANICAL DUCT. SEE MECHANICAL.
26. CONCRETE CURB AT FLOOR LEVEL BELOW
27. BOLLARDS, PAINT YELLOW – 4 AT EACH OVERHEAD DOOR
28. PROVIDE CUSTOM BENT PLATE
29. TURN SILL FLASHING UP AT JAMBS

GRAPHIC SCALE:

6" 0 3" 6"

SCALE: 3" = 1'–0"

NO	DESCRIPTION	DATE	APPR
1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD

STATE OF TEXAS – SELVAKUMAR BUVANENDIRAN – 104375 – LICENSED PROFESSIONAL ENGINEER

NAVFAC

SEAL

Gulf Coast Architectural Group
2510 West Cervantes Street
Pensacola, Florida 32505
p 850.607.7328
www.gcarchgroup.com

A/E INFO

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FOR COMMANDER NAVFAC / B.L.T.L

ACTIVITY

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DES EP ' | DRW EP ' | CHK DC '

PROJECT MANAGER R PENARANDA

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CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
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CORPUS CHRISTI, TX

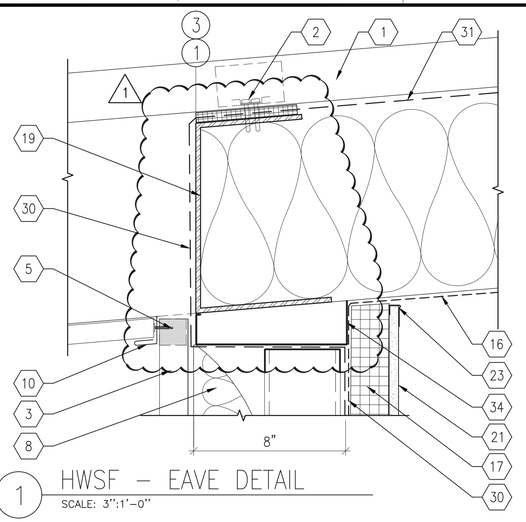
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

HWSF – DETAILS

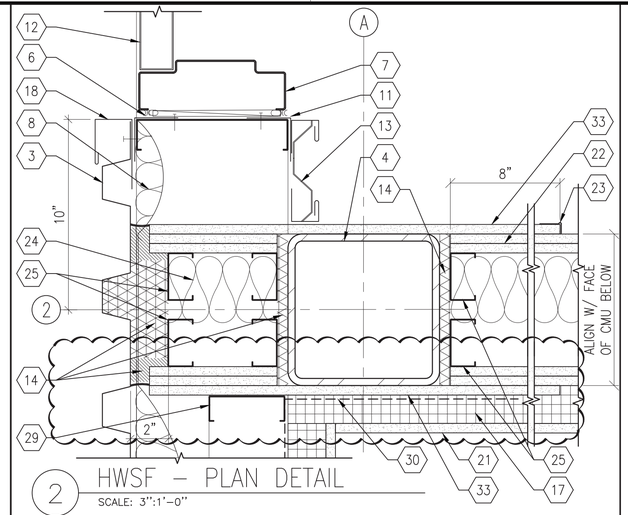
SCALE: AS SHOWN
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 15122470
SHEET 40 OF 91

A-C502

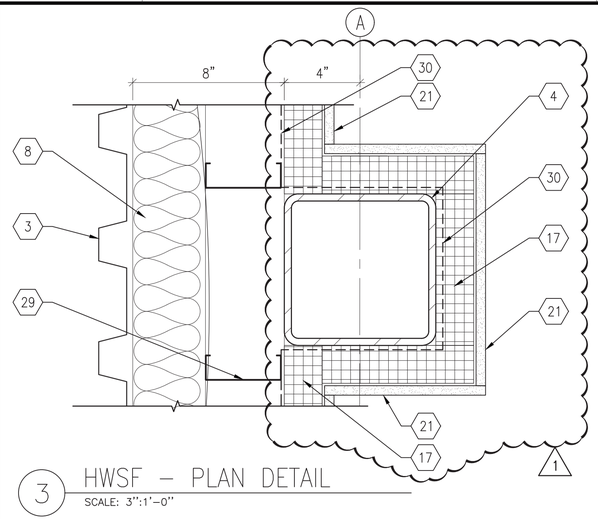
DRAWFORM REVISION: 7 AUGUST 2009



1 HWSF – EAVE DETAIL
SCALE: 3":1'–0"



2 HWSF – PLAN DETAIL
SCALE: 3":1'–0"



3 HWSF – PLAN DETAIL
SCALE: 3":1'–0"

4 HWSF – LOUVER HEAD
SCALE: 3":1'–0"

5 HWSF – PLAN DETAIL
SCALE: 3":1'–0"

6 HWSF – PLAN DETAIL
SCALE: 3":1'–0"

7 HWSF – LOUVER SILL
SCALE: 3":1'–0"

8 HWSF – LOUVER JAMB
SCALE: 3":1'–0"

9 HWSF – JAMB DETAIL
SCALE: 3":1'–0"

KEYNOTES

1. ROOF PANELS
2. PANEL CLIP WITH THERMAL SPACER BLOCK AT ALL ROOF CONNECTIONS
3. WALL PANELS
4. STEEL STRUCTURE BY PEMB MANUFACTURER. 1
5. FOAM CLOSURE – MATCH WALL PANELS PROFILE.
6. CONTINUOUS BACKER ROD AND SEALANT
7. HOLLOW METAL DOOR FRAME W/ ANCHORS
8. R–13 VINYL FACED BATT INSULATION
9. SEALANT TAPE
10. PRE–FINISHED SOFFIT PANEL CLOSURE TRIM
11. PRE–FINISHED TRIM
12. HOLLOW METAL DOOR
13. INTERIOR WALL LINER PANELS
14. FIRESTOPPING SYSTEM, FILL VOID OR CAVITY WITH SEALANT OR MINERAL WOOL OR FIRE RATED PACKING MTL THAT MEETS PARTITION FIRE RATING
15. LOUVER – COLOR TO MATCH WALL PANELS 1
16. R–30 PERFORATED VINYL FACED BATT INSULATION AT FIRE SUPPRESSION EQUIPMENT ROOM.
17. R–10 RIGID INSULATION 1
18. PRE–FINISHED FLASHING – MIN 24–GA
19. PURLIN
20. SECURE LOUVER W/ MANUFACTURERS RECOMMENDED MOUNTING CLIPS
21. 1/2" MOISTURE RESISTANT GWB
22. 5/8" GYPSUM BOARD TYPE X SHEATHING:
    1 LAYER PER SIDE FOR 1H FIRE RATED ASSEMBLIES;
    2 LAYERS PER SIDE FOR 2H FIRE RATED ASSEMBLIES;
23. "J" BEAD
24. R–13 UN–FACED BATT INSULATION
25. 2–1/2" 20–GA TOP/BOTTOM TRACKS AND STUDS @ 16" O.C.
26. PRE–FINISHED SILL FLASHING – MIN 24–GA
27. PEMB TAPERED COLUMN
28. SEALANT ALONG JOINT
29. 4" GMS @ 16" OC BETWEEN PURLINS
30. AIR / VAPOR BARRIER OF WALL ASSEMBLY WHERE OCCURS. ATTACH TO STEEL STUDS INTEGRATE W/ BY LAPPING AND TAPPING JOINTS / SEAMS AT FIRE SUPPRESSION EQUIPMENT ROOM.
31. ROOF AIR/ VAPOR BARRIER ATTACHED TO STEEL PURLINS INTEGRATE W/ BY LAPPING AND TAPPING JOINTS & SEAMS AT FIRE SUPPRESSION EQUIPMENT ROOM.
32. MECHANICAL DAMPER, SEE MECHANICAL
33. 5/8" TYPE X GWB
34. PROVIDE CUSTOM BENT PLATE

APPR	DATE	DESCRIPTION	STM
RAD	07/27/18	AMENDMENT 0001	1
RAD	06/25/18	ISSUED FOR BID	0

NAVFAC

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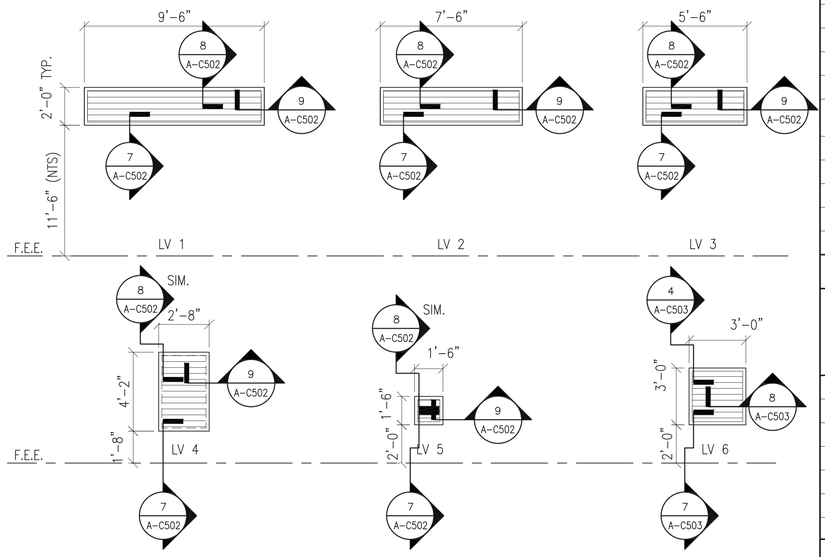
HAZ WASTE FACILITY B257/B259
CORPUS CHRISTI, TX
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
HWSF – DETAILS

SCALE: AS SHOWN
EPROJECT NO.: .
CONSTR. CONTR. NO. .
NAVFAC DRAWING NO. 15122471
SHEET 41 OF 91
A-C503

DRAWFORM REVISION: 7 AUGUST 2009

LOUVER SCHEDULE

AREA SERVING	UNIT NO.	FUNCTION	SIZE	FREE AREA (SQ.FT.)	QTY	TOTAL FREE AREA (SQ.FT.)	TOTAL CFM	AVERAGE VELOCITY (FPM)
NON-PERMITTED	LV 1	RELIEF	114"x24"	8.11	4	46.33	45,000	971
	LV 3	RELIEF	66"x24"	4.63	3			
	LV 4	INTAKE	30"x48"	4.58	4	18.32	8,880	485
PERMITTED	LV 2	RELIEF	90"x24"	6.42	1	24.94	25,000	1002
	LV 3	RELIEF	66"x24"	4.63	4			
	LV 4	INTAKE	30"x48"	4.58	2	9.16	3,680	402
ELEC./COMP. RM.	LV 5	INTAKE	24"x24"	1.61	1	1.61	1,000	621
FIRE SUPPRESSION RM.	LV 6	INTAKE	36"x36"	3.90	1	3.90	2,500	641



DOOR SCHEDULE (HAZARDOUS WASTE STORAGE FACILITY ONLY)

MARK	DOOR SIZE WIDTH	SIZE HEIGHT	SIZE THICK	MATL	TYPE	GLAZING	FRAME MATL	FRAME TYPE	DETAIL HEAD	DETAIL JAMB	DETAIL SILL	FIRE RATED	SPECIAL DEVICE	HARDWARE SET	REMARKS
C101	6'-0"	6'-8"	1 3/4"	HM	FP-2	–	ST	A	5/A-502	9/A-503	3/A-601	–	–	2	1
C102	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	7/A-601	2/A-502 6/A-601	3/A-601	–	–	1	1
C103	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	1/A-601	1&2/A-601	–	90	–	3	3,4
C104	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	7/A-601	2/A-502	3/A-601	–	–	1	1
C105	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	7/A-601	2/A-502	3/A-601	–	–	1	1
C106	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	7/A-601	2/A-502	3/A-601	–	–	1	1
C107	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	7/A-601	2/A-502	3/A-601	–	–	1	1
C108	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	5/A-502	1/A-503	3/A-601	–	–	1	1
C109	6'-0"	8'-0"	1 3/4"	HM	FP-2	–	ST	A	5/A-502	2/A-502	3/A-601	–	–	2	1
C110	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	7/A-601	2/A-502	3/A-601	–	–	1	1
C111	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	1/A-601	1&2/A-601	–	90	–	3	3,4
C112	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	7/A-601	2/A-502 6/A-601	3/A-601	–	–	1	1
C113	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	7/A-601	2/A-502	3/A-601	–	–	1	1
C114	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	7/A-601	2/A-502	3/A-601	–	–	1	1
C115	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	7/A-601	2/A-502	3/A-601	–	–	1	1
C116	3'-0"	6'-8"	1 3/4"	HM	FP	–	ST	A	1/A-601	1&2/A-601	–	45	–	3	3
OHCD	7'-6"	8'-0"	1 3/4"	ST	FP	–	ST	OHCD	4/A-502	2&3/A-502	5/A-601	–	–	1	2

DOOR SCHEDULE (B259)

MARK	DOOR SIZE WIDTH	SIZE HEIGHT	SIZE THICK	MATL	TYPE	GLAZING	FRAME MATL	FRAME TYPE	DETAIL HEAD	DETAIL JAMB	DETAIL SILL	FIRE RATED	SPECIAL DEVICE	HARDWARE SET	REMARKS
B101	6'-0"	6'-8"	EX.	EX.	EX.	–	EX.	EX.	5/A-B501	7/A-B503	4/A-601	–	–	4	–
B102	3'-0"	6'-8"	EX.	EX.	EX.	–	EX.	EX.	5/A-B501	7/A-B503	4/A-601	–	–	4	–
B103	12'-0"	10'-0"	EX.	EX.	EX.	–	EX.	EX.	–	–	–	–	–	4	–
B104	8'-0"	8'-0"	EX.	EX.	EX.	–	EX.	EX.	–	–	–	–	–	4	–
B105	3'-0"	6'-8"	EX.	EX.	EX.	–	EX.	EX.	5/A-B501	7/A-B503	4/A-601	–	–	4	–
B106	3'-0"	6'-8"	EX.	EX.	EX.	–	EX.	EX.	5/A-B501	7/A-B503	4/A-601	–	–	4	–
B107	3'-0"	6'-8"	EX.	EX.	EX.	–	EX.	EX.	5/A-B501	7/A-B503	4/A-601	–	–	4	–

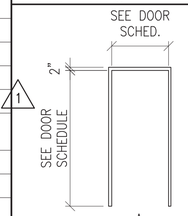
GENERAL NOTES

1. ALL PERSONNEL DOORS ARE TO BE ACCESSIBLE.
2. PROVIDE U.L. LISTED HARDWARE WHERE REQUIRED BY NFPA 80 AT DOORS IDENTIFIED IN RATED WALL CONSTRUCTION.

REMARKS

1. INSULATED DOOR & FRAME.
2. OVERHEAD COILING DOOR.
3. RATED DOOR & FRAME.
4. BUILD DOOR SILL UP WITH CONCRETE TO PROVIDE A LEVEL FINISH UNDER DOOR.

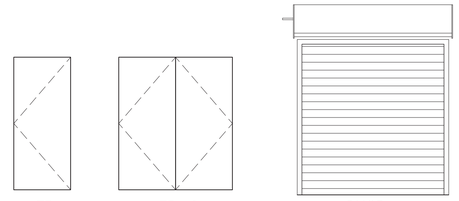
FRAME TYPES



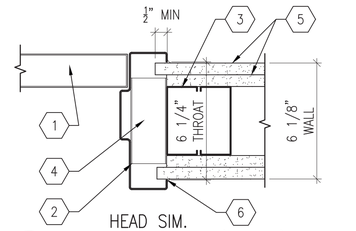
ABBREVIATIONS

FP	FLUSH PANEL
HM	HOLLOW METAL
OHCD	OVERHEAD COILING DOOR
ST	STEEL

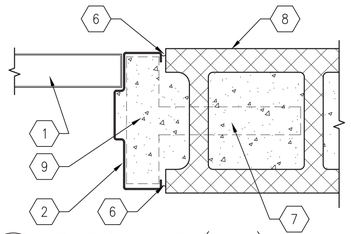
DOOR TYPES



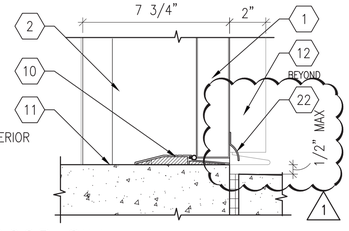
DOOR DETAILS



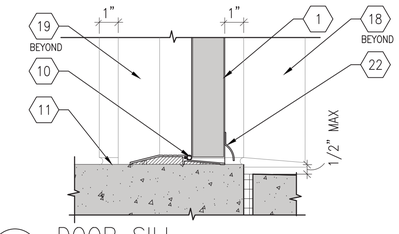
1 DOOR JAMB (HIGH)
SCALE: 3":1'-0"



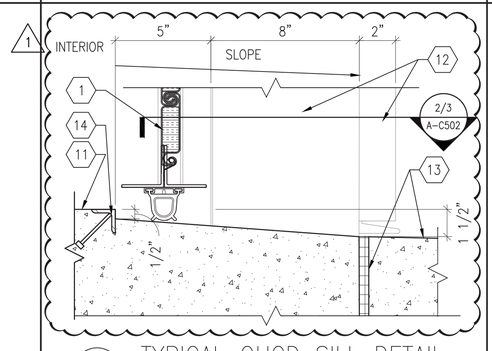
2 DOOR JAMB (LOW)
SCALE: 3":1'-0"



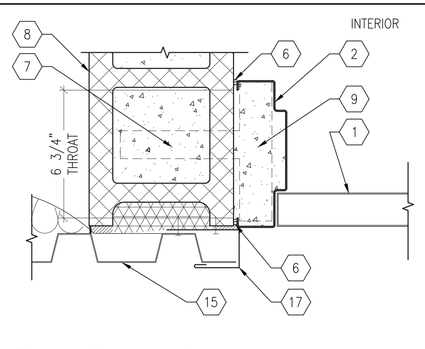
3 DOOR SILL
SCALE: 3":1'-0"



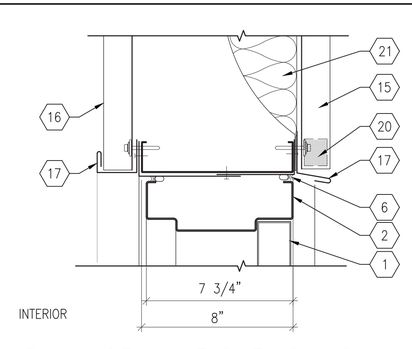
4 DOOR SILL
SCALE: 3":1'-0"



5 TYPICAL OHCD SILL DETAIL
SCALE: 3":1'-0"



6 DOOR JAMB
SCALE: 3":1'-0"



7 HWSF – HEAD FLASHING
SCALE: 3":1'-0"

KEYNOTES:

1. SCHEDULED DOOR
2. HOLLOW METAL FRAME, 16 GAUGE, MITERED REINFORCED WELDED CORNERS, WELDED Z ANCHORS 3 PER JAMB, PACK FRAME WITH MINERAL FIBER, TYP. MORTISED AND REINFORCED FOR HARDWARE, FACTORY PRIMED, FIELD PAINT, TYPICAL.
3. GALVANIZED METAL STUD FRAMING
4. STUD ANCHORS – MIN. 3 PER JAMB
5. 5/8" GYPSUM WALLBOARD
6. CONTINUOUS SEALANT, FULL PERIMETER AND BOTTOM OF THE FRAME, TYP.
7. MASONRY "T" FRAME ANCHOR – (3) PER JAMB
8. CMU AS SCHEDULED
9. GROUT SOLID
10. THRESHOLD SET IN 2 BEADS OF CONTINUOUS SEALANT
11. FLOOR FINISH AS SCHEDULED
12. METAL TRIM BEYOND
13. CONCRETE PAVING AND EXPANSION JOINT MATERIAL, SEE CIVIL
14. STEEL ANGLE NOSEING
15. WALL PANELS
16. INTERIOR WALL LINER PANELS
17. PRE-FINISHED TRIM
18. REINFORCED EFIS COATING AND FINISH SYSTEM
19. EXISTING HOLLOW METAL FRAME, PREP, SCRAPE, FILL VOIDS, AND PAINT EXISTING DOOR AND FRAME
20. FOAM CLOSURE – MATCH WALL PANELS PROFILE.
21. R-13 VINYL FACED BATT INSULATION
22. PROVIDE ALUMINUM DRIP AT EXTERIOR DOOR BOTTOM

1	07/24/18	RAD	RAD	APPR
0	06/25/18	DATE		
1	AMENDMENT 0001			
0	ISSUED FOR BID	DESCRIPTION		
STK				

NAVFAC

SEAL

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www.gcarchgroup.com

A/E INFO

APPROVED

FOR COMMANDER NAVFAC / B.L.T.L

ACTIVITY	.
SATISFACTORY TO DATE	.
DES EP '	DRW EP ' CHK DC '
PROJECT MANAGER	R PENARANDA
IPT TECH. BRANCH HEAD	T FRAZIER
CHIEF ENG/ARCH (CORE)	.

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
IPT SOUTH ATLANTIC

NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
NAVAL AIR STATION CORPUS CHRISTI

CORPUS CHRISTI, TX

HAZ WASTE FACILITY B257/B259

HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

DOOR SCHEDULE AND DETAILS

SCALE:	AS SHOWN
EPROJECT NO.:	.
CONSTR. CONTR. NO.	.
NAVFAC DRAWING NO.	15122472
SHEET	42 OF 91

A-601

DRAWFORM REVISION: 7 AUGUST 2009

GENERAL NOTES

1. THIS PROJECT IS DESIGNED TO COMPLY WITH THE FOLLOWING CRITERIA:
   - IBC 2015: INTERNATIONAL BUILDING CODE
   - IEBC 2015: INTERNATIONAL EXISTING BUILDING CODE
   - ASCE 7-10: MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
   - UFC 1-200-01: DoD BUILDING CODE, 20 JUNE 2016
   - UFC 3-301-01: STRUCTURAL ENGINEERING, 1 JUNE 2013, WITH CHANGE 3, 12 SEPTEMBER 2016
   - UFC 3-310-04: SEISMIC DESIGN OF BUILDINGS, 1 JUNE 2013, WITH CHANGE 1, 20 JUNE 2016
   - UFC 4-010-01: DoD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS, 9 FEBRUARY 2012, WITH CHANGE 1, 1 OCTOBER 2013
   - UFC 4-010-02: DoD MINIMUM ANTITERRORISM STANDOFF DISTANCES FOR BUILDINGS (FOUO), 9 FEBRUARY 2012
2. THE STRUCTURAL DOCUMENTS ARE TO BE USED IN CONJUNCTION WITH THE ARCHITECTURAL DOCUMENTS. USE THESE NOTES IN CONJUNCTION WITH THE SPECIFICATIONS. IF A CONFLICT EXISTS, THE MORE STRINGENT GOVERNS.
3. COMPLY WITH REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE 2015 EDITION, AND ALL OTHER APPLICABLE FEDERAL, STATE AND LOCAL CODES, STANDARDS, REGULATIONS, AND LAWS.
4. REVIEW ALL CONTRACT DOCUMENTS, DIMENSIONS, AND SITE CONDITIONS AND COORDINATE WITH DIMENSIONS AND PROJECT SHOP DRAWINGS PRIOR TO CONSTRUCTION. REPORT ANY FIELD DISCREPANCIES IN WRITING TO THE CONTRACTING OFFICER. DO NOT CHANGE SIZE OR DIMENSIONS OF STRUCTURAL MEMBERS WITHOUT WRITTEN INSTRUCTION FROM THE STRUCTURAL ENGINEER OF RECORD.
5. ANY DISCREPANCIES, OMISSIONS OR VARIATIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS DISCOVERED DURING THE BIDDING PERIOD SHALL BE IMMEDIATELY COMMUNICATED IN WRITING TO THE CONTRACTING OFFICER.
6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SAFETY AND CONSTRUCTION PROCEDURES.
7. FIELD VERIFY ALL DIMENSIONS.
8. DETAILS LABELED "TYPICAL DETAILS" ON THE DRAWINGS APPLY TO ALL SITUATIONS THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. SUCH DETAILS APPLY WHETHER OR NOT THEY ARE KEYED IN AT EACH LOCATION. QUESTIONS REGARDING APPLICABILITY OF TYPICAL DETAILS SHALL BE RESOLVED BY THE CONTRACTING OFFICER.
9. DESIGN LOADS AND CRITERIA:
   A. WIND CRITERIA (ASCE 7-10, AS MODIFIED BY UFC 3-301-01)

- WIND VELOCITY (ULTIMATE):	149 MPH
- WIND VELOCITY (NOMINAL):	116 MPH
- EXPOSURE:	C
- RISK CATEGORY:	II
- ENCLOSURE:	ENCLOSED
- INTERNAL PRESSURE COEFFICIENT:	±0.18

   B. SEISMIC CRITERIA (ASCE 7-10, AS MODIFIED BY UFC 3-310-04)

- S_S:	0.06
- $S_{1.0}$:	0.02
- OCCUPANCY CATEGORY:	II
- SITE SOIL CLASSIFICATION:	D
- SEISMIC DESIGN CATEGORY:	A
- S_{DS}	0.064
- S_{D1}	0.032
- C_s	3
- R	3
- ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE METHOD

10. ALL WIND FORCES SHALL BE DETERMINED ACCORDING TO ASCE 7-10 FOR THE MINIMUM WIND CRITERIA STATED ABOVE, INCLUDE ALL APPROPRIATE SHAPE, HEIGHT, AND GUST FACTORS FOR THE MAIN WIND FORCE RESISTING SYSTEM AND COMPONENTS AND CLADDING TO CALCULATE THE MAXIMUM NET ROOF UPLIFT, USE A DEAD LOAD OF 3 PSF.
11. SNOW:
    GROUND SNOW LOAD: 0 PSF
12. SOIL PROPERTIES:

ALLOWABLE NET PASSIVE:	250 PCF
COEFFICIENT OF FRICTION:	0.40
SUBGRADE MODULUS	80 PCI
DESIGN BEARING PRESSURE:	2000 PSF

13. ATFP DESIGN CRITERIA PER UFC 4-010-01 DATED 9 FEBRUARY 2012, WITH CHANGE 1, 1 OCTOBER 2013:
    BUILDING LOCATION: WITHIN CONTROLLED PERIMETER
    BUILDING OCCUPANCY CATEGORY: LOW OCCUPANCY
14. ALL WINDOWS, DOORS, SKYLIGHTS, ETC. AND THEIR ATTACHMENTS TO THE STRUCTURAL FRAME SHALL BE DESIGNED TO RESIST ALL INTERNATIONAL BUILDING CODE 2015 EDITION, AND ASCE 7-10 REQUIREMENTS INCLUDING BUT NOT LIMITED TO WIND LOADS AND IMPACT RESISTANCE. ALL WINDOWS, DOORS, SKYLIGHTS, ETC. SHALL BE DESIGNED BY THEIR SYSTEMS ENGINEER AND PROVIDED AS A SYSTEM INCLUDING ANY REQUIRED INTERMEDIATE SUPPORT AND THEIR ATTACHMENTS TO THE MAIN STRUCTURAL FRAME.
15. DESIGN FOR DEAD AND LIVE LOADS IN ACCORDANCE WITH ASCE 7-10 AND UFC 3-301-01 UNIFIED FACILITIES CRITERIA, STRUCTURAL ENGINEERING, 1 JUNE 2013 WITH CHANGE 3, 12 SEPTEMBER 2016

- DEAD LOAD	ACTUAL
- ROOF LIFE LOAD	20 PSF
- COLLATERAL	10 PSF - DOES NOT INCLUDE ROOF TOP MECHANICAL EQUIPMENT
- STORAGE	250 PSF

SPECIAL INSPECTIONS

1. SEE SPECIFICATION SECTION 01 45 35.00 25 FOR SPECIAL STRUCTURAL INSPECTION REQUIREMENTS.
2. THE CONTRACTOR SHALL MEET ALL THE REQUIREMENTS FOR SPECIAL INSPECTIONS IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE, 2015 EDITION.

SHALLOW FOUNDATIONS

1. REFERENCE THE PROJECT SPECIFICATION SECTION 31 23 00.00 20 EXCAVATION AND FILL FOR ALL REQUIREMENTS FOR THE GEOTECHNICAL WORK REQUIRED FOR THE BUILDING PAD AND FOUNDATIONS. SITE SOIL IMPROVEMENTS ARE REQUIRED FOR THIS PROJECT AS PROVIDED IN THE GEOTECHNICAL REPORT.
2. SITE PREPARATION IN THE AREAS OF NEW BUILDINGS AND PAVEMENTS SHALL BE INITIATED AND THE COMPLETE REMOVAL OF EXISTING PAVEMENTS, FOUNDATIONS FLOOR SLABS, UNDERGROUND UTILITIES AND OTHER DELETEROUS MATERIALS. AFTER STRIPPING AND GRUBBING, THE EXPOSED SUBGRADE SHALL BE PROOF-ROLLED USING A 15-TON ROLLER OR FULLY LOADED DUMP TRUCK.
3. BACKFILL AND COMPACTION REQUIREMENTS: BASED ON THE EXPECTATION THAT ALL UNSUITABLE MATERIALS WILL BE REMOVED IN THE ABOVE RECOMMENDED STRIPPING OPERATIONS, THE SANDY SOILS THAT WILL BE REMOVED FROM THE UNDERCUT EXCAVATIONS SHALL BE COMPACTED TO AT LEAST 95% OF THE MATERIAL'S STANDARD PROCTOR DENSITY (SPD), ASTM D698. THE BACKFILL SHALL BE PLACED IN MAX 8-INCH THICK LOOSE LIFTS AND EACH LIFT SHALL BE COMPACTED TO AT LEAST 95% MODIFIED PROCTOR DENSITY (MPD). IN ORDER TO ACHIEVE THIS LEVEL OF COMPACTION IN THE SANDY BACKFILL SOILS, IT MAY BE NECESSARY TO MOISTURE CONDITION THE SOILS TO ACHIEVE A MOISTURE CONTENT IN THE RANGE OF PLUS OR MINUS 2% OF THE OPTIMUM VALUE INDICATED IN THE LABORATORY MPD TEST. REFERENCE THE SPECIFICATIONS FOR ALL BUILDING PAD AND FOUNDATION PREPARATION REQUIREMENTS.
4. REFER TO SPECIFICATIONS FOR THE GEOTECHNICAL TESTING REQUIREMENTS.
5. FOUNDATION DESIGN IS BASED ON A MAXIMUM ALLOWABLE SOIL BEARING CAPACITY OF 2000 PSF FOR FOOTING. THE CONTRACTOR IS RESPONSIBLE FOR ACHEIVING THE REQUIRED BEARING CAPACITY.
6. DO NOT EXCAVATE FOR ANY PURPOSE WITHIN ONE FOOT OF THE ANGLE OF REPOSE OF ANY SOIL BEARING FOOTING OR FOUNDATION UNLESS SUCH FOOTING OR FOUNDATION IS FIRST PROPERLY PROTECTED AGAINST SETTLEMENT.
7. SOIL COMPACTION SHALL BE FIELD CONTROLLED BY A SOILS ENGINEER OR TESTING LABORATORY. A REPORT BEARING THE SIGNATURE AND SEAL OF THE REGISTERED PROFESSIONAL ENGINEER WHO CONTROLLED AND TESTED THE SOIL COMPACTION SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER OF RECORD AS AN INDICATION THAT THE REQUIREMENTS OF THE CONTRACT DOCUMENTS HAVE BEEN FOLLOWED.

PRE-ENGINEERED METAL BUILDING

1. THE METAL BUILDING SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST METAL BUILDING SYSTEMS MANUAL WITH THE APPLICABLE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE 2015 EDITION, UFC 1-200-01, UFC 2-200-01, UFC 3-301-01, UFC 4-010-01, AND UFC 4-020-01. IF A CONFLICT EXISTS BETWEEN THE CRITERIA REFERENCED, THE MORE STRINGENT GOVERNS.
2. THE METAL BUILDING MANUFACTURER SHALL DESIGN AND SUBMIT CALCULATIONS BY A REGISTERED ENGINEER ON ALL COMPONENTS AND THE OVERAL STRUCTURAL FUNCTIONING AND STABILITY OF THE METAL BUILDING.
3. CALCULATIONS SHALL INCLUDE DEFLECTION AND CAMBER REQUIREMENTS. LIVE LOAD DEFLECTIONS SHALL BE LIMITED TO L/240. TOTAL LOAD DEFLECTIONS SHALL BE LIMITED TO L/240. DESIGN CALCULATIONS SHALL INCLUDE SUPERIMPOSED LOADS FOR FRAMING SUPPORTING EQUIPMENT.
4. THE METAL BUILDING MANUFACTURER SHALL SUBMIT DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A REGISTERED ENGINEER.
5. IF HIGH STRENGTH BOLTS OR FULL PENETRATION WELDS ARE USED, CONTRACTOR SHALL RETAIN AN INDEPENDENT TESTING AGENCY TO CERTIFY COMPLIANCE WITH AISC AND AWS SPECIFICATIONS.
6. MANUFACTURER SHALL CALCULATE THE DEAD, LIVE, SEISMIC, AND LATERAL FORCES FROM ALL ATTACHED ITEMS AND DESIGN THE METAL BUILDING FRAME TO ACCOMODATE THE FORCES.
7. PRE-ENGINEERED METAL BUILDING COLUMNS SHALL BE DESIGNED WITH "PINNED" BASES.
8. BUILDING DRIFT SHALL BE LIMITED TO H/480 PER UFC 3-301-01.
9. PEMB FRAMING SHALL BE DESIGNED TO SUPPORT ROOF MOUNTED EQUIPMENT LOADS. REFER TO ROOF PLAN FOR LOCATIONS OF ROOF MOUNTED EQUIPMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF EQUIPMENT SUPPORT REQUIREMENTS INCLUDING LOADS AND GEOMETRY. ROOF MOUNTED EQUIPMENT IN EXCESS OF 100 POUNDS SHALL BE SUPPORTED USING STRUCTURAL STEEL.

ADHESIVE ANCHORING SYSTEMS

1. USE A 1:1 TWO-COMPONENT, HIGH STRENGTH, HIGH SOLIDS, EPOXY BASED ADHESIVE.
2. FOLLOW MANUFACTURER'S SPECIFICATIONS FOR USE AND INSTALLATION.
3. INSTALL AND MAINTAIN A MIN. EMBEDMENT IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS, OR AS SPECIFIED ON DRAWINGS.
4. DIAMETER OF HOLE SHALL BE AS RECOMMENDED BY MANUFACTURER FOR THE PARTICULAR PRODUCT SPECIFIED IN THE DRAWINGS.
5. UNLESS NOTED, ANCHOR SPACING AND ANCHOR EDGE DISTANCE SHALL BE ACCORDING TO THE MANUFACTURER'S MOST CURRENT PUBLICATION IN ORDER TO DEVELOP MAXIMUM WORKING LOADS.
6. DO NOT EXCEED MANUFACTURER'S MAX. RECOMMENDED TIGHTENING TORQUE.
7. ALL ANCHORS SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS AND UNDER MANUFACTURER'S SUPERVISION IN ORDER TO DEVELOP THE MOST CURRENT PUBLISHED WORKING LOADS.
8. ALL EPOXIED ANCHORING SHALL BE TESTED AFTER INSTALLATION AT CONTRACTOR'S EXPENSE. A MINIMUM OF 10% OF EACH DAY'S APPLICATIONS AND NO LESS THAN 2 SHALL BE TESTED BY APPLYING A TENSILE LOAD OF 1000 POUNDS TO THE EMBEDDED ANCHOR. IF A TEST APPLICATION FAILS, ALL APPLICATIONS FOR THAT DAY SHALL BE TESTED. TESTING PROCEDURES AND RESULTS SHALL BE SUBMITTED AND APPROVED BY THE CONTRACTING OFFICER.

STRUCTURAL STEEL

1. ALL STEEL WORK (INCLUDING FABRICATION AND ERECTION) SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION 14TH EDITION AND PROJECT SPECIFICATIONS. USE THE FOLLOWING:
   A. ROLLED SHAPES, ASTM A992, GRADE 50.
   B. PLATES, BARS, CHANNELS, AND ANGLES, ASTM A36.
   C. COLD-FORMED STEEL TUBING: ASTM A500, GRADE B.
   D. HOT-FORMED STEEL TUBING: ASTM A501.
   E. STEEL PIPE: ASTM A53, TYPE E OR S, GRADE B.
2. USE STRUCTURAL STEEL THAT IS FULLY WELDABLE WITHIN GRADES AND FROM ANY GRADE TO ANY OTHER GRADE. WELD ALL SHOP CONNECTIONS, U.N.O.
3. ALL SHOP AND FIELD WELDING SHALL CONFORM TO THE STRUCTURAL WELDING CODE AWS D1.1, LATEST EDITION, PUBLISHED BY THE AMERICAN WELDING SOCIETY (AWS). USE ELECTRODES CONFORMING TO AWS D1.1, E70 SERIES, U.N.O. SHOW ALL SHOP WELDS ON THE FABRICATION DRAWINGS AND ALL FIELD WELDS ON THE ERECTION DRAWINGS.
4. ALL SHOP AND FIELD WELDERS, WELDING OPERATORS, AND TACKERS SHALL BE CERTIFIED ACCORDING TO AWS PROCEDURES FOR THE WELDING PROCESS AND WELDING POSITION USED.
5. ALL JOINT WELDING PROCEDURES TO BE USED SHALL BE PREPARED BY THE FABRICATOR OR CONTRACTOR AS WRITTEN PROCEDURE SPECIFICATIONS AND SUBMITTED TO THE CONTRACTING OFFICER FOR THEIR RECORD. ALL JOINT WELDING PROCEDURES SHALL BE QUALIFIED PRIOR TO USE ACCORDING TO AWS PROCEDURES.
6. USE A36 BOLTS FOR ANCHOR BOLTS OR WHEN SPECIFICALLY CALLED FOR ON THE DRAWINGS.
7. CUT, DRILL, OR PUNCH HOLES PERPENDICULAR TO METAL SURFACES. DO NOT FLAME CUT HOLES OR ENLARGE HOLES BY BURNING.
8. SPLICING OF STRUCTURAL STEEL MEMBERS IN THE FIELD OR IN THE SHOP IS PROHIBITED EXCEPT WHERE INCLUDED ON THE DRAWINGS.
9. DO NOT PAINT STEEL SURFACES IN CONTACT WITH CONCRETE.
10. SUBMIT STRUCTURAL STEEL SHOP DRAWINGS FOR REVIEW BEFORE FABRICATION. NOTE CLEARLY ANY AND ALL FIELD CONDITIONS THAT REQUIRE MODIFICATIONS TO THE DRAWINGS.
11. DO NOT REPRODUCE THE STRUCTURAL DRAWINGS FOR USE AS SHOP DRAWINGS.
12. ALL EXPOSED STEEL MEMBERS & CONNECTIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. ALL CONNECTIONS SHALL BE PRE-DRILLED AND/OR WELDED PRIOR TO HOT DIP GALVANIZING. (1)
13. CONTRACTOR SHALL VISUALLY INSPECT 50% OF ALL BLAST FRAME WELDS. SUBMIT REPORT TO GOVERNMENT FOR THEIR RECORDS. ANY DEFICIENCIES SHALL BE NOTED AND CORRECTED PRIOR TO ACCEPTANCE.

CONCRETE MASONRY

1. ALL MASONRY WORK IS TO CONFORM TO ACI 530 AND ACI 530.1.
2. CONSTRUCT REINFORCED MASONRY AS NOTED ON THE PLANS AND DETAILS IN ACCORDANCE WITH THE REQUIREMENTS OF MASONRY SPECIFICATION SECTIONS. UNREINFORCED MASONRY SHALL NOT BE USED.
3. USE CONCRETE MASONRY UNITS CONFORMING TO ASTM C90. PROVIDE f'm OF 1500 PSI (UNIT STRENGTH 1900 PSI) FOR ALL REINFORCED MASONRY SHEAR WALLS. PERFORM f'm AND C90 COMPLIANCE BY UNIT STRENGTH METHOD.
4. USE TYPE "S" MORTAR IN ACCORDANCE WITH ASTM C270. USE 3/8" FULL-BEDDED JOINTS FOR ALL MASONRY UNITS. REMOVE MORTAR PROTRUDING INTO CELL CAVITIES THAT ARE TO BE REINFORCED AND GROUTED. ALLOW A MIN. OF 24 HOURS FOR MORTAR TO CURE BEFORE PLACING GROUT.
5. USE ALL GROUT CONFORMING TO ASTM C-476 WITH A MIN. COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS, TESTED IN ACCORDANCE WITH ASTM C1019. AGGREGATE TO CONFORM TO ASTM C404 FOR COARSE GROUT AND SLUMP OF 8" TO 11". TEST SAMPLES FOR COMPRESSIVE STRENGTH. TEST EVERY 30 YARDS OR EACH DAY'S GROUTING.
6. FOR REINFORCED MASONRY USE HEAVY DUTY (3/16" SIDE RODS WITH 9 GAUGE CROSS RODS) LADDER TYPE HORIZONTAL JOINT REINFORCING IN EVERY OTHER COURSE U.N.O. USE PREFABRICATED CORNERS AND TEES AT WALL INTERSECTIONS. OVERLAP DISCONTINUOUS ENDS A MIN. OF 12". HORIZONTAL REINFORCING SHALL CONFORM TO ASTM A-82.
7. FOR MASONRY CAVITY WALLS, HORIZONTAL JOINT REINFORCING SHALL BE HEAVY DUTY (3/16" SIDE RODS WITH 9 GAUGE CROSS RODS) LADDER TYPE. VERTICAL SPACING OF REINFORCING SHALL BE 16" O.C. MAX. WITH 8" O.C. MAX AT BUILDING CORNERS (SEE WIND CLADDING DIAGRAM FOR CORNER DIMENSION) TIES SHALL BE LOCATED WITHIN 8" OF WALL DISCONTINUITIES (MCJ, DOORS, WINDOWS, ETC.)
8. USE ASTM A-615 GRADE 60 REINFORCING STEEL.
9. HIGH LIFT GROUTING IS NOT PERMITTED.
10. WHERE ANCHOR BOLTS ARE SET IN MASONRY WALLS, FILL BLOCK CELLS WITH GROUT FOR BOLTED COURSE, ONE COURSE ABOVE AND TWO COURSES BELOW ANCHOR ELEVATION.
11. CMU CONTROL JOINTS ARE NOT TO EXCEED 24'-0" U.N.O.. THE JOINTS SHALL BE LOCATED A MINIMUM OF 24" FROM DOOR OR WINDOW OPENINGS TO MISS LINTELS U.N.O. THE HORIZONTAL JOINT REINFORCING SHALL BE TERMINATED 2" FROM EACH SIDE OF JOINT. ALL BOND BEAM REINFORCING SHALL CONTINUE THRU THE JOINT.
12. PROVIDE 8" DEEP BOND BEAMS AT 10'-0" O.C. VERTICALLY REINFORCED WITH (2)-#5 CONT, U.N.O..

REINFORCED CONCRETE

1. USE STRUCTURAL CONCRETE AND CONCRETING PRACTICES CONFORMING TO ACI-316 AND 301 AND PROPORTION CONCRETE IN ACCORDANCE WITH ACI-318 CH. 4 AND MEETING A MIN. ULTIMATE COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:

-FOOTINGS	4000 PSI
-SLABS ON GRADE	4000 PSI
-ALL OTHER CONCRETE	4000 PSI

   PROVIDE CURRENT (MAX. 1 YEAR OLD) STATISTICAL DATA FOR EACH CONCRETE MIX DESIGN SUBMITTED.
2. WHERE CONCENTRATION OF REINFORCING STEEL HINDERS PROPER CONSOLIDATION OF CONCRETE USE CONCRETE CONTAINING A SUPERPLASTICIZING (N.R.W.R.) ADMIXTURE, ASTM C494 TYPE F. SLUMP AFTER ADDITION OF SUPERPLASTICIZER SHALL BE 9"±1".
3. IF CONCRETE IS PUMPED, SLUMP MAY BE INCREASED TO 6" AT THETRUCK, PROVIDED THE SLUMP SPECIFIED IN NOTE 2 IS MAINTAINED AT THE DISCHARGE END. USE A MINIMUM 4-INCH PUMP, UNLESS PRE-APPROVED BY THE CONTRACTING OFFICER. TAKE CONCRETE SAMPLES FOR SLUMP AT TRUCK AND AT DISCHARGE END. TAKE CONCRETE SAMPLES FOR CYLINDER TESTING AT DISCHARGE END.
4. SLEEVE ALL PIPES THRU SLABS ON GRADE INDIVIDUALLY. OPENINGS LARGER THAN 6", NOT SHOWN ON STRUCTURAL DRAWINGS AND ALL CONDUITS IN SLABS ON GRADE, SHALL REQUIRE SHOP DRAWINGS SHOWING SIZE AND LOCATION FOR CONTRACTING OFFICER'S APPROVAL. PROVIDE (1)-#5x4'-0" E.W. PLACED DIAGONALLY AT MID DEPTH AROUND ALL OPENINGS LARGER THAN 12" UNLESS OTHERWISE NOTED ON DRAWINGS
5. SUBMIT PLACING DRAWINGS FOR ALL REINFORCING STEEL TO STRUCTURAL ENGINEER FOR APPROVAL BEFORE FABRICATION.
6. ALL SLAB EDGES AND EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED 3/4", U.N.O.
7. ALL SLAB REENTRANT CORNERS SHALL HAVE (2) #4X4'-0" BAR AT 45° TO THE CORNER, UNLESS THERE IS A JOINT COMING OFF THE REENTRANT CORNER.
8. ALL DISCONTINUOUS CONTRACTION JOINTS SHALL HAVE (2) #4X4'-0" CENTERED ON THE DISCONTINUOUS END.
9. USE ASTM A-615 GR. 60 FOR ALL REINFORCING STEEL, CONFORM TO ACI-301, ACI-315, ACI-318, AND CRSI "MANUAL OF STANDARD PRACTICE". ALL REINFORCING SHALL BE ACCURATELY PLACED, RIGIDLY SUPPORTED AND FIRMLY TIED IN PLACE WITH BAR SUPPORTS AND SPACERS IN ACCORDANCE WITH THE ABOVE REQUIREMENTS. PROVIDE CLASS 'B' LAP SPLICE FOR CONTINUOUS BARS, U.N.O. LAP BOTTOM STEEL OVER SUPPORTS AND TOP STEEL AT MIDSPAN UNLESS OTHERWISE SPECIFIED. HOOK DISCONTINUOUS ENDS OF ALL TOP BARS AND ALL BARS IN WALLS, U.N.O. USE 1" COVER OVER REINFORCING EXCEPT AS FOLLOWS:

	BOTTOM	TOP	SIDES
FOOTINGS	3"	2"	3"
SLABS ON GROUND	2"	1"	2"

10. USE PLAIN, COLD-DRAWN ELECTRICALLY-WELDED STEEL WIRE FABRIC CONFORMING TO ASTM A-185. SUPPLY IN FLAT SHEETS ONLY. LAP SPLICES SHALL BE MEASURED BETWEEN OUTERMOST CROSS WIRES OF EACH FABRIC SHEET AND SHALL BE NOT LESS THAN TWICE THE SPACING OF THE CROSS WIRES PLUS TWO (2) INCHES.

REBAR LAP SCHEDULE	
BAR SIZE	4000 PSI
#3	24"
#4	32"
#5	40"
#6	48"

ROOF NOTES

1. TYPICAL STRUCTURAL STANDING SEAM ROOFING SHALL BE 22 GAGE.
2. THE CONNECTIONS TO THE EXISTING STRUCTURE SHALL TRANSFER AND AND ALL VERTICAL AND LATERAL FORCES IMPOSED BY THE RETRO ROOF SYSTEM. THE NEW ATTACHMENTS TO THE EXISTING CONCRETE STRUCTURE SHALL BE MADE SUCH THAT THE EXISTING JOISTS, BEAMS, OR WALL REINFORCING IS NOT DAMAGED. INSTALL ANCHORS WITH PROPER EDGE DISTANCE AND DEPTH.
3. REFER TO EXISTING ROOF FRAMING PLANS FOR EXISTING STRUCTURAL INFORMATION NOT SHOWN.
4. PROVIDE 14 GAGE 6"x5" BENT PLATE AT EAVE END AND 3"x6" BENT PLATE AT RAKE END.
5. PROVIDE A MINIMUM OF 14 GAGE BENT PLATE AT ROOF RIDGES AND VALLEYS.
6. FIELD VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO FABRICATION.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AT THE STANDING SEAM ROOF OVERLAY SYSTEM.

STATE OF TEXAS — SELVAKUMAR BUVANENDARAN — 104375 — LICENSED PROFESSIONAL ENGINEER

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STUART SMITH P.E.
FLORIDA LICENSE NUMBER 49738
SCG project: 2017-156

DESCRIPTION	DATE	APPR
1 AMENDMENT 0001	07/27/18	ZPL
0 ISSUED FOR BID	06/25/18	RAD

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HAZ WASTE FACILITY B257/B259
CORPUS CHRISTI, TEXAS
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
GENERAL NOTES

SCALE: AS SHOWN
EPROJECT NO.: —
CONSTR. CONTR. NO. —
NAVFAC DRAWING NO. 15122473
SHEET 43 OF 91
S-C001

DRAWFORM REVISION: 7 AUGUST 2009

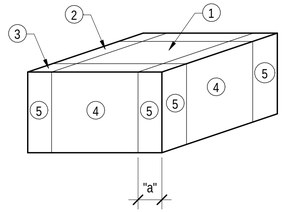
STRUCTURAL LEGEND

ACI	AMERICAN CONCRETE INSTITUTE
AFF	ABOVE FINISHED FLOOR
AISC	AMERICAN INSTITUTE FOR STEEL CONSTRUCTION
AISI	AMERICAN IRON STEEL INSTITUTE
ALT	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
A.R.	ANCHOR ROD
ARCH	ARCHITECT(URAL)
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
BLDG.	BUILDING
BOT	BOTTOM
BRG	BEARING
CJ	CONSTRUCTION JOINT / CONTRACTION JOINT
CL	CENTER LINE
CLR	CLEAR, CLEARANCE
CMU	CONCRETE MASONRY UNIT
COL.	COLUMN
CONN	CONNECTION
CONT	CONTINUOUS, CONTINUE
DIA, Ø	DIAMETER
DL	DEAD LOAD
DWG.	DRAWING
EA	EACH
EF	EACH FACE
EL. OR ELEV.	ELEVATION
E.J.	EXPANSION JOINT
E.W.	EACH WAY
E.O.S.	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
EXIST	EXISTING
EXP	EXPANSION
F.D.	FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
F.S.	FAR SIDE
FT	FOOT, FEET
GA	GAGE, GAUGE
GALV.	GALVANIZED
HDG	HOT DIP GALVANIZED
HORIZ.	HORIZONTAL
HSS	HOLLOW STRUCTURAL STEEL
IN	INCH
JT.	JOINT
K	KIP
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
LB	POUND
LL	LIVE LOAD
LLV	LONG LEG VERTICAL
LW	LIGHTWEIGHT
MAX.	MAXIMUM
MECH	MECHANIC(AL)
MFR	MANUFACTURE(R, ING)
MIN.	MINIMUM
MISC.	MISCELLANEOUS
NIC	NOT IN CONTRACT
N.S.	NEAR SIDE
N.T.S.	NOT TO SCALE
NW	NORMAL WEIGHT
O.C.	ON CENTER
OPP	OPPOSITE
PCF	POUND PER CUBIT FOOT
PL	PLATE
PROJ.	PROJECTION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
REBAR	REINFORCING BAR
REINF	REINFORCE(D, ING)
REQD.	REQUIRED
REV	REVISION(S), REVISED
S.F.	STEP FOOTING
SIDL	SUPER IMPOSED DEAD LOAD
SIM.	SIMILAR
SJI	STEEL JOIST INSTITUTE
SLV	SHORT LEG VERTICAL
SPEC	SPECIFICATION(S)
SSMA	STEEL STUD MANUFACTURER'S ASSOCIATION
T&B	TOP AND BOTTOM
T.D.	TURN DOWN
TEMP	TEMPERATURE
T.O.	TOP OF
T.O.C.	TOP OF CONCRETE
T.O.F.	TOP OF FOOTING
T.O.S.	TOP OF STEEL
T.O.W.	TOP OF WALL
T.S.	THICKENED SLAB
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
W/	WITH
W/ O	WITHOUT
W.P.	WORK POINT
WWR	WELDED WIRE REINFORCEMENT
<<X/S-XX X>>	SECTION OR DETAIL REFERENCE

WIND PRESSURE DIAGRAM - NEW STORAGE BUILDING

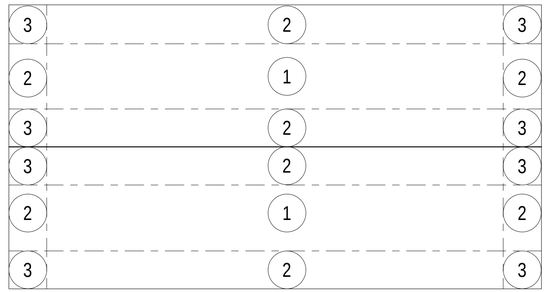
CLADDING PRESSURES NEW STORAGE BUILDING ROOF			
AREA	10 SF	50 SF	100 SF
NEGATIVE ZONE 1	-49	-46	-44
NEGATIVE ZONE 2	-82	-61	-53
NEGATIVE ZONE 3	-123	-74	-53
ALL POSITIVE ZONES	20	17	16
OVERHANG ZONE 2	-70	-67	-66
OVERHANG ZONE 3	-115	-58	-33
CLADDING PRESSURES NEW STORAGE BUILDING WALLS			
AREA	10 SF	100 SF	500 SF
NEGATIVE ZONE 4	-48	-42	-37
NEGATIVE ZONE 5	-59	-46	-37
ALL POSITIVE ZONES	44	38	33

PRESSURES ARE ULTIMATE



WIND LOAD ZONE WALL DIAGRAM - NEW STORAGE BUILDING
"a" = 6'-0"
ULTIMATE BASE PRESSURE = 41.3 PSF

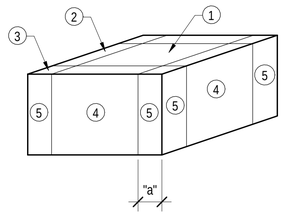
NEW STORAGE BUILDING



WIND PRESSURE DIAGRAM - B259

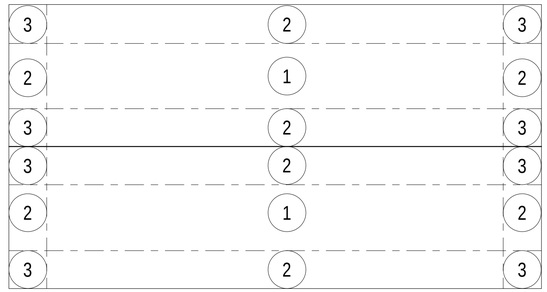
CLADDING PRESSURES B259 ROOF			
AREA	10 SF	50 SF	100 SF
NEGATIVE ZONE 1	-49.4	-46.4	-45.2
NEGATIVE ZONE 2	-82.8	-62.4	-53.6
NEGATIVE ZONE 3	-124.7	-75.0	-53.6
ALL POSITIVE ZONES	20.1	17.2	16.0
OVERHANG ZONE 2	-71.1	-66.9	-64.0
OVERHANG ZONE 3	-117.2	-33.5	-33.5
CLADDING PRESSURES B259 WALLS			
AREA	10 SF	100 SF	500 SF
NEGATIVE ZONE 4	-49.0	-42.3	-37.7
NEGATIVE ZONE 5	-60.2	-46.9	-37.7
ALL POSITIVE ZONES	45.2	38.5	33.9

PRESSURES ARE ULTIMATE



WIND LOAD ZONE WALL DIAGRAM - B259
"a" = 4'-0"
ULTIMATE BASE PRESSURE = 41.8 PSF

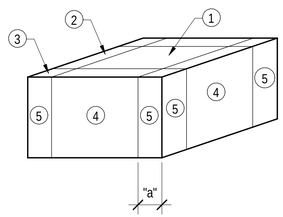
B259



WIND PRESSURE DIAGRAM - B259 CANOPY

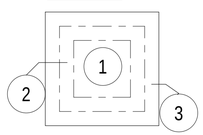
CLADDING PRESSURES B259 CANOPY ROOF			
AREA	10 SF	50 SF	100 SF
NEGATIVE ZONE 1	-57	-45	-37
NEGATIVE ZONE 2	-94	-72	-66
NEGATIVE ZONE 3	-131	-110	-95
ALL POSITIVE ZONES	16	16	16
OVERHANG ZONE 2	N/A	N/A	N/A
OVERHANG ZONE 3	N/A	N/A	N/A
CLADDING PRESSURES B259 CANOPY WALLS			
AREA	10 SF	100 SF	500 SF
NEGATIVE ZONE 4	N/A	N/A	N/A
NEGATIVE ZONE 5	N/A	N/A	N/A
ALL POSITIVE ZONES	N/A	N/A	N/A

PRESSURES ARE ULTIMATE



WIND LOAD ZONE WALL DIAGRAM - B259 CANOPY
"a" = 3'-0"
ULTIMATE BASE PRESSURE = 41.6 PSF

B259 CANOPY



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STUART SMITH P.E.
FLORIDA LICENSE NUMBER 49738
SCG project: 2017-156

APPR	DATE	DESCRIPTION	STM
ZPL	07/27/18	AMENDMENT 0001	1
RAD	06/25/18	ISSUED FOR BID	0

NAVFAC

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A/E INFO

APPROVED

FOR COMMANDER NAVFAC / B.L.T.L.

ACTIVITY

SATISFACTORY TO DATE

DES JK	DRW JK	CHK SCS
PROJECT MANAGER		
IPT TECH. BRANCH HEAD		
CHIEF ENG/ARCH (CORE)		

DEPARTMENT OF THE NAVY
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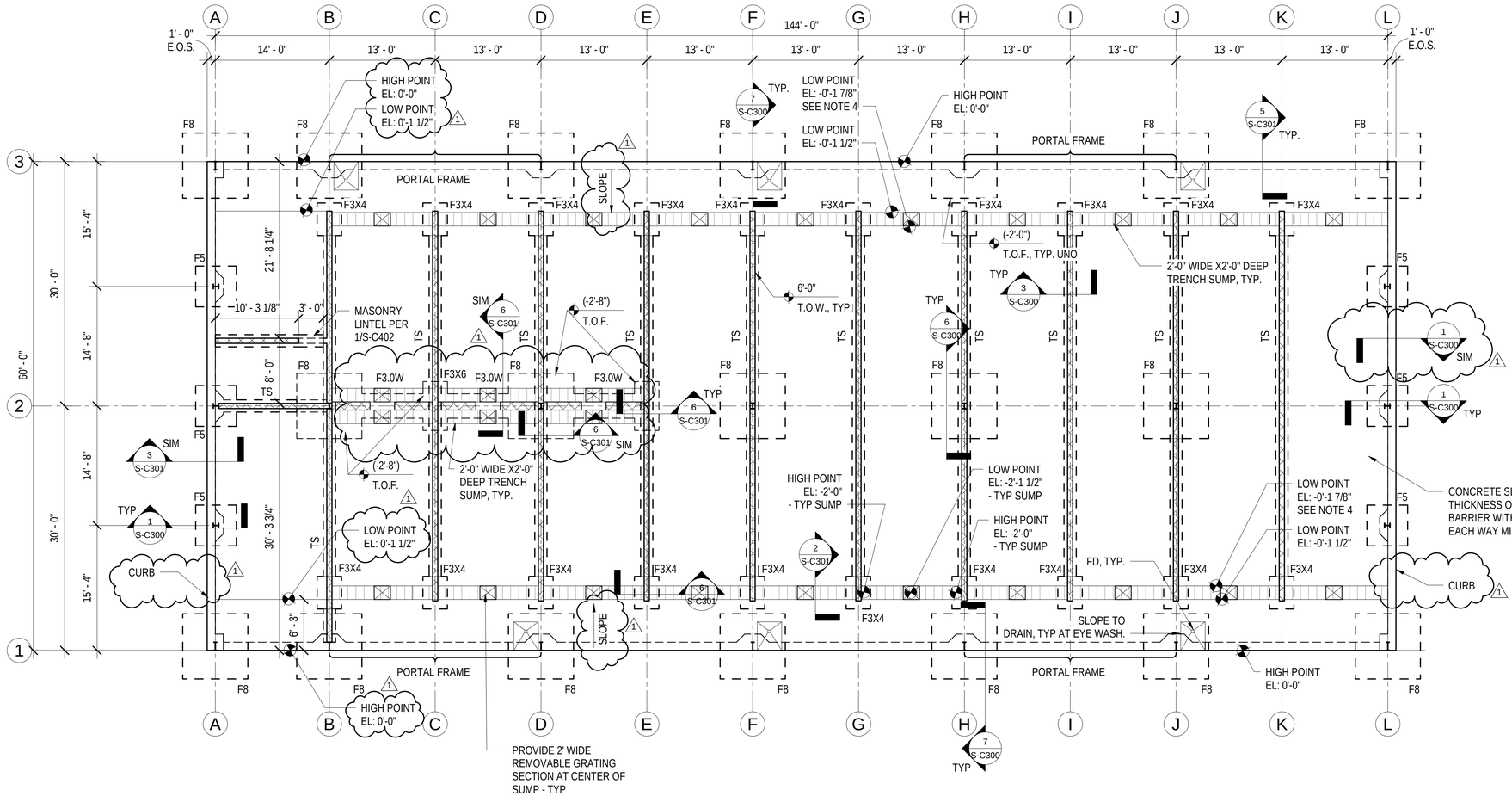
IPT SOUTH ATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR STATION, JACKSONVILLE
HAZ WASTE FACILITY B257/B259
CORPUS CHRISTI, TEXAS
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
GENERAL NOTES

STATE OF TEXAS SELVAKUMAR BUVANENDARAN 104375 LICENSED PROFESSIONAL ENGINEER

SCALE:	AS SHOWN
EPROJECT NO.:	–
CONSTR. CONTR. NO.	–
NAVFAC DRAWING NO.	15122474
SHEET	44 OF 91

S-C002

DRAWFORM REVISION: 7 AUGUST 2009



NORTH

1 S-C100 | S-C100 FOUNDATION PLAN

8' 8' 16'

SHEET NOTES:

1. SEE S-C001 FOR GENERAL STRUCTURAL NOTES.
2. FINISH FLOOR ELEVATION = (0'-0").
3. TYPICAL TOP OF FOOTING ELEVATION = (-2'-0"), U.N.O.
4. CONCRETE ELEVATION IS BASED ON 3/8" CONCRETE COATING THICKNESS. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING CONCRETE ELEVATION WITH SELECTED COATING SYSTEM
5. SEE ARCH FOR OHCD LOCATIONS.

LEGEND:

= 8" CMU WALL W/ #5 VERT. BARS @ 24" O.C.

FOUNDATION SCHEDULE:

TYPE:	SIZE:	REINFORCING:	MAX UNFACTORED COLUMN REACTIONS (KIP) INTERIOR COL GRAVITY	INTERIOR COL UPLIFT	EXTERIOR COLUMN GRAVITY / LAT	EXTERIOR COLUMN UPLIFT / LAT
F5	5'-0"X5'-0"X1'-4"	(7) #5 CONT., T.&B., E.W.	NA	NA	30 / NA	5.5/1.5
F8	8'-0"X8'-0"X2'-0"	(11) #6 CONT., T.&B., E.W.	50	13	25/4	8/5
F3X4	3'-0"X4'-0"X1'-0"	#4 CONT., T.&B., E.W.	NA	NA	NA	NA
F3X6	3'-0"X6'-0"X1'-0"	#5 CONT., T.&B., E.W.	NA	NA	NA	NA
F3.0W	3'-0"XCONT.	(4) #5 CONT. BOT., #4 @ 24 TRANSV.	NA	NA	NA	NA

1

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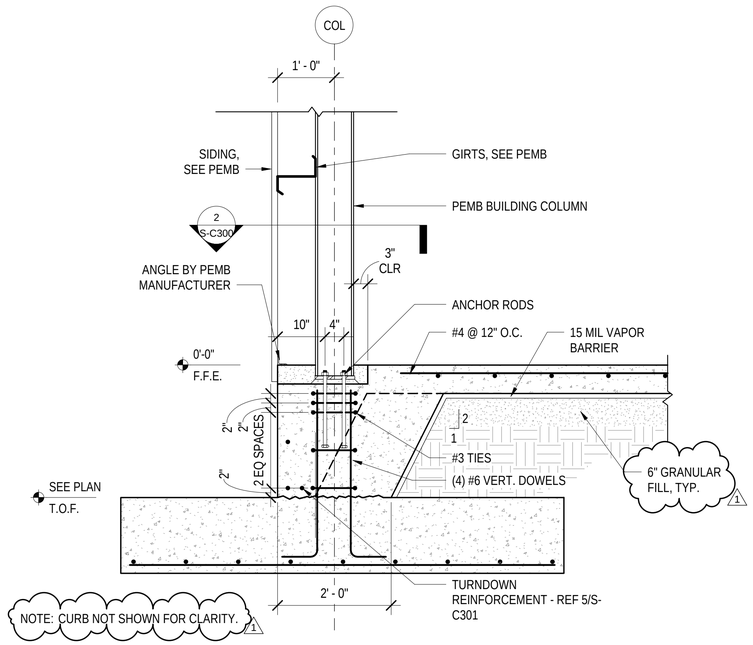
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
HWSF – FOUNDATION PLAN

SCALE: AS SHOWN
EPROJECT NO.: —
CONSTR. CONTR. NO. —
NAVFAC DRAWING NO. 15122478
SHEET 48 OF 91

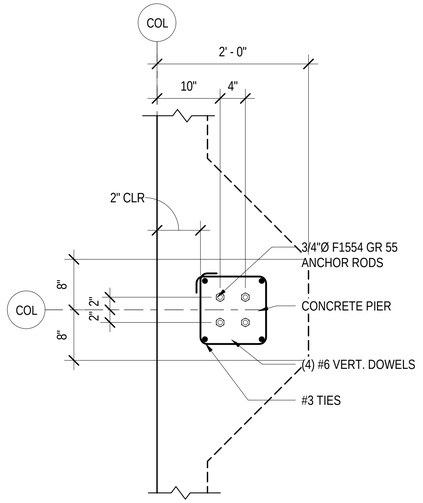
S-C100

DRAWFORM REVISION: 7 AUGUST 2009



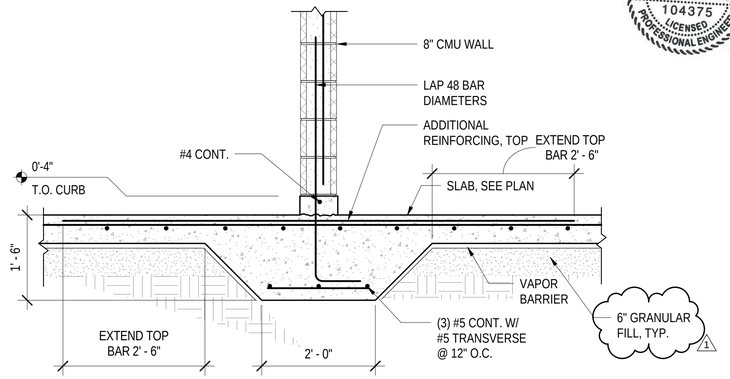
1 S-C300 | S-C300 EXTERIOR FOUNDATION DETAIL – END WALL

12" 0' 1' 2' 3'



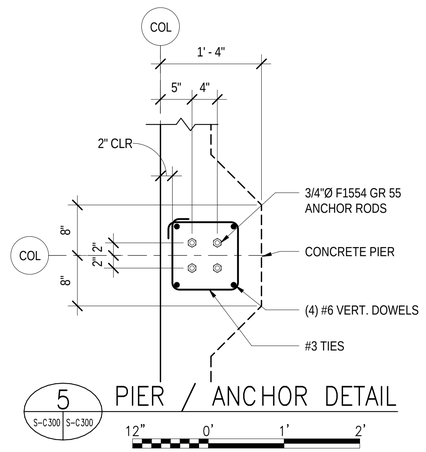
2 S-C300 | S-C300 PIER / ANCHOR DETAIL – BYPASS GIRTS

12" 0' 1' 2'



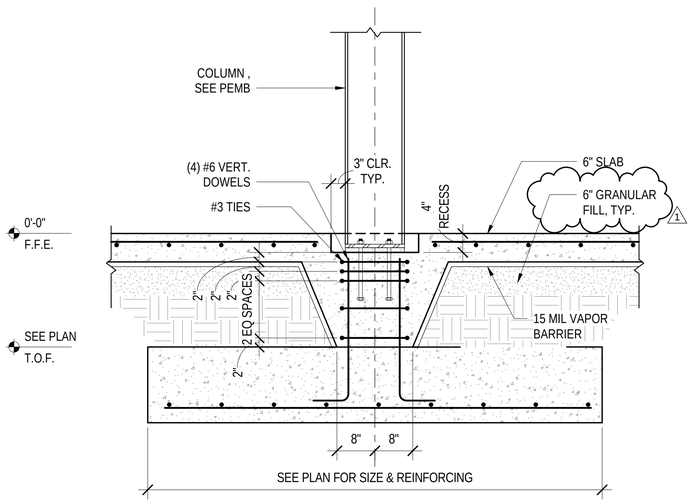
3 S-C300 | S-C300 THICKENED SLAB DETAIL

12" 0' 1' 2' 3'



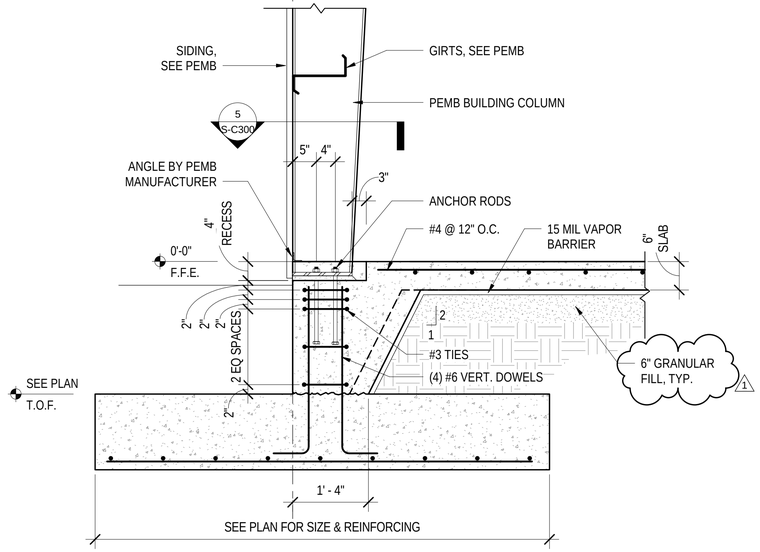
5 S-C300 | S-C300 PIER / ANCHOR DETAIL

12" 0' 1' 2'



6 S-C300 | S-C300 INTERIOR FOUNDATION DETAIL

12" 0' 1' 2' 3'



7 S-C300 | S-C300 EXTERIOR FOUNDATION DETAIL

12" 0' 1' 2' 3'

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STUART SMITH P.E.
FLORIDA LICENSE NUMBER 49738
SCG project: 2017-156

STATE OF TEXAS · SELVAKUMAR BUVANENDARAN · 104375 · LICENSED PROFESSIONAL ENGINEER

	DESCRIPTION	DATE	APPR
1	AMENDMENT 0001	07/27/18	ZPL
0	ISSUED FOR BID	06/25/18	RAD

NAVFAC

STUART CHARLES SMITH, P.E. · LICENSE NO. 49738 · STATE OF FLORIDA · PROFESSIONAL ENGINEER · SEAL

Gulf Coast Architectural Group
2510 West Cervantes Street
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A/E INFO

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FOR COMMANDER NAVFAC / B.L.T.L.

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DES JK	DRW JK	CHK SCS
PROJECT MANAGER		
IPT TECH. BRANCH HEAD		
CHIEF ENG/ARCH (CORE)		

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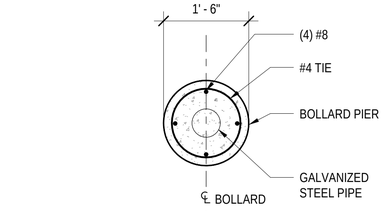
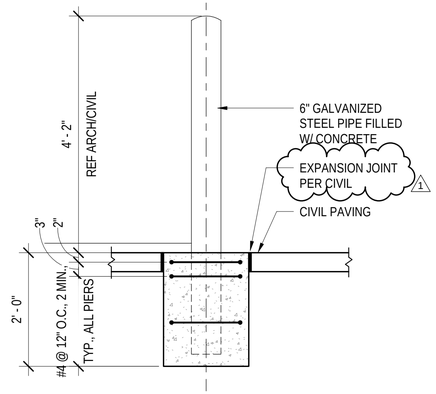
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR STATION, JACKSONVILLE
HAZ WASTE FACILITY B257/B259
CORPUS CHRISTI, TEXAS
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
CONCRETE DETAILS

SCALE: AS SHOWN
EPROJECT NO.: –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO. 15122479
SHEET 49 OF 91

S-C300

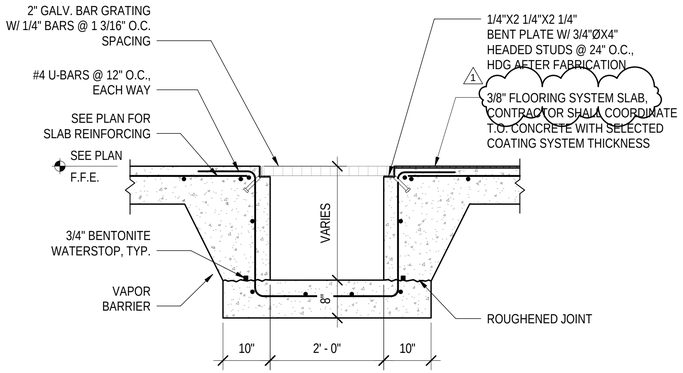
DRAWFORM REVISION: 7 AUGUST 2009





1 S-C301 | S-C301 BOLLARD DETAIL

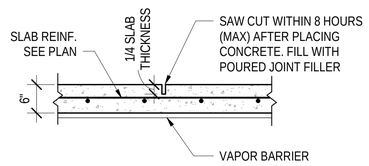
12" 0' 1' 2' 3'



2 S-C301 | S-C301 TRENCH SUMP DETAIL

12" 0' 1' 2' 3'

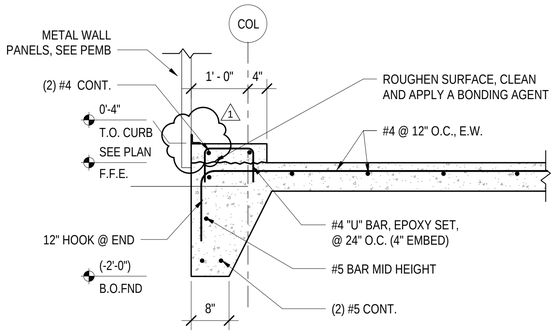
NOTE: MAXIMUM CONTROL JOINT SPACING SHALL BE 40 TIMES SLAB THICKNESS. MAXIMUM FOR ALL FLOATING SLABS ON GRADE. DO NOT EXCEED A 1.5 TO 1 WIDTH TO LENGTH RATIO. SEE PLAN FOR LOCATIONS.



CONTRACTION JOINT

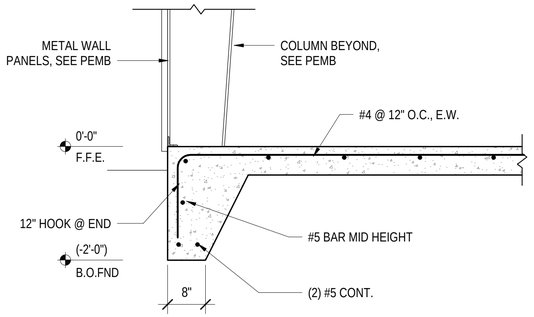
4 S-C301 | S-C301 6" SLAB CONTROL JOINT DETAIL

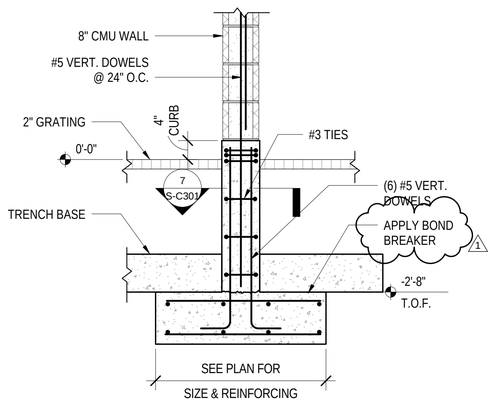
12" 0' 1' 2' 3'



3 S-C301 | S-C301 FOUNDATION DETAIL @ CURB

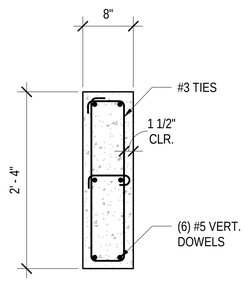
12" 0' 1' 2' 3'





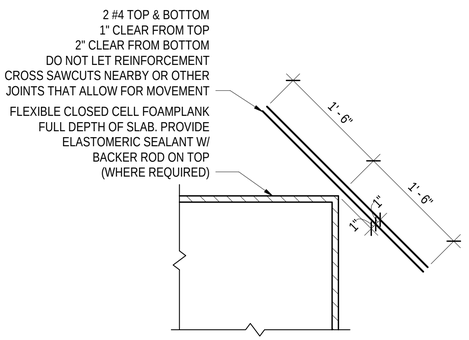
6 S-C301 | S-C301 DETAIL @ SUMP

12" 0' 1' 2' 3'



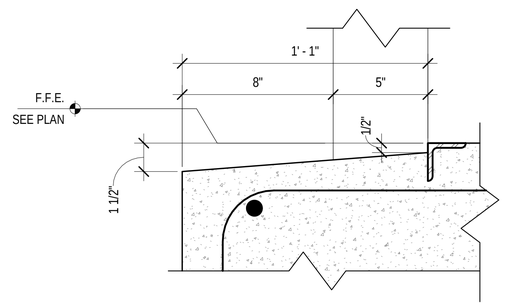
7 S-C301 | S-C301 PIER DETAIL

12" 0' 1' 2'



8 S-C301 | S-C301 REENTRANT CORNER PLAN DETAIL

12" 0' 1' 2'



REFER TO ARCH PLAN FOR OHCD LOCATIONS

9 S-C301 | S-C301 SLAB EDGE AT OHCD

SCHMIDT CONSULTING· GROUP, INC.
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SCG project: 2017-156

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EPROJECT NO.: –
CONSTR. CONTR. NO. –
NAVFAC DRAWING NO. 15122480
SHEET 50 OF 91

S-C301

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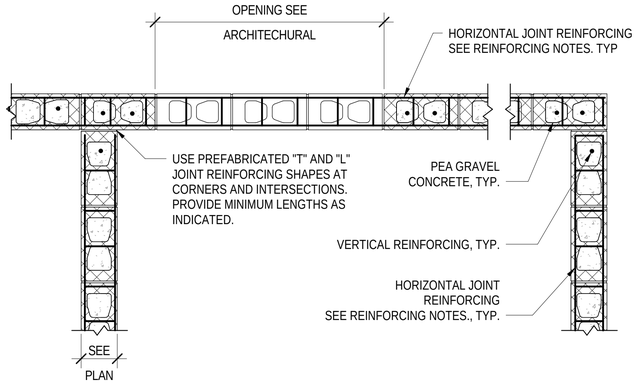
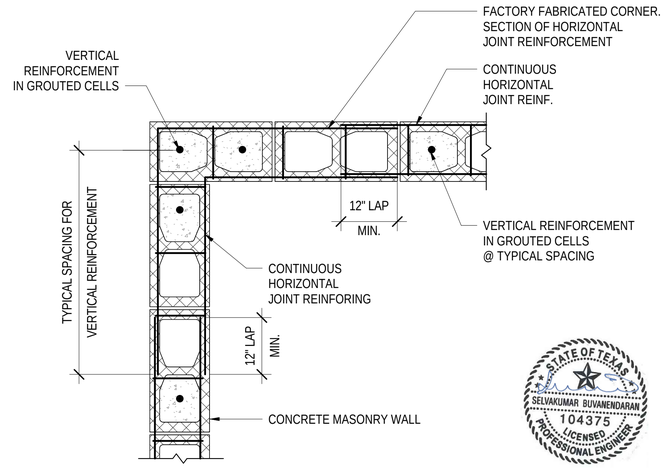
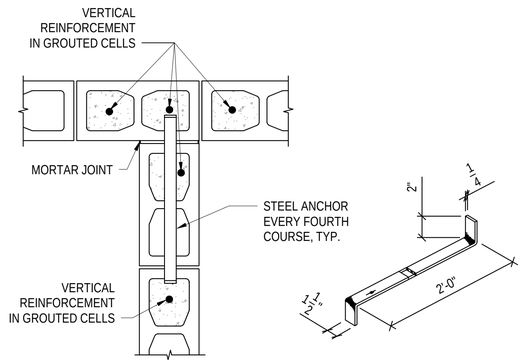
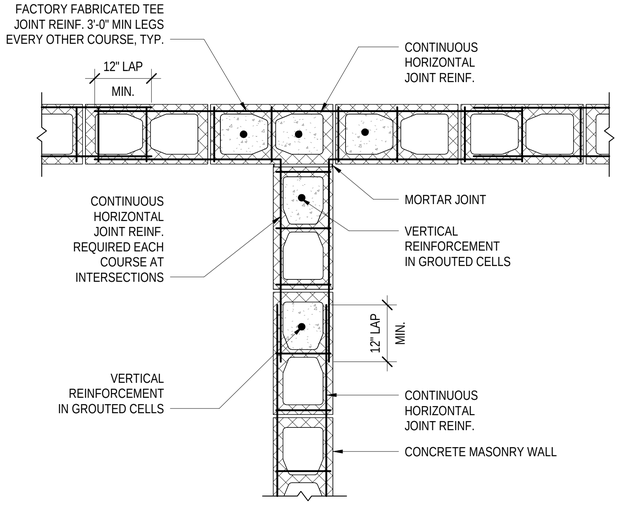


1 S-C400 | S-C400 TYPICAL 8" CMU WALL REINFORCING DETAIL



2 S-C400 | S-C400 TYPICAL DETAIL – JOINT REINFORCEMENT AT CORNER DETAIL





3 S-C400 | S-C400 TYPICAL DETAIL – INTERSECTION OF STRUCTURAL WALLS

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CMU DETAILS

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NAVFAC DRAWING NO. 15122481
SHEET 51 OF 91

S-C400

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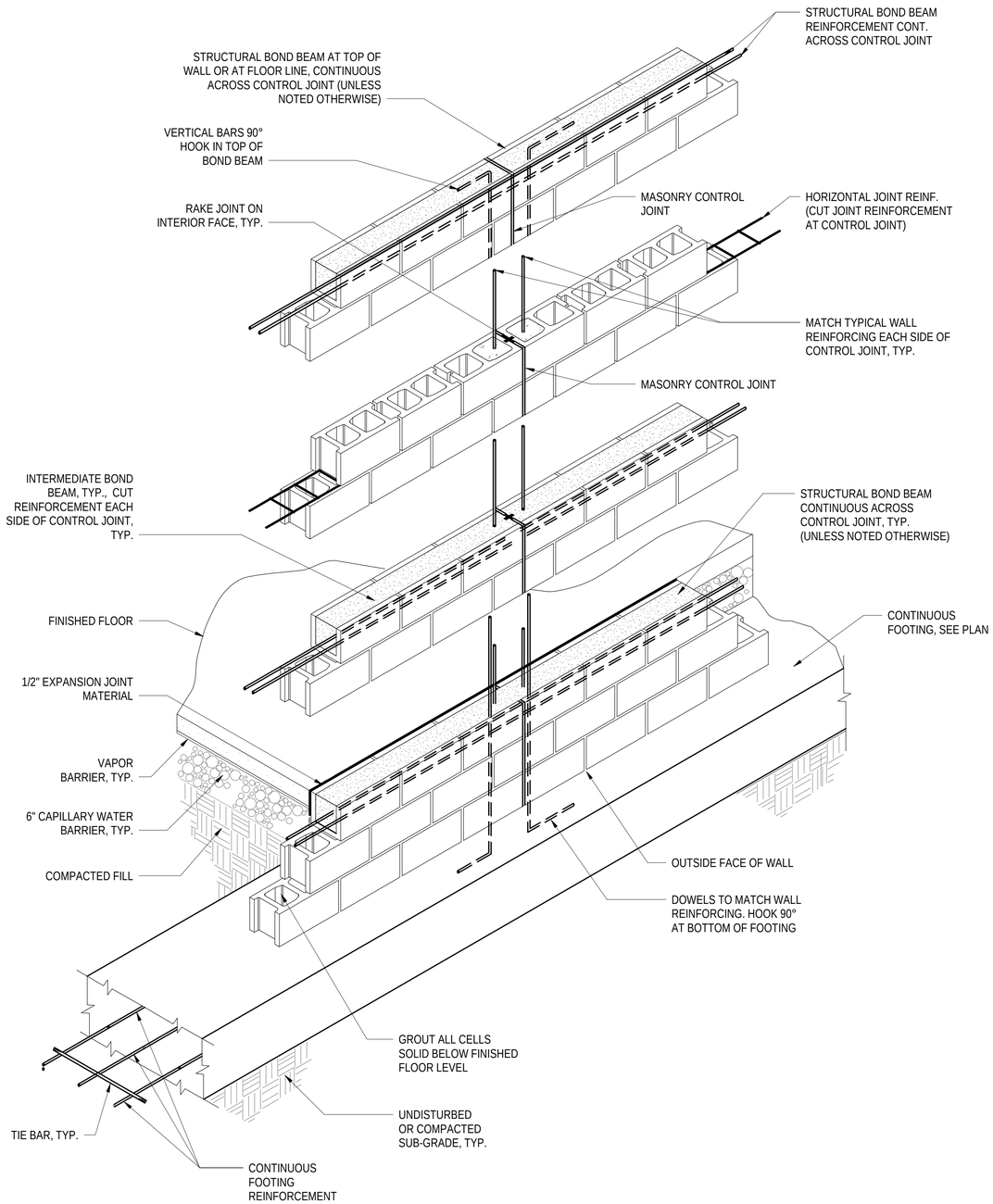
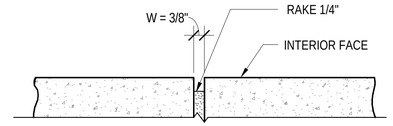
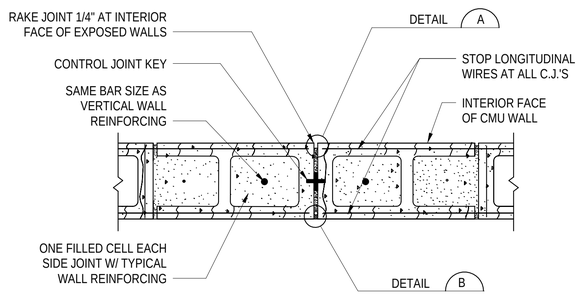


ISOMETRIC VIEW OF TYPICAL MASONRY WALL

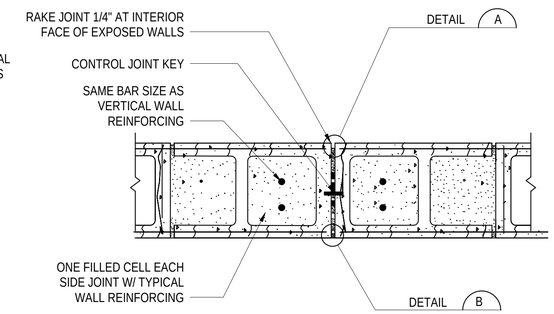
1 | S-C401 | S-C401



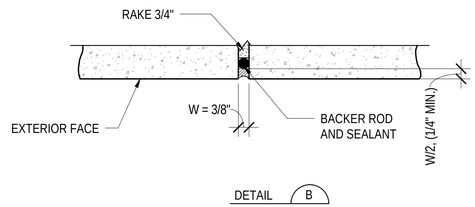
DETAIL A



8" CMU



12" CMU



DETAIL B

NOTE:
1. CMU CONTROL JOINTS ARE NOT TO EXCEED 24', TYP., U.N.O., THE JOINTS SHALL BE LOCATED A MINIMUM OF 24" FROM DOOR OR WINDOW OPENINGS TO MISS LINTELS. THE HORIZONTAL JOINT REINFORCING SHALL BE TERMINATED 2" FROM EACH SIDE OF JOINT. ALL BOND BEAM REINFORCING SHALL CONTINUE THRU THE JOINT.

TYPICAL CONTROL JOINT DETAIL W/ RUBBER KEY

2 | S-C401 | S-C401

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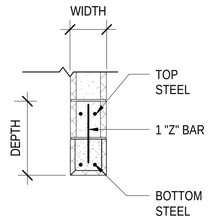
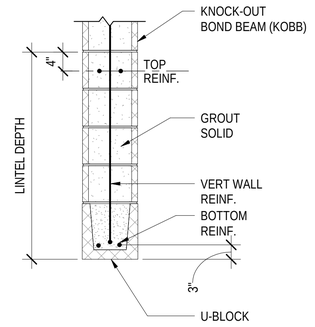
NAVFAC DRAWING NO. 15122482
SHEET 52 OF 91
S-C401
DRAWFORM REVISION: 7 AUGUST 2009

LINTEL SCHEDULE				
DESIGNATION	SIZE (WIDTH x DEPTH)	REINFORCING		
		TOP	BOTTOM	SHEAR
(1)	8x16 CMU	(2) #5	(2) #5	-



LINTEL NOTES:
1. LINTEL SIZES TYPICAL, UNLESS NOTED OTHERWISE.
2. 8" MINIMUM BEARING FOR CMU AND CONCRETE LINTELS 24" DEEP OR LESS.
3. 16" MINIMUM BEARING FOR CMU AND CONCRETE LINTELS GREATER THAN 24" DEEP.

1 S-C402 | S-C402 TYPICAL LINTEL DETAIL

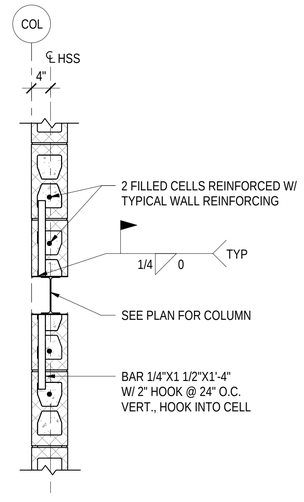


2 S-C402 | S-C402 CMU LINTEL DETAIL

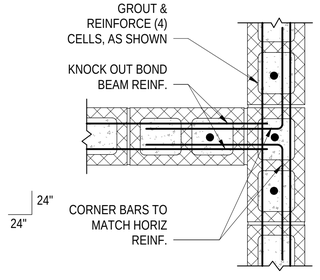
CMU WALL NOTES:

1. DOWEL ALL CMU REINFORCING IN FOOTINGS AND EXTEND INTO UPPERMOST BOND BEAM WITH 90º HOOKS WITH A MINIMUM 1'-0" LEG.
2. PROVIDE FOUR (4) FILLED CELLS OF TYPICAL WALL REINFORCING AT INTERSECTIONS. PROVIDE THREE (3) FILLED CELLS OF TYPICAL WALL REINFORCING AT ALL WALL CORNERS. PROVIDE TWO (2) FILLED CELLS AT EACH SIDE OF WALL OPENINGS AND AT DISCONTINUOUS ENDS U.N.O.
3. ALL CONCRETE MASONRY UNITS SHALL BE PLACED IN RUNNING BOND.
4. TYPICAL WALL REINFORCING UNLESS OTHERWISE NOTED WITH ADDITIONAL REINFORCING IN NOTE 3:
5. HORIZONTAL REINFORCING IN ALL BLOCK WALLS SHALL BE HEAVY DUTY (3/16 SIDE RODS WITH 9 GAUGE CROSS RODS) LADDER TYPE WALL REINFORCING AT 16" U.N.O. ALL WALLS PERPENDICULAR TO EXTERIOR WALLS SHALL HAVE ADDITIONAL PREFABRICATED "T" OR "L" JOINT REINFORCING IN ALTERNATE BLOCK AS INDICATED IN TYPICAL CMU DETAILS.
6. HORIZONTAL JOINT REINFORCING IN MASONRY CAVITY WALLS SHALL BE HEAVY DUTY (3/16 SIDE RODS W/ 9 GAUGE CROSS RODS) LADDER TYPE WALL REINFORCING W/ ADJUSTABLE U-SHAPED PINTLE EYE VENEER TIES FABRICATED OF 3/16 INCH DIAMETER ZINC-COATED STEEL WIRE SPACED @ 16" O.C. MAXIMUM ECCENTRICITY BETWEEN EACH ELEMENT OF THE TIE IS 1/2 INCH. JOINT REINFORCING SHALL BE AT 16" O.C. VERTICALLY W/ 8" O.C. VERTICALLY AT BUILDING CORNERS (SEE WIND CLADDING DIAGRAM FOR CORNER DIMENSIONS.) TIES SHALL BE WITHIN 8" OF WALL DISCONTINUITIES (MCJ, DOORS, WINDOWS, ETC.)
7. PROVIDE HORIZONTAL BOND BEAMS AT 10'-0" O.C. MAXIMUM VERTICALLY:
   12" CMU BOND BEAM SHALL BE REINFORCED WITH (2) #6 CONT.
   8" CMU BOND BEAM SHALL BE REINFORCED WITH (2) #5 CONT.
8. GROUT STOP IS A FIBERGLASS MESH CONFORMING TO ASTM STANDARD D1668-73, TYPE 207.
9. PROVIDE MINIMUM 8" DEEP CONCRETE CAP BEAM AT TOP OF ALL BEARING WALLS OR WALLS TO ROOF DECK, MINIMUM REINFORCING AS FOLLOWS:
   (1) 8" WALLS SHALL HAVE (2) #5 CONT.
   (2) 12" WALLS SHALL HAVE (2) #6 CONT.
10. PROVIDE MINIMUM 8" CMU CAP BEAM AT TOP OF ALL NON-BEARING WALLS, MINIMUM REINFORCING AS FOLLOWS:
    (1) 8" WALLS SHALL HAVE (2) #5 CONT.
    (2) 12" WALLS SHALL HAVE (2) #6 CONT.
11. SPLICE ALL BARS 48 BAR DIAMETERS UNLESS NOTED OTHERWISE.

1



4 S-C402 | S-C402 TYPICAL COLUMN IN CMU DETAIL



5 S-C402 | S-C402 BOND BEAM INTERSECTION DETAIL

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NAVFAC DRAWING NO. 15122483
SHEET 53 OF 91

S-C402

DRAWFORM REVISION: 7 AUGUST 2009

DUCTLESS SPLIT SYSTEM HEAT PUMP UNIT SCHEDULE

UNIT NO.	SERVING	NOM TONS CLG. CAP.	O.A. CFM	NOMINAL SUPPLY CFM L-M-H	INDOOR UNIT: COOLING CAPACITY ENTERING AIR °F.D.B.	°F.W.B.	TOTAL MBH	HEATING CAPACITY ENTERING AIR °F.D.B.	°F.W.B.	TOTAL MBH	UNIT WEIGHT LBS	OUTDOOR UNIT: COOLING E.A.T DB (°F)	HEATING E.A.T DB (°F)	UNIT MCA	MOCP	SEER	UNIT WEIGHT LBS	ELECTRICAL V-ø-Hz	REMARKS
DSS-1	FIRE SUPPR. EQPT.	0.75	N/A	170-237-300	80	62	9.0	70	60	10.9	22	95	47	9.0	4.4	24.6	81	208-1-60	SEE NOTES

NOTES:

1. WALL MOUNTED INDOOR UNIT.
2. PROVIDE UNIT COMPLETE WITH MANUFACTURER'S WIRED REMOTE CONTROLLER.
3. SUPPLY UNIT WITH R410A REFRIGERANT.
4. MOUNT OUTDOOR UNIT ON CONCRETE PAVEMENT USING STAINLESS STEEL FASTENERS.

EXHAUST FAN SCHEDULE

FAN NO.	SERVING	CFM	S.P.	HP	TYPE	CONTROL	ELECT. CHAR.	NOTES
EF-1	NON PERMITTED SPACE	4440	0.50	1.5	CENTRIFUGAL ROOF VENTILATOR	ON/OFF	480V/3ø/60HZ	CLASS1, DIV1
EF-2	NON PERMITTED SPACE	4440	0.50	1.5	CENTRIFUGAL ROOF VENTILATOR	ON/OFF	480V/3ø/60HZ	CLASS1, DIV1
EF-3	PERMITTED SPACE	3680	0.50	1.0	CENTRIFUGAL ROOF VENTILATOR	ON/OFF	480V/3ø/60HZ	CLASS1, DIV1
EF-4	ELEC./COMP. ROOM	1000	0.25	1/6	CENTRIFUGAL ROOF VENTILATOR	THERMOSTAT	120V/1ø/60HZ	
EF-5	FIRE SUPPRESSION EQPT	2500	0.25	3/4	CENTRIFUGAL ROOF VENTILATOR	INTERLOCK W/ FIRE PUMP	120V/1ø/60HZ	

GENERAL NOTES:

1. GENERAL: FURNISH LABOR, EQUIPMENT AND MATERIALS NECESSARY FOR THE INSTALLATION OF THE COMPLETE MECHANICAL SYSTEM AS SPECIFIED HEREIN AND INDICATED IN THE CONTRACT DOCUMENTS. OUTLINE DESCRIPTION AND DIAGRAMMATIC REPRESENTATION OF SYSTEM OPERATION AND EQUIPMENT DOES NOT LIMIT CONTRACTOR LIABILITY FOR FURNISHING AND INSTALLING COMPLETE AND OPERABLE SYSTEMS.
2. NOTE DEFINITIONS: "GENERAL NOTES" APPLY TO THE ENTIRE DRAWING ON WHICH THEY APPEAR, WHERE RELEVANT. "KEYNOTES" APPLY ONLY WHERE INDICATED WITH THE "KEYNOTE" SYMBOL. REFER TO LEGEND.
3. INSTALL MECHANICAL MATERIALS AND EQUIPMENT TO MAINTAIN THEIR RESPECTIVE UL RATING AND TO CONFORM TO FACTORY MUTUAL STANDARDS AS APPLICABLE.
4. ALL DIMENSIONS SHOWN FOR DUCTWORK ARE NET INSIDE DIMENSIONS.
5. NOT ALL OFFSETS AND TRANSITIONS REQUIRED ARE SHOWN IN DUCTWORK. FULLY COORDINATE THE MECHANICAL WORK WITHIN ITSELF AND WITH ALL TRADES TO PROVIDE COMPLETE AND OPERABLE SYSTEMS.

MECHANICAL H.V.A.C. LEGEND

SYMBOLS

- SUPPLY AIR DUCT (UP,DOWN)
- EXHAUST AIR DUCT (UP,DOWN)
- RETURN AIR DUCT (UP,DOWN)
- FLEXIBLE CONNECTION
- VOLUME DAMPER
- FIRE DAMPER; FDR
- SMOKE DAMPER; SD
- 90° ELBOW
- RADIUS ELBOW
- SUPPLY AIR DIFFUSER
- EXHAUST AIR GRILLE
- RETURN AIR GRILLE
- MOTOR OPERATED DAMPER
- (T) TEMPERATURE SENSOR/THERMOSTAT
- (H) HUMIDITY SENSOR

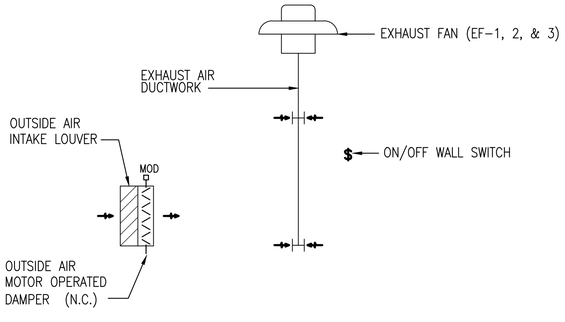
MECHANICAL ABBREVIATIONS

ABBREVIATIONS

ABV	ABOVE
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ACOUSTICALLY LINED
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ATC	AUTOMATIC TEMPERATURE CONTROL
BDD	BACK DRAFT DAMPER
BEL	BELOW
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BOD	BOTTOM OF DUCT
BOJ	BOTTOM OF JOIST
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STEEL
BTU	BRITISH THERMAL UNITS
BTUH	BRITISH THERMAL UNITS PER HOUR
CFM	CUBIC FEET PER MINUTE
CFH	CUBIC FEET PER HOUR
CLG	CEILING
CONN	CONNECT
CONT	CONTINUATION
CUH	CABINET UNIT HEATER
D	DOWN SLOPE (DUCTWORK)
DEPT	DEPARTMENT
DIA	DIAMETER
DIFF	DIFFUSER
DN	DOWN
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE
ETR	EXISTING TO REMAIN
EX	EXISTING
EXH	EXHAUST
FCU	FAN COIL UNIT
FDF	FIRE DAMPER
FOB	FLAT ON BOTTOM
FL	FLOOR
FSD	FIRE-SMOKE DAMPER
GC	GENERAL CONTRACTOR
GR	GRILLE
H	HUMIDISTAT
HD	HEAD
ID	INSIDE DIAMETER
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU'S PER HOUR
MIN	MINIMUM
MO	MOTOR OPERATED
MOD	MOTOR OPERATED DAMPER
MVD	MANUAL VOLUME DAMPER
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
OD	OUTSIDE DIAMETER
OED	OPEN END DUCT
PSI	POUNDS PER SQUARE INCH
R	RISE (DUCTWORK)
RA	RETURN AIR
REG	REGISTER
RET	RETURN
RPM	REVOLUTIONS PER MINUTE
RS/RL	REFRIGERANT SUCTION/LIQUID
SA	SUPPLY AIR
SD	SMOKE DAMPER
SP	STATIC PRESSURE
ST	SOUND TRAP
SUP	SUPPLY
TEMP	TEMPERATURE
TV	TURNING VANES
TYP	TYPICAL
UH	UNIT HEATER
VD	VOLUME DAMPER
W/	WITH
WO/	WITHOUT
WMS	WIRE MESH SCREEN

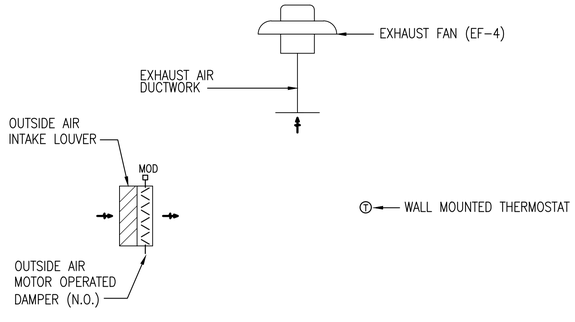
NOTE:

NOT ALL SYMBOLS AND ABBREVIATIONS APPLY



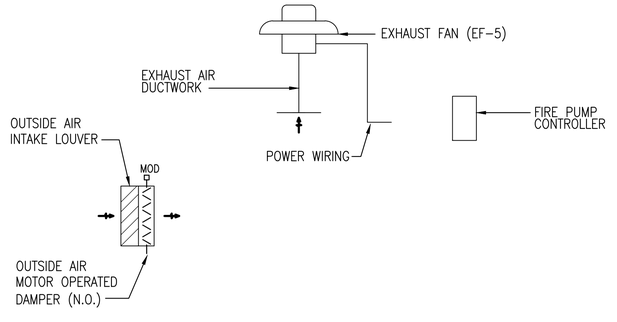
EF 1 THRU 3 CONTROL DIAGRAM

SEQUENCE OF OPERATION:
1. EXHAUST FANS RUNS CONTINUOUSLY (24/7).
2. WHEN FAN IS ENERGIZED, OUTSIDE AIR DAMPER OPENS.
3. WHEN FAN IS DE-ENERGIZED, OUTSIDE AIR DAMPER CLOSES.
4. WHEN FIRE IS DETECTED, EXHAUST FAN IS DE-ENERGIZED.
5. IF EXHAUST FAN FAILS, PROVIDE ALARM.
6. OUTSIDE AIR DAMPER IS NORMALLY CLOSE (I.E. SPRING RETURN TO FAIL CLOSED).



EF 4 CONTROL DIAGRAM

SEQUENCE OF OPERATION:
1. UPON A RISE IN SPACE TEMPERATURE ABOVE THE WALL MOUNTED THERMOSTAT (103°F ADJUSTABLE), OUTSIDE AIR DAMPER OPENS AND EF-4 IS ENERGIZED.
2. PROVIDE END SWITCH ON OUTSIDE AIR DAMPER TO PREVENT EF-4 FROM ENERGIZING UNTIL DAMPER IS FULLY OPEN.
3. UPON A DROP IN SPACE TEMPERATURE BELOW SETPOINT, EF-4 IS DE-ENERGIZED AND OUTSIDE AIR DAMPER CLOSES.
4. IF EXHAUST FAN FAILS, PROVIDE ALARM.
5. OUTSIDE AIR DAMPER IS NORMALLY OPEN (I.E. SPRING RETURN TO FAIL OPEN).



EF 5 CONTROL DIAGRAM

SEQUENCE OF OPERATION:
1. WHEN FIRE PUMP IS ENEGIZED, OUTSIDE AIR DAMPER OPENS AND EF-5 IS ENERGIZED.
2. PROVIDE END SWITCH ON OUTSIDE AIR DAMPER TO PREVENT EF-5 FROM ENERGIZING UNTIL DAMPER IS FULLY OPEN.
3. WHEN FIRE PUMP IS DE-ENERGIZED, EF-5 IS DE-ENERGIZED AND OUTSIDE AIR DAMPER CLOSES.
4. IF EXHAUST FAN FAILS, PROVIDE ALARM.
5. OUTSIDE AIR DAMPER IS NORMALLY OPEN (I.E. SPRING RETURN TO FAIL OPEN).

STATE OF TEXAS — SELVAKUMAR BUVANENDARAN — 104375 — LICENSED PROFESSIONAL ENGINEER

APPR	DATE	DESCRIPTION	STM
RAD	07/27/18	AMENDMENT 0001	1
RAD	06/25/18	ISSUED FOR BID	0

NAVFAC

STATE OF MARYLAND — MELCHIZEDEK VILLAR — No. 21187 — PROFESSIONAL ENGINEER — 7/10/18 — SEAL

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A/E INFO

APPROVED

FOR COMMANDER NAVFAC / B.L.T.L.

ACTIVITY

SATISFACTORY TO DATE

DES EP '	DRW EP'	CHK DC '

PROJECT MANAGER R PENARANDA

IPT TECH. BRANCH HEAD T FRAZIER

CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
IPT SOUTH ATLANTIC
NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX
HAZ WASTE FACILITY B257/B259
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
MECHANICAL SCHEDULES, DETAILS, & SYMBOLS

SCALE: AS SHOWN

EPROJECT NO.:

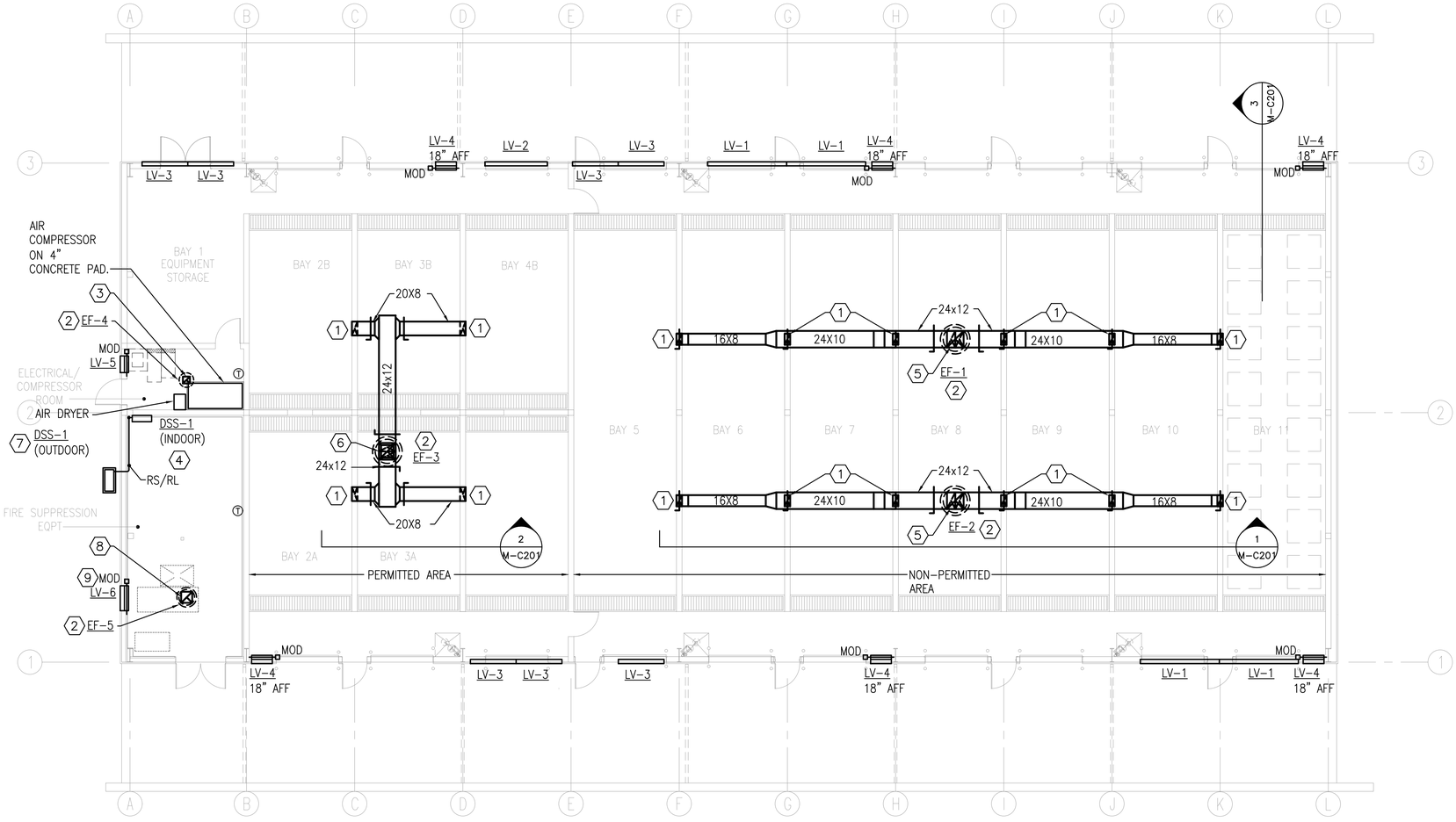
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122487

SHEET 56 OF 91

M-C001

DRAWFORM REVISION: 7 AUGUST 2009



1 M101 | M101

NEW STORAGE FACILITY – MECHANICAL PLAN

8' 4' 0' 8' 16'

KEYNOTES

1. 16x8 EA DUCT DOWN. SEE DRAWING M-C201 FOR MORE INFORMATION.
2. EXHAUST FAN ON ROOF.
3. 12x12 EA DUCT UP THRU ROOF TO EF-4. TERMINATE WITH OPEN END DUCT WITH BIRDSCREEN 12'-0" ABOVE FINISHED FLOOR.
4. MOUNT INDOOR UNIT ±8'-0" ABOVE FINISHED FLOOR.
5. 24x24 DUCT UP THRU ROOF TO EXHAUST FAN.
6. TRANSITION 24x24 EA DUCT TO 18x18 AND UP THRU ROOF TO EXHAUST FAN.
7. MOUNT ON 4" HIGH CONCRETE PAD. SEE DETAIL C3 ON SHEET C-503 OF CIVIL PLANS.
8. 16x16 EA DUCT UP THRU ROOF TO EF-5. TERMINATE WITH OPEN END DUCT WITH BIRDSCREEN 12'-0" ABOVE FINISHED FLOOR.
9. PROVIDE THERMALLY INSULATED MOTOR OPERATED DAMPER.

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GENERAL NOTES

1. COORDINATE EXACT POSITION OF DUCTS WITH MECHANICAL CHASES IN PART-HEIGHT CMU PARTITIONS. SEE ARCHITECTURAL DRAWINGS.
2. PROVIDE NECESSARY RELAYS, CONTACTS, ETC. COORDINATE WITH ELECTRICAL AND FIRE ALARM DRAWINGS.
3. SEE ARCHITECTURAL DRAWINGS FOR LOUVER SCHEDULE.

1	AMENDMENT 0001	07/27/18	RAD	
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STM	DESCRIPTION	DATE	APPR	

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STATE OF MARYLAND
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7/10/18
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A/E INFO

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ACTIVITY

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DES EP ' | DRW EP' | CHK DC '

PROJECT MANAGER R PENARANDA

IPT TECH. BRANCH HEAD T FRAZIER

CHIEF ENG/ARCH (CORE)

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NAVAL AIR STATION CORPUS CHRISTI

HAZ WASTE FACILITY B257/B259
CORPUS CHRISTI, TX

HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

NEW STORAGE – MECHANICAL PLAN

SCALE: AS SHOWN

EPROJECT NO.:

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122488

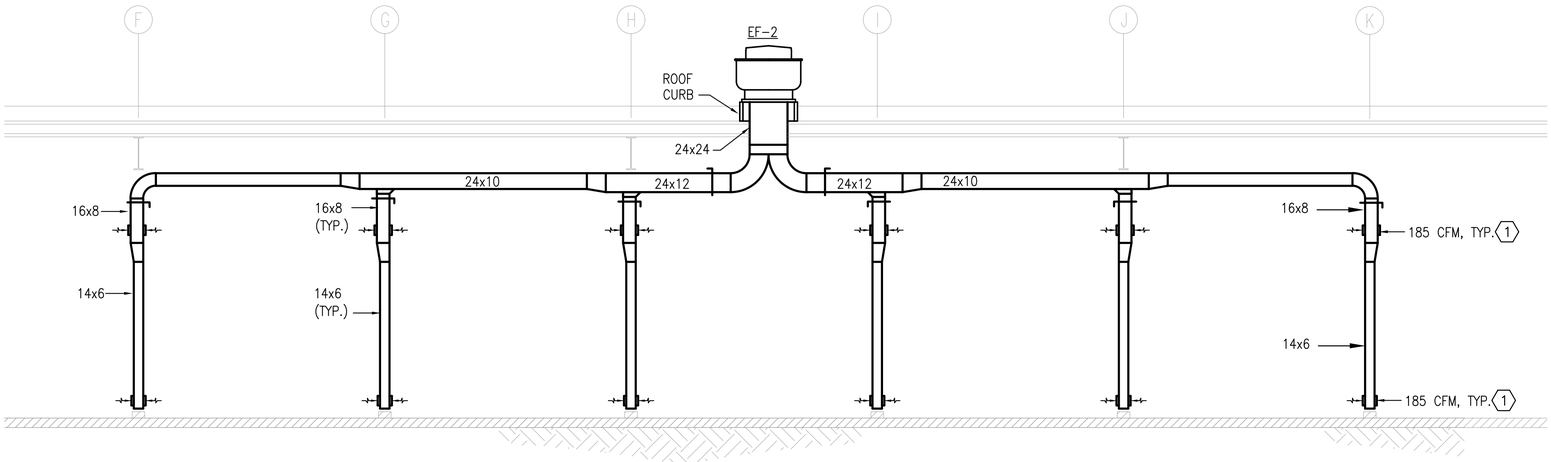
SHEET 57 OF 91

M-C101

DRAWFORM REVISION: 7 AUGUST 2009

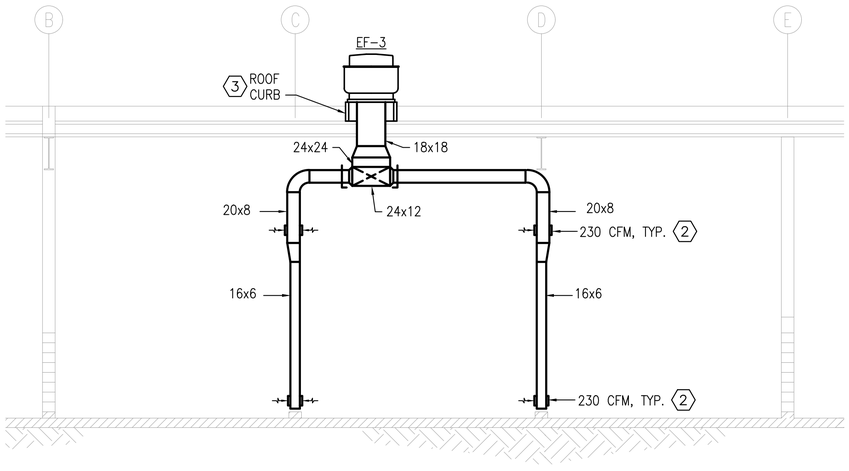
KEYNOTES

1. 12x6 ALUMINUM EXHAUST GRILLE WITH INTEGRAL DAMPER. BALANCE EACH REGISTER TO 185 CFM (NON-PERMITTED AREA).
2. 12x6 ALUMINUM EXHAUST GRILLE WITH INTEGRAL DAMPER. BALANCE EACH REGISTER TO 230 CFM (PERMITTED AREA).
3. SEE ARCHITECTURAL DRAWINGS FOR ROOF CURB DETAIL.



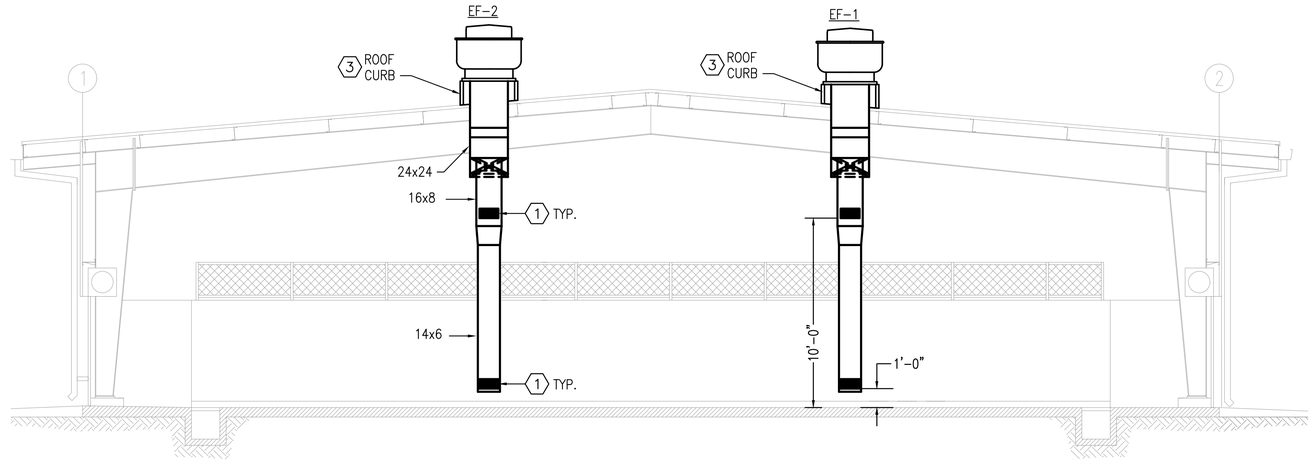
1 M-C201 | M-C201 HWSF – SECTION – NON PERMITTED AREA

4' 2' 0' 4' 8'



2 M-C201 | M-C201 HWSF – SECTION – PERMITTED AREA

4' 2' 0' 4' 8'



3 M-C201 | M-C201 HWSF – SECTION

4' 2' 0' 4' 8'

1	AMENDMENT 0001	07/27/18	RAD	APPR
0	ISSUED FOR BID	06/25/18	RAD	
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HAZ WASTE FACILITY B257/B259

HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

NEW STORAGE – MECHANICAL SECTIONS

SCALE: AS SHOWN

EPROJECT NO.:

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122489

SHEET 58 OF 91

M-C201

DRAWFORM REVISION: 7 AUGUST 2009

ELECTRICAL LEGEND

GENERAL ELECTRICAL DEVICES:

$ SINGLE POLE LIGHTING SWITCH. MOUNT 48" AFF UNLESS NOTED OTHERWISE. SUBSCRIPT INDICATES AS FOLLOWS:
XP – EXPLOSION PROOF LIGHTING SWITCH.
3 – 3–WAY LIGHTING SWITCH.

DUPLEX RECEPTACLE NEMA 5–20R. MOUNT 18" AFF UNLESS NOTED OTHERWISE. VERIFY DUPLEX MOUNTING REQUIREMENTS WITH ARCHITECTUAL DRAWINGS PRIOR TO ROUGH–IN. SUBSCRIPT INDICATES AS FOLLOWS:
G – GROUND FAULT CIRCUIT INTERRUPTER TYPE
WP – WATERPROOF RECEPTACLE

LIGHTING FIXTURES:

EXPLOSION PROOF LED AREA LIGHTING FIXTURE. SEE LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL REQUIREMENTS.

EMERGENCY EXPLOSION PROOF LED AREA LIGHTING FIXTURE. PROVIDE WITH EMERGENCY BATTERY PACK.

SUSPENDED LED LIGHTING FIXTURE. SEE LIGHTING FIXTURE SCHEDULE FOR DETAILS.

EMERGENCY SUSPENDED LED LIGHTING FIXTURE. PROVIDE WITH EMERGENCY BATTERY PACK.

LED EXIT SIGN. PROVIDE WITH EMERGENCY BATTERY PACK.

EMERGENCY OUTDOOR LIGHTING FIXTURE. PROVIDE WITH EMERGENCY BATTERY PACK.

OTHER:

CIRCUIT RUN CONCEALED ABOVE CEILING OR IN WALL.

CIRCUIT RUN CONCEALED IN OR BELOW FLOOR SLAB OR UNDERGROUND.

HOMERUN TO PANELBOARD ANY CIRCUIT WITHOUT FURTHER DESIGNATION 2#12, 1#12 GRD, 1/2"C. 3#12, 1#12 GRD, 1/2"C, ETC., PER NEC. MINIMUM SIZE ON HOMERUNS GREATER THAN 100 FEET SHALL BE #10 AWG.

AHU 1 MECHANICAL EQUIPMENT IDENTIFICATION TAG. SEE MECHANICAL EQUIPMENT ELECTRICAL SCHEDULE.

F2A LIGHT FIXTURE IDENTIFICATION TAG. SEE LIGHT FIXTURE SCHEDULE FOR SYMBOLS & DETAILS.

1 DEMOLITION SHEET NOTE TAG.

1 NEW WORK SHEET NOTE TAG.

LEADER.

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR.	EMT	ELECTRICAL METALLIC TUBING
C	CONDUIT.	SCA	SHORT CIRCUIT AMPS
C/L	CENTERLINE	kAIC	KILO–AMPERE INTERRUPTING CAPABILITY
MNT	MOUNTING HEIGHT AFF	WP	WEATHERPROOF
(E)	EXISTING EQUIPMENT.	JB	JUNCTION BOX

DISTRIBUTION & POWER EQUIPMENT:

PANELBOARD. MOUNT AS INDICATED. SEE PANELBOARD SCHEDULES.

NON–FUSED HEAVY DUTY SAFETY SWITCH. SIZE FOR LOAD BEING SERVED.

COMBINATION MOTOR STARTER/SAFETY SWITCH. SIZE FOR LOAD BEING SERVED.

MISCELLANEOUS EQUIPMENT:

MOTOR FURNISHED BY OTHERS.

J JUNCTION BOX.

GENERAL NOTES

1. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE.
2. CONDUIT ROUTINGS AND DEVICE/EQUIPMENT LOCATIONS SHOWN ARE DIAGRAMMATIC ONLY, CONTRACTOR SHALL FIELD ROUTE AND LOCATE AS REQUIRED. CONDUIT ROUTINGS SHALL BE NORTH/SOUTH OR EAST/WEST.
3. ALL ELECTRICAL EQUIPMENT AND DEVICES SHALL BE PROVIDED WITH SUITABLE PHENOLIC MECHANICALLY FASTENED NAMEPLATES.
4. FOR OTHER THAN LIGHTING FIXTURES, CATALOG NUMBERS AND MANUFACTURERS SHOWN ARE TO INDICATE DEVICE, QUALITY, AND TYPE OF ITEM DESIRED ONLY.
5. THE CONDUIT MATERIAL SHALL BE AS FOLLOWS (SEE SPECIFICATION SECTION 262000 FOR EXCEPTIONS AND ADDITIONAL INFORMATION):
   A) BELOW GRADE – RIGID NON–METALLIC (POWER & SITE LIGHTING ONLY).
   B) RISER FROM 36" BELOW GRADE – RIGID GALVANIZED STEEL.
   C) CONCEALED RISER FROM 36" BELOW GRADE – RIGID NON–METALLIC. (POWER ONLY)
   D) ABOVE GRADE SUBJECT TO PHYSICAL ABUSE – RIGID GALVANIZED STEEL OR INTERMEDIATE.
   E) ABOVE GRADE NOT SUBJECT TO PHYSICAL ABUSE OR WEATHER – ELECTRICAL METALLIC TUBING.
   F) INDOORS NOT SUBJECT TO PHYSICAL ABUSE – ELECTRICAL METALLIC TUBING.
6. THE LOADS SHOWN FOR APPLIANCES AND EQUIPMENT ARE BASED ON DESIGN INFORMATION. THE CONTRACTOR SHALL VERIFY ALL APPLICANCE LOADS PRIOR TO RUNNING THE CIRCUIT. THE MINIMUM CIRCUIT REQUIREMENTS SHALL BE BASED ON THE APPLIANCE NAMEPLATE VALUE OR CODE REQUIREMENTS, WHICHEVER IS MORE STRINGENT. ADDITIONAL COMPENSATION SHALL NOT BE ALLOWED FOR APPLIANCE MODIFICATIONS BY THE CONTRACTOR.
7. COORDINATE LOCATIONS OF ELECTRICAL EQUIPMENT, DEVICES, OUTLETS, FIXTURES, ETC., WITH ARCHITECTURAL PLANS, ELEVATIONS AND REFLECTED CEILING PLANS PRIOR TO ROUGH–IN WORK.
8. WALL OUTLETS SHALL NOT BE INSTALLED BACK TO BACK.
9. PROVIDE A 6'–0" MAXIMUM FLEXIBLE CONNECTION FROM EACH RECESSED LIGHITNG FIXTURE TO JUNCTION BOX ABOVE CEILING.
10. ALL CONDUITS NOT LOCATED UNDER SLAB SHALL HAVE A MINIMUM BURIAL DEPTH OF 36" UNLESS NOTED OTHERWISE.
11. ALL SAFETY SWITCH DISCONNECTS LOCATIONS IN MECHANICAL ROOMS SHALL HAVE 3'–0" MIN. OF WORKING SPACE IN FRONT OF DISCONNECT; COORDINATE WITH MECHANICAL CONTRACTOR AND EQUIPMENT LOCATIONS.
12. FINAL CONDUIT CONNECTIONS TO AIR HANDLERS, EXHAUST FANS, AND WATER HEATERS SHALL BE FLEXIBLE METAL (LIQUID TIGHT IN FLAMMABLE, OUTSIDE AND OTHER DAMP AND WET LOCATIONS).
13. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION. REFER TO MECHANICAL AND PLUMBING DRAWINGS FOR EXACT LOCATION AND SIZE OF EQUIPMENT WHICH ARE PROVIDED BY OTHERS AND CONNECTED BY ELECTRICAL.
14. CONDUITS LEAVING OR ENTERING BUILDING SHALL BE SEALED PER N.E.C. TO PREVENT ENTRANCE OF MOISTURE.
15. ALL EXHAUST FAN DISCONNECTS AND OVERLOADS ARE SCHEDULED TO BE PROVIDED UNDER DIVISION 23.
16. ALL DIMENSIONS TO DEVICES AFF SHALL BE TO CENTERLINE UNLESS NOTED OTHERWISE.
17. WORKING SPACE OF 36" FOR 120/208 SYSTEMS AND 42" FOR 277/480 SYSTEMS SHALL BE MAINTAINED IN FRONT OF ALL ELECTRICAL PANELS AND DEVICES.
18. ALL SIDEWALKS AND PARKING LOT ASPHALT AREAS THAT ARE CUT DUE TO ELECTRICAL SERVICES SHALL BE REPAIRED TO MATCH EXISTING.
19. FINAL CONNECTION TO ALL EQUIPMENT IS SHOWN DIAGRAMMATIC. PROVIDE FINAL CONNECTION AS REQUIRED PER MANUFACTURER OF EQUIPMENT.
20. ALL NEW SURFACE MOUNTED JUNCTION BOXES SHALL BE FS OR FD CAST HUB JUNCTION BOX. EXPOSED CONDUIT AND JUNCTION BOXES SHALL BE PAINTING TO MATCH EXISTING WALL FINISH.

STATE OF TEXAS
SELVAKUMAR SUVANENDARAN
104375
LICENSED
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901 W. Garden St. • Pensacola, FL 32502
P: 850-438-0000 • F: 850-432-8631
TODD NICHOLSON P.E.
FLORIDA LICENSE NUMBER 56882
SCG project: 2017-156

STM	DESCRIPTION	DATE	APPR
1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD

NAVFAC

TODD A. NICHOLSON LICENSE NO. 56882 STATE OF FLORIDA PROFESSIONAL ENGINEER 6/25/18

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A/E INFO

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FOR COMMANDER NAVFAC / B.L.T.L.

ACTIVITY

SATISFACTORY TO DATE

DES	TAN	DRW	TAN	CHK	TAN

PROJECT MANAGER R PENARANDA

IPT TECH. BRANCH HEAD T FRAZIER

CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
IPT SOUTH ATLANTIC
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NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX
HAZ WASTE FACILITY B257/B259
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
ELECTRICAL LEGEND AND NOTES

SCALE: AS SHOWN

EPROJECT NO.:

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122490

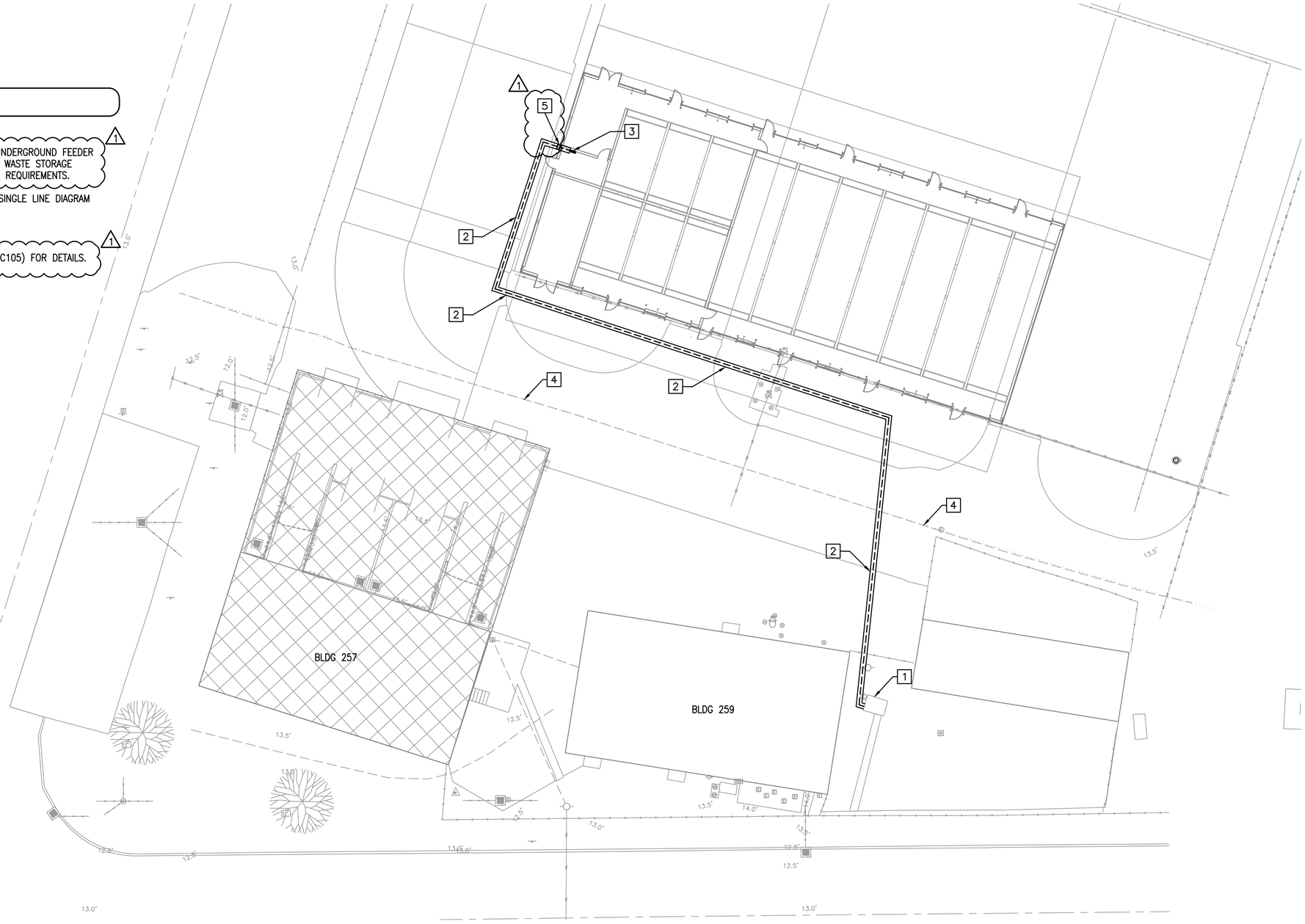
SHEET 60 OF 91

E-001

DRAWFORM REVISION: 7 AUGUST 2009

SHEET NOTES

1. EXISTING PAD MOUNTED TRANSFORMER TO REMAIN.
2. CUT AND PATCH EXISTING CONCRETE TO INSTALL NEW UNDERGROUND FEEDER BETWEEN PAD MOUNTED TRANSFORMER AND HAZARDOUS WASTE STORAGE FACILITY. SEE DETAIL 6, SHEET E-C107 FOR ADDITIONAL REQUIREMENTS. (1)
3. NEW SERVICE ENTRANCE RATED PANEL 4P1. REFER TO SINGLE LINE DIAGRAM FOR REQUIREMENTS.
4. EXISTING ELECTRICAL PRIMARY DUCTBANK TO REMAIN.
5. NEW CT CABINET. SEE SINGLE LINE DIAGRAM (SHEET E-C105) FOR DETAILS. (1)



1 ELECTRICAL SITE PLAN
E100 | E100
16' 8' 0' 16' 32'

PROJECT NORTH

MLS	STM	DESCRIPTION	DATE	APPR
	1	AMENDMENT 0001	07/27/18	RAD
	0	ISSUED FOR BID	06/25/18	RAD

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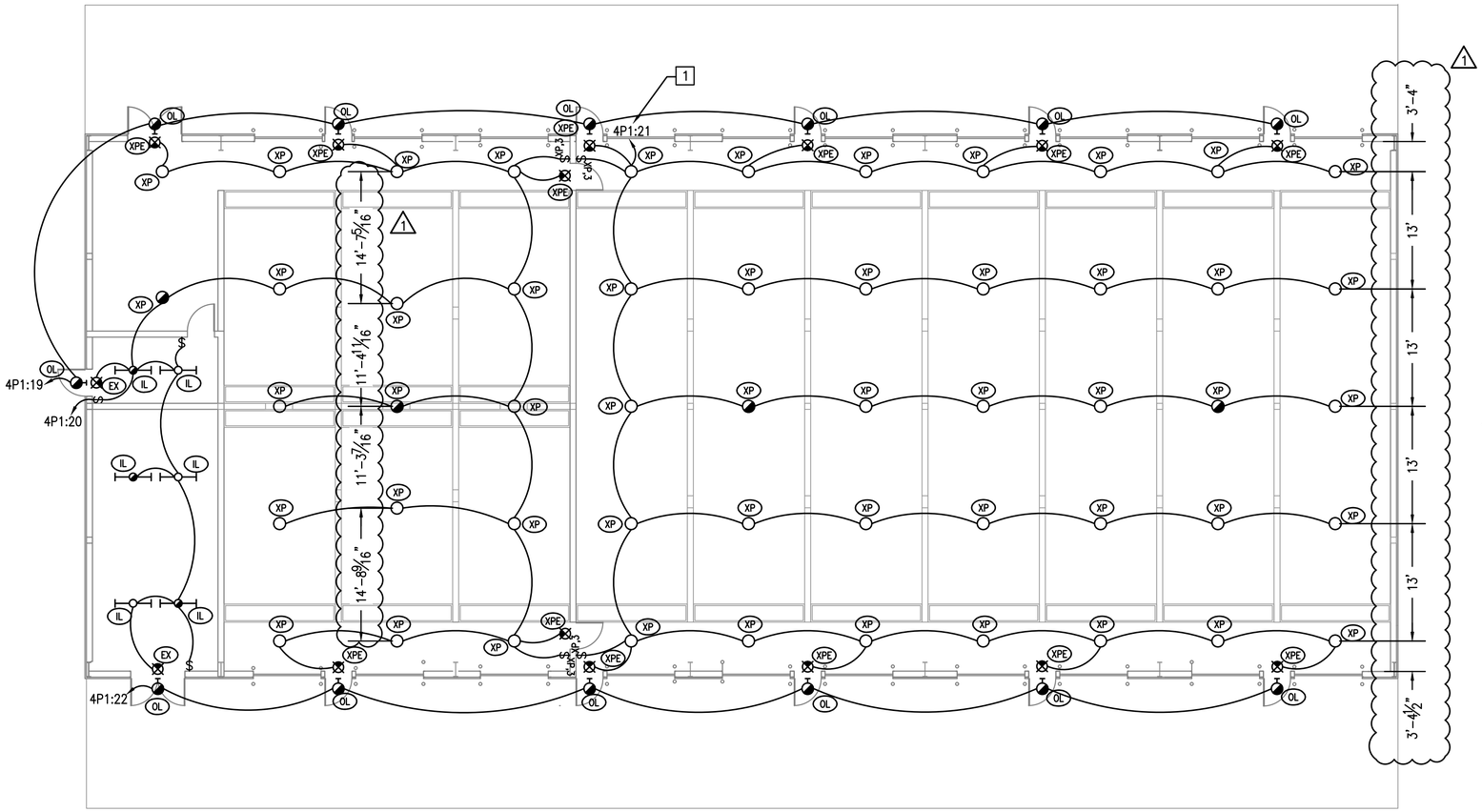
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
IPT SOUTH ATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX
HAZ WASTE FACILITY B257/B259
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
ELECTRICAL SITE PLAN

SCALE: AS SHOWN
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 15122491
SHEET 61 OF 91

E-100

DRAWFORM REVISION: 7 AUGUST 2009



GENERAL NOTE

1. ALL BAYS LOCATED UNDER CANOPY SHALL BE CLASSIFIED AS CLASS 1, DIVISION 1 HAZARDOUS LOCATION AS DEFINED IN ARTICLE 500 OF THE 2017 EDITION OF THE NATIONAL ELECTRICAL CODE (NEC). ALL WIRING, CONDUIT, BOXES, LIGHT FIXTURES, SWITCHES AND ALL OTHER ELECTRICAL ITEMS SHALL BE EXPLOSION PROOF AND MEET ALL NEC REQUIREMENTS FOR CLASS 1, DIVISION 1 HAZARDOUS LOCATIONS. AREA LOCATED FROM EDGE OF CANOPY OUT 10'-0" IN ALL DIRECTIONS SHALL BE LISTED AS CLASS 1, DIVISION 2 HAZARDOUS LOCATION AS DEFINED IN ARTICLE 500 OF THE 2017 EDITION OF THE NEC.
2. LIGHTS HUNG IN THE HAZARDOUS AREA SHALL BE CENTERED IN THE BAYS AND HUNG 24" FROM THE TOP OF THE BEAM TO THE BOTTOM OF THE FIXTURE.
3. LIGHTING FIXTURES SHALL BE LOCATED AS DIMENSIONED ON THE PLAN. LEEWAY SHALL BE GIVEN TO AVOID HIGH EXPANSION FOAM GENERATORS.

SHEET NOTES

1 HOMERUN SHALL BE 2#10, #10G, 3/4" CONDUIT.

1 E-C101 | E-C101

HSFW ELECTRICAL NEW WORK LIGHTING PLAN

8' 4' 0' 8' 16'

PROJECT NORTH

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TODD NICHOLSON P.E.
FLORIDA LICENSE NUMBER 56882
SCG project: 2017-156

STATE OF TEXAS · SELVAKUMAR BUVANENDARAN · 104375 · LICENSED PROFESSIONAL ENGINEER

STM	#	DESCRIPTION	DATE	APPR
	1	AMENDMENT 0001	07/27/18	RAD
	0	ISSUED FOR BID	06/25/18	RAD

NAVFAC

TODD A. NICHOLSON · LICENSE NO. 56882 · STATE OF FLORIDA · PROFESSIONAL ENGINEER · 6/25/18

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A/E INFO

APPROVED

FOR COMMANDER NAVFAC / B.L.T.L

ACTIVITY

SATISFACTORY TO DATE

DES	TAN	DRW	TAN	CHK	TAN

PROJECT MANAGER R PENARANDA

IPT TECH. BRANCH HEAD T FRAZIER

CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
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IPT SOUTH ATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
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HAZ WASTE FACILITY B257/B259
CORPUS CHRISTI, TX
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
HSFW ELECTRICAL NEW WORK LIGHTING PLAN

SCALE: AS SHOWN

EPROJECT NO.:

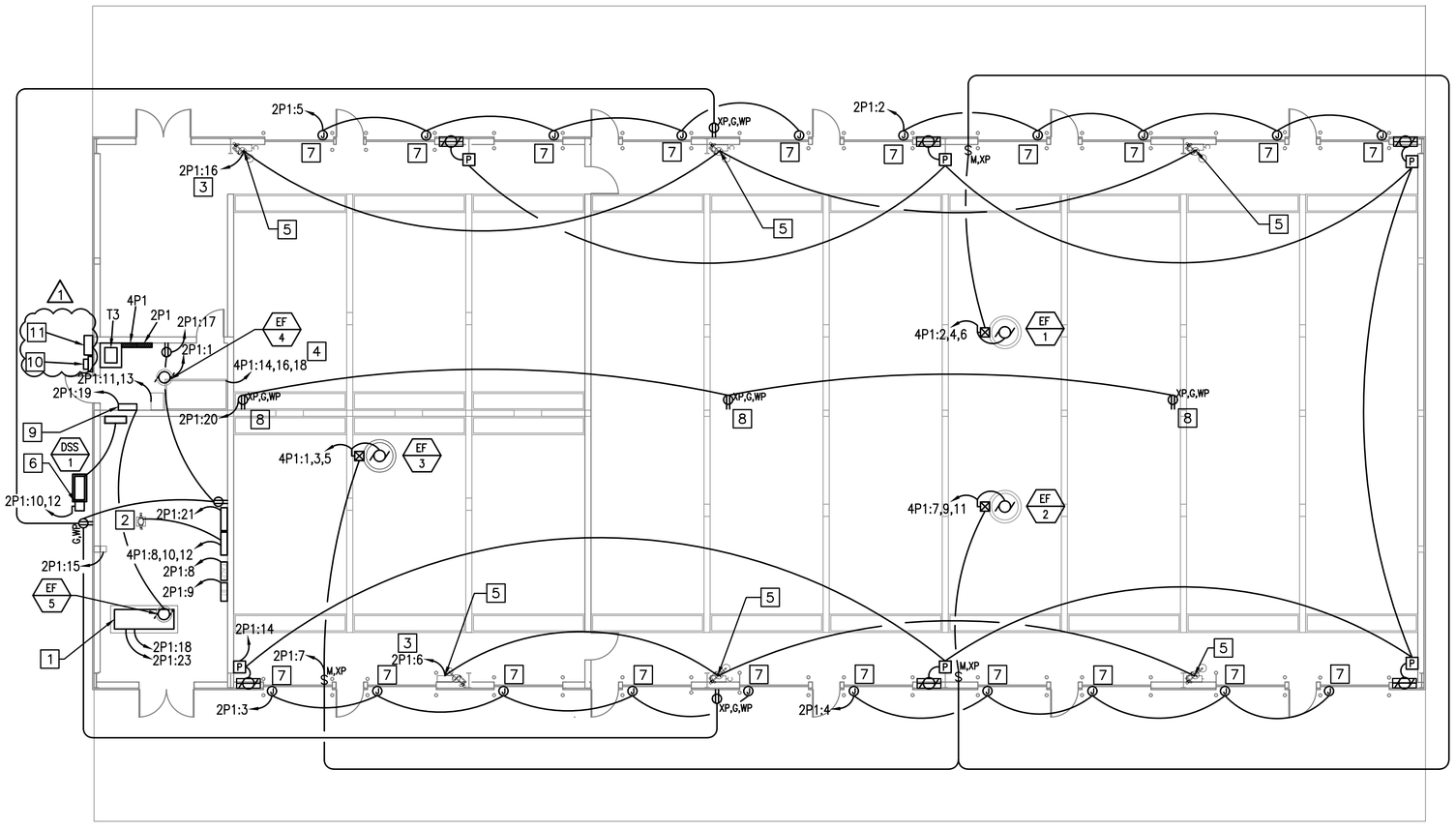
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122497

SHEET 67 OF 91

E-C101

DRAWFORM REVISION: 7 AUGUST 2009



GENERAL NOTE

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SHEET NOTES

1. MAIN FIRE PUMP.
2. JOCKEY FIRE PUMP.
3. HOMERUN SHALL BE 2#10, #10G, 3/4" CONDUIT.
4. AIR COMPRESSOR. HOMERUN SHALL BE 3#6, #8G, 1" CONDUIT.
5. EYE WASH EMERGENCY SIGNAL.
6. POWER FOR DUCTLESS SPLIT IS CONNECTED TO OUTSIDE UNIT. INSIDE UNIT RECEIVES POWER FROM OUTSIDE UNIT VIA 2#12. COORDINATE WITH MECHANICAL CONTRACTOR FOR FURTHER INFORMATION.
7. JUNCTION BOX FOR BAY DOOR BRAKE RELEASE. COORDINATE WITH DOOR PROVIDER FOR LOCATION.
8. CONVENIENCE RECEPTACLES TO BE MOUNTED ON ROOF.
9. UPS FOR EF-5. SEE SINGLE LINE DIAGRAM (SHEET E-C105) FOR DETAILS. (1)
10. AMI METER. SEE SINGLE LINE DIAGRAM (SHEET E-C105) FOR DETAILS.
11. CT CABINET. SEE SINGLE LINE DIAGRAM (SHEET E-C105) FOR DETAILS.

1 E-C102 | E-C102

HSFW ELECTRICAL NEW WORK POWER PLAN

8' 4' 0' 8' 16'

PROJECT NORTH

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IPT TECH. BRANCH HEAD T FRAZIER

CHIEF ENG/ARCH (CORE)

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CORPUS CHRISTI, TX
HAZ WASTE FACILITY B257/B259
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

HSFW ELECTRICAL NEW WORK POWER PLAN

SCALE: AS SHOWN

EPROJECT NO.:

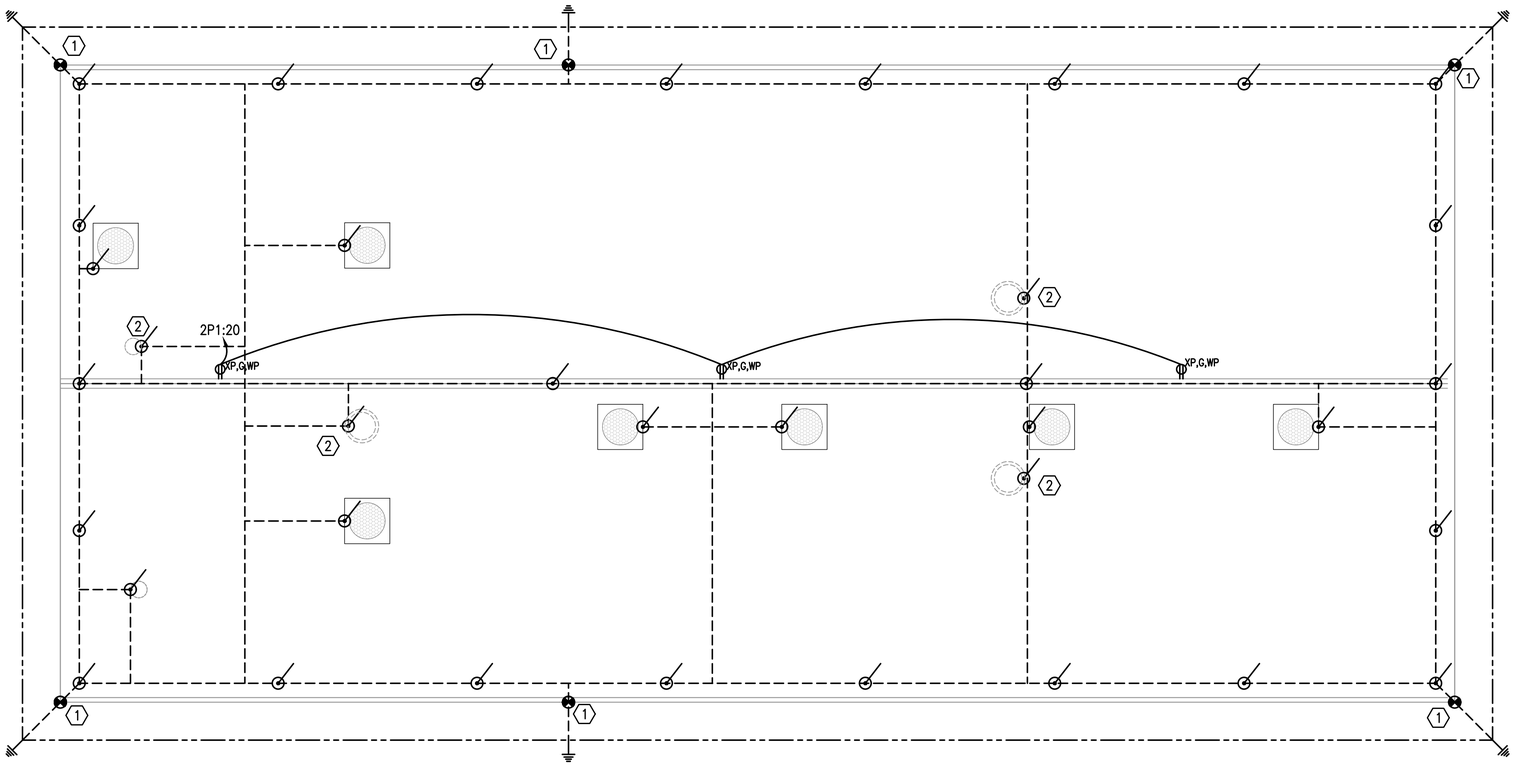
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122498

SHEET 68 OF 91

E-C102

DRAWFORM REVISION: 7 AUGUST 2009



GENERAL NOTE

1. COUNTERPOISE AND TEST WELLS SHALL BE INSTALLED WITHIN THE LIMITS OF THE EXISTING PAVING DEMOLITION. SEE CIVIL PLANS FOR DETAILS.

SHEET NOTES

1. ROUTE DOWN CONDUCTOR EXPOSED IN CONDUIT DOWN EXTERIOR WALL.
2. PROVIDE AIR TERMINAL ON SURFACE OF MECHANICAL EQUIPMENT. SEE DETAIL 5/E-C107

LIGHTNING PROTECTION LEGEND

- AIR TERMINAL REFER TO DETAIL 1/E-C104.
- DOWN CONDUCTOR. ROUTE DOWN CONCEALED IN EXTERIOR WALL. REFER TO DETAIL 4/E-C104.
- LIGHTNING PROTECTION SYSTEM DEDICATED GROUND ROD. REFER TO DETAIL 2/E-C104 AND 3/E-C104.
- ROOF CONDUCTOR.
- GROUND COUNTERPOISE.

LIGHTNING PROTECTION NOTES

1. LOCATE AIR TERMINALS AS SHOWN ON SHOP DRAWINGS. TAKE CARE TO ENSURE THAT ALL POINTS ARE WITHIN 2'-0" OF OUTSIDE BUILDING EDGE, OUTSIDE CORNERS, AND RIDGE ENDS, AND THAT MAXIMUM SPACING DOES NOT EXCEED DISTANCE SHOWN AND THAT MINIMUM PROJECTION ABOVE OBJECT PROTECTED IS 10".
2. MAINTAIN HORIZONTAL OR DOWNWARD COURSING OF MAIN CONDUCTOR AND INSURE THAT ALL BENDS HAVE AT LEAST AN 8" RADIUS AND DO NOT EXCEED 90 DEGREES.
3. SUPPORT ALL EXPOSED ROOF, DOWNLEAD, AND BONDING CABLES AT 3'-0" ON CENTER MAXIMUM.
4. GROUND ELECTRODES SHALL BE INSTALLED AS SHOWN ON SHOP DRAWINGS BUT IN NO INSTANCE SHALL THEY BE LESS THAN 1'-0" BELOW GRADE AND 2'-0" FROM FOUNDATION WALL. DRIVEN RODS SHALL PENETRATE EARTH AT LEAST 10'-0".
5. BOND TO WATER SERVICE AND OTHER PIPING SYSTEMS AS REQUIRED BY NFPA AND L.P.I. CODES. BOND TO BUILDING STEEL WHERE POSSIBLE.
6. INTERCONNECT LIGHTNING PROTECTION GROUND TO ELECTRIC, TELEPHONE, AND OTHER BUILDING GROUND SYSTEMS AS SHOWN ON SHOP DRAWINGS OR AS REQUIRED BY CODES.
7. SYSTEM SHALL BE INSTALLED AS SHOWN ON SHOP DRAWINGS TO ENSURE PROPER CODE COMPLIANCE AND SYSTEM CERTIFICATION. ANY MAJOR VARIANCE SHALL ENTAIL RESUBMITTAL AND NEW APPROVAL.
8. LIGHTNING PROTECTION DESIGN UTILIZES ALUMINUM COMPONENTS ABOVE THE ROOF IN ORDER TO MAINTAIN COMPATIBILITY WITH THE ALUMINUM/GALVALUME/GALVANIZED METAL ROOF AS REQUIRED BY THE LIGHTNING PROTECTION CODES. ALL MATERIAL BELOW THE ROOF SHALL BE COPPER.
9. LIGHTNING PROTECTION LAYOUT IS FOR INTENT ONLY. ACTUAL DESIGN OF LIGHTNING PROTECTION SYSTEM SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND SHOP DRAWINGS.
10. ALL SEALANT MATERIALS SHALL BE COORDINATED WITH THE ROOFING SUPPLIER TO ENSURE ANY WARRANTIES ARE NOT INVALIDATED.
11. WHERE STEEL COLUMNS ARE INBEDDED IN CONCRETE THEY SHALL BE BONDED TO THE FOUNDATION SLAB REBAR, CONTRACTOR SHALL COORDINATE WITH STEEL ERECTOR.
12. METAL BODIES OF INDUCTANCE THAT ARE LOCATED WITHIN 6'-0" OF THE LIGHTNING PROTECTION SYSTEM SHALL BE BONDED TO THE LIGHTING PROTECTION SYSTEM USING SECONDARY BONDING CONDUCTORS AND FITTINGS UNLESS INHERENTLY BONDED THROUGH CONSTRUCTION TO ANOTHER BONDED METAL BODY.
13. LIGHTING PROTECTION DESIGN SHALL CONFORM TO NFPA 780.
14. LIGHTNING PROTECTION SYSTEM SHALL NOT PENETRATE METAL ROOF OR FLASHING AND SHALL COME WITH UL LIGHTNING PROTECTION INSPECTION CERTIFICATE CERTIFIED TO UL 96A.

1 E-C103 / E-C103 HSFW LIGHTNING PROTECTION PLAN

8' 4' 0' 8' 16'

PROJECT NORTH

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TODD NICHOLSON P.E.
FLORIDA LICENSE NUMBER 56882
SCG project: 2017-156

NO	DESCRIPTION	DATE	APPR
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NAVFAC

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A/E INFO

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ACTIVITY

SATISFACTORY TO DATE

DES	TAN	DRW	TAN	CHK	TAN

PROJECT MANAGER R PENARANDA

IPT TECH. BRANCH HEAD T FRAZIER

CHIEF ENG/ARCH (CORE)

STATE OF TEXAS SELVAKUMAR BUVANENDARAN 104375 LICENSED PROFESSIONAL ENGINEER

DEPARTMENT OF THE NAVY
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HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
HSFW LIGHTNING PROTECTION PLAN

SCALE: AS SHOWN

EPROJECT NO.:

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122499

SHEET 69 OF 91

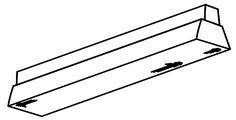
E-C103

DRAWFORM REVISION: 7 AUGUST 2009

LIGHTING FIXTURE SCHEDULE

MARK	MANUFACTURER AND CATALOG NUMBER	LAMP TYPE	TOTAL WATTS	VOLTAGE	MOUNTING	NOTES
IL	INDUSTRIAL STRIP LIGHT LITHONIA ZL1D BASIS OF DESIGN	LED 35K	40W	277	PENDANT 12'-0" AFF	1 DROP LENS, 80CRI, MULTIVOLT INPUT
OL	OUTDOOR AREA LIGHT LITHONIA WST-LED BASIS OF DESIGN	LED 30K	25W	277	WALL MOUNT 8'-0" AFF	3000 LUMENS, 70CRI, VISUAL COMFORT FORWARD THROW, PROVIDE BATTERY BACKUP
XP	EXPLOSION PROOF LED AREA LIGHT RIG-A-LITE SXPJ11L2UGGXX BASIS OF DESIGN	LED 40K	96W	277	SUSPENDED 14'-0" AFF	EXPLOSION PROOF LED AREA LIGHT. UL LISTED FOR HAZARDOUS LOCATIONS. CLASS 1 DIVISION 1 GROUP C&D. FIELD REPLACEABLE LED CIRCUIT BOARDS AND DRIVERS, ACCESSABLE FROM SINGLE SET SCREW. PROVIDE WITH STAINLESS GUARD AND BOROSILICATE GLASS GLOBE.
XPE	EXPLOSION PROOF LED EXIT SIGN RIG-A-LITE XPEX-1-R-DT-WP-EM BASIS OF DESIGN	LED	2.5W	277	WALL MOUNT 8'-0" AFF	EXPLOSION PROOF LED EXIT SIGN. UL LISTED FOR HAZARDOUS LOCATIONS, WET LOCATIONS. CLASS 1 DIVISION 1 GROUP C&D. FIELD REPLACEABLE LED CIRCUIT BOARDS AND DRIVERS. 3-HOUR EMERGENCY OPERATION W/INTEGRAL BATTERY BACKUP AND SELF DIAGNOSIS
EX	LED EXIT SIGN	LED	3W	277	WALL MOUNT 8'-0" AFF	PROVIDE BATTERY BACKUP, DIE CAST ALUMINUM HOUSING W/BRUSHED ALUMINUM FACEPLATE, SELF DIAGNOSIS W/LEDs

TYPE: IL



FEATURES

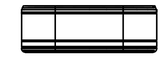
LAMP TYPE: 3500K 80 CRI
5000 LUMEN
SHIELDING: COMPACT CHANNEL AND DROP LENS.
DRIVER: ELECTRONIC

NOM. DIMENSIONS: 3-1/4"H X 3-2/8"W X 48-1/8"L

GENERAL DESCRIPTION:

HOUSING: COMPACT-DESIGN CHANNEL AND COVER FROM COLD ROLLED STEEL,
ELECTRICAL: 40W, 277 VOLT
FINISH: WHITE ENAMEL POWDER COAT AFTER FABRICATION.

TYPE: OL



FEATURES

LAMP TYPE: 3000K 70CRI 3000 LUMEN LED.
SHIELDING: IMPACT-RESISTANT, ACRYLIC LENS.
DRIVER: ELECTRONIC
NOM. DIMENSIONS: (17"W X 8-1/2"H X 10-3/16"D)
OTHER: VISUAL COMFORT WIDE DISTRIBUTION, BATTERY BACKUP.

GENERAL DESCRIPTION:

HOUSING: SINGLE PIECE DIE-CAST, ALUMINUM HOUSING. DIE-CAST DOOR FRAME WITH FULLY GASKETED TEMPERED GLASS LENS. DRIVER MOUNTED IN DIRECT CONTACT WITH CASTING.
MOUNTING: WALL MOUNT. COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL ELEVATIONS.
ELECTRICAL: 25W, 277 VOLT
FINISH: ZINC INFUSED DARK BRONZE POWDER COAT FINISH.
OTHER: SINGLE FUSE, BATTERY BACKUP.

TYPE: XPE

FEATURES

LAMP TYPE: LED.
MOUNTING: WALL MOUNT.
SHIELDING: FLAT SHEET ACRYLIC LENS.
DRIVER: ELECTRONIC
NOM. DIMENSIONS: (14.88"W X 3.69"D X 16"H)

GENERAL DESCRIPTION:

HOUSING: A356T6 ALUMINUM HOUSING WITH LESS THAN .4% COPPER CONTENT. ONE PIECE SILICONE GASKET. STAINLESS STEEL HARDWARE.
ELECTRICAL: 2.5W, 277 VOLT
FINISH: BAKED-ON GRAY EPOXY.

TYPE: XP

FEATURES

LAMP TYPE: 4000K 72 CRI 8829 LUMEN LED.
SHIELDING: BOROSILICATE GLASS LENS.
DRIVER: ELECTRONIC
NOM. DIMENSIONS: (12-1/8"D X 18-3/4"H)

GENERAL DESCRIPTION:

HOUSING: A360 ALUMINUM HOUSING WITH LESS THAN .4% COPPER CONTENT. ONE PIECE SILICONE GASKET. STAINLESS STEEL HARDWARE. BOROSILICATE GLASS LENS.
MOUNTING: SUSPENDED 14'-0" AFF.
ELECTRICAL: 96W, 277 VOLT
FINISH: WHITE ENAMEL POWDER COAT AFTER FABRICATION

TYPE: EX

FEATURES

LAMP TYPE: LED.
MOUNTING: UNIVERSAL
SHIELDING: FLAT SHEET ACRYLIC
LETTERS: GREEN
NOM. DIMENSIONS: (11-3/8"W X 7-7/8"H X 1-3/4"D)

GENERAL DESCRIPTION:

HOUSING: DIE-CAST ALUMINUM OR 20 GA. COLD ROLLED STEEL, HARDWARE FINISH TO MATCH HOUSING FINISH. 6"H LETTERS WITH 3/4" STROKE. DIRECTIONAL ARROWS AS REQUIRED.
ELECTRICAL: 277 VOLT.
FINISH: BLOCK
OTHER: MINIMUM BRIGHTNESS 20 CD/SQ METER ON FACE OF SIGN.

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STATE OF TEXAS
SELVAKUMAR BUVANENDARAN
104375
LICENSED
PROFESSIONAL ENGINEER

STK	DESCRIPTION	DATE	APPR
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6/25/18

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A/E INFO

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ACTIVITY

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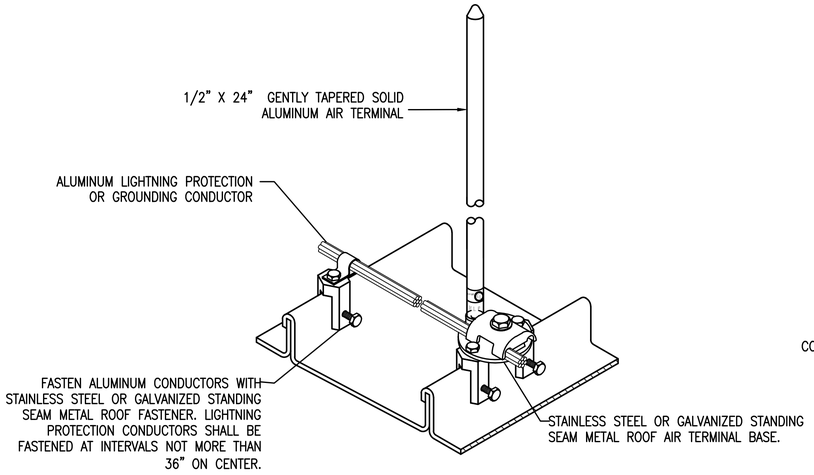
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
ELECTRICAL DETAILS

SCALE: AS SHOWN
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.
15122502
SHEET 72 OF 91

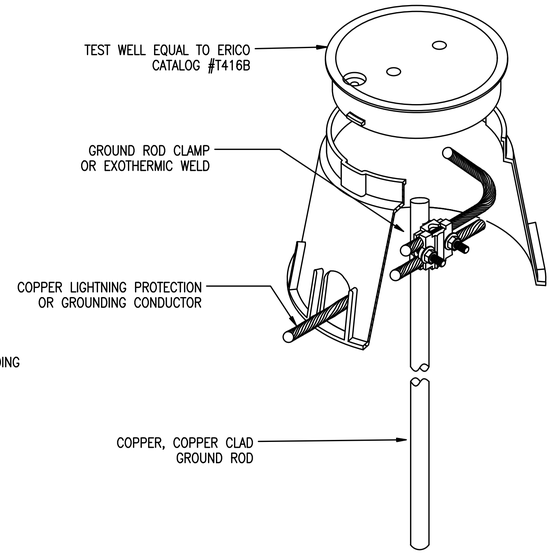
E-C106

DRAWFORM REVISION: 7 AUGUST 2009

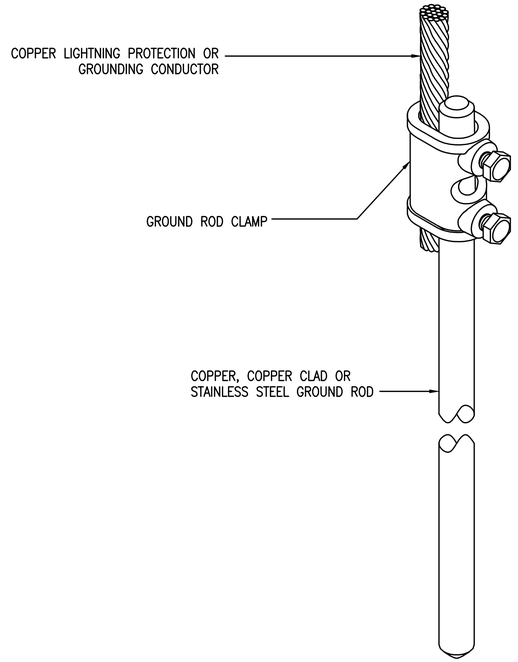


NOTES:
1. AIR TERMINAL SPACING SHALL CONFORM TO NFPA 780 & UL 96 REQUIREMENTS.
2. MATERIAL COMPATIBILITY SHALL CONFORM TO NFPA 780 & 96 REQUIREMENTS.
3. MATERIAL CLASS SHALL CONFORM TO NFPA 780 & UL 96 REQUIREMENTS.
4. AIR TERMINALS SHALL BE UL LISTED & CAL-OSHA APPROVED.

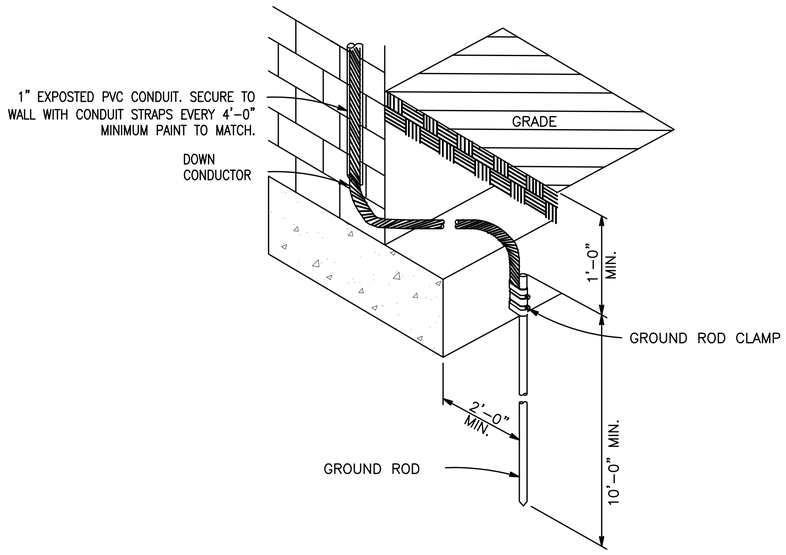
1 STANDING SEAM ROOF AIR TERMNINAL
NOT TO SCALE



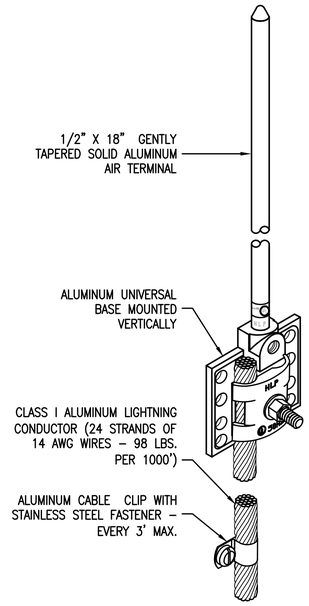
2 TEST WELL DETAIL
NOT TO SCALE



3 GROUND ROD DETAIL
NOT TO SCALE

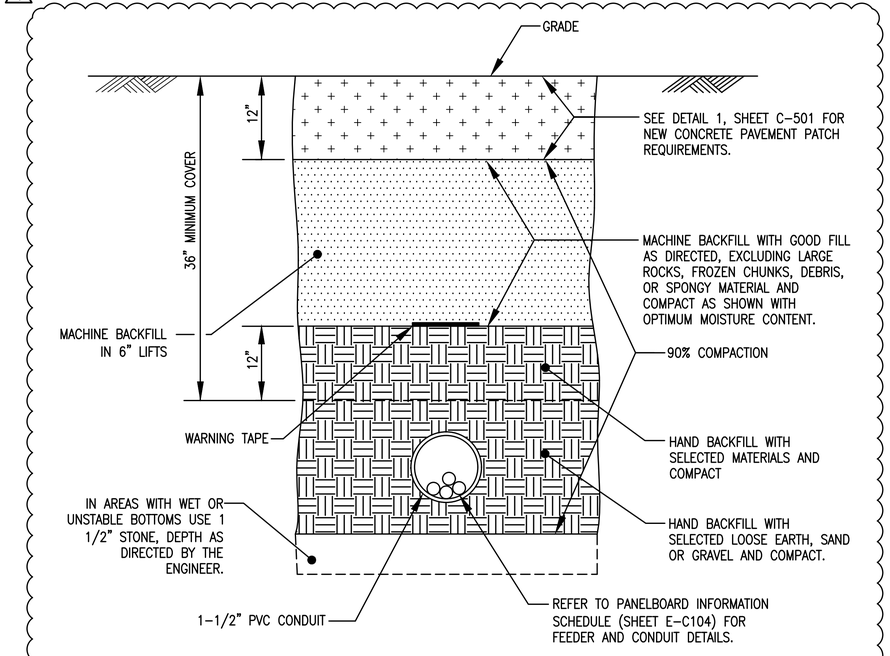


4 DOWNLEAD GROUNDING DETAIL
NOT TO SCALE



5 AIR TERMINAL DETAIL
NOT TO SCALE

1



6 TRENCH DETAIL
NOT TO SCALE

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STATE OF TEXAS — SELVAKUMAR BUVANENDARAN — 104975 — LICENSED PROFESSIONAL ENGINEER

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PROJECT MANAGER	R PENARANDA				
IPT TECH. BRANCH HEAD	T FRAZIER				
CHIEF ENG/ARCH (CORE)					

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ELECTRICAL DETAILS

SCALE:	AS SHOWN
EPROJECT NO.:	.
CONSTR. CONTR. NO.	.
NAVFAC DRAWING NO.	15122503
SHEET	73 OF 91

E-C107

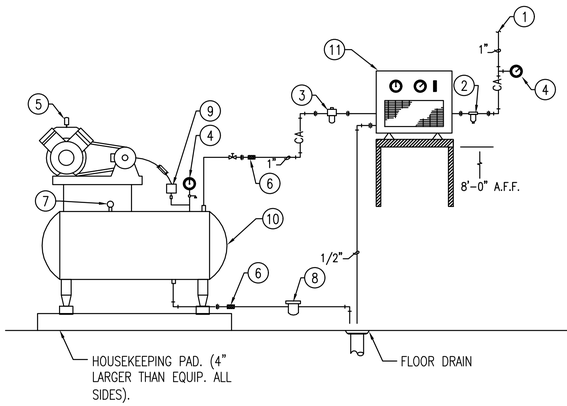
DRAWFORM REVISION: 7 AUGUST 2009

NEW FIXTURE SCHEDULE

NO.	FIXTURES	FLOOR TO RIM	WASTE INCHES	SUPPLY SIZE (INCHES) HOT	SUPPLY SIZE (INCHES) COLD	DESCRIPTION
P-1	EMERGENCY SHOWER/EYE WASH	--	--	N/A	1¼"	COMBINATION DRENCH SHOWER AND EYE/FACE WASH UNIT, 20 GPM PLASTIC SHOWER HEAD, STAINLESS STEEL BOWL WITH FOOT TREADLE OPERATION. FURNISH COMPLETE WITH EXPLOSION PROOF, CLASS 1, DIVISION 1 EMERGENCY SIGNALING SYSTEM WITH FLOW SWITCH, HORN, SIGNAL LIGHT, SHUT-OFF SWITCH.
FD	FLOOR DRAIN	--	4"	N/A	N/A	FLOOR DRAIN W/ SQUARE TOP AND TRAP PRIMER CONNECTION.*

GENERAL NOTES:

* TRAP PRIMER CONNECTION ONLY IN COMPRESSOR AND FIRE SUPPRESSION EQUIPMENT ROOMS FLOOR DRAINS.

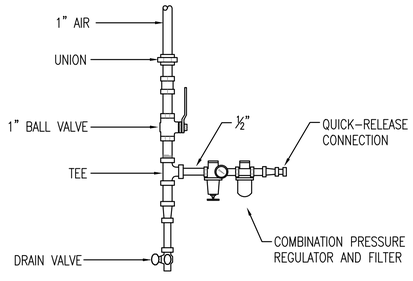


KEYNOTES ○

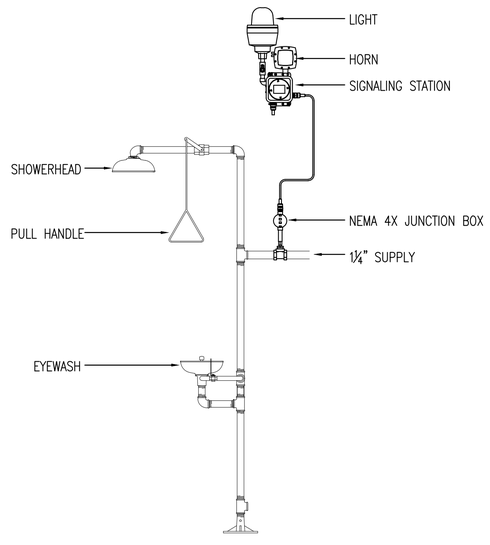
(THIS DETAIL ONLY)

1. SEE PLAN FOR CONTINUATION
2. COMPRESSED AIR FILTER RATED AT SCHEDULED SCFM (MIN.) WITH 125 PSIG. SECURE TO WALL WITH SUPPORT AS REQUIRED.
3. PRESSURE REGULATOR RATED AT SCHEDULED SCFM AT 125 PSIG.
4. PRESSURE GAUGE, 0-200 PSI.
5. AIR INTAKE FILTER.
6. VIBRATION ISOLATOR.
7. PRESSURE RELIEF VLVE.
8. AUTOMATIC DRAIN VALVE.
9. PRESSURE SWITCH, ON AT 90 PSI, OFF AT 125 PSI.
10. AIR COMPRESSOR. RECIPROCATING, 120-GAL, 25HP, 83 CFM @ 125 PSIG.
11. AIR DRYER. REFRIGERATED DRYER, CAPACITY: 100SCFM @ 100PSIG, 100'F AIR INLET, 100'F AMBIENT.

1 / P-001 AIR COMPRESSOR PIPING
NOT TO SCALE



2 / P-001 COMPRESSOR AIR DROP
NOT TO SCALE



3 / P-001 EMERGENCY SHOWER/EYE WASH STATION
NOT TO SCALE

PIPING LEGEND

SYMBOLS

- FLOOR DRAIN, W/ TRAP; FD
- FLOOR DRAIN, WO/ TRAP; FD
- FIXTURE DRAIN, W/ TRAP
- SANITARY; SAN
- SANITARY VENT; V
- PIPE DROP
- PIPE RISE
- TEE OUTLET DROP
- DOMESTIC COLD WATER; CW
- COMPRESSED AIR (A)
- BALL VALVE
- BACK FLOW PREVENTER

PIPING ABBREVIATIONS

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BFP	BACKFLOW PREVENTER
BWV	BACKWATER VALVE
CFH	CUBIC FEET PER HOUR
CO	CLEAN OUT
CONT	CONTINUATION
CW	DOMESTIC COLD WATER
DN	DOWN
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING
EXIST	EXISTING
FD	FLOOR DRAIN
FL	FLOOR
GPM	GALLONS PER MINUTE
INV	INVERT
MAX	MAXIMUM
MIN	MINIMUM
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
SAN	SANITARY
SP	STATIC PRESSURE
TEMP	TEMPERATURE
TPL	TRAP PRIMING LINE
TYP	TYPICAL

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NOTE:

NOT ALL SYMBOLS AND ABBREVIATIONS APPLY

GENERAL NOTES:

1. GENERAL: FURNISH LABOR, EQUIPMENT AND MATERIALS NECESSARY FOR THE INSTALLATION OF THE COMPLETE PLUMBING SYSTEM AS SPECIFIED HEREIN AND INDICATED IN THE CONTRACT DOCUMENTS. OUTLINE DESCRIPTION AND DIAGRAMMATIC REPRESENTATION OF SYSTEM OPERATION AND EQUIPMENT DOES NOT LIMIT CONTRACTOR LIABILITY FOR FURNISHING AND INSTALLING COMPLETE AND OPERABLE SYSTEMS.

2. NOTE DEFINITIONS: "DRAWING NOTES" APPLY TO THE ENTIRE DRAWING ON WHICH THEY APPEAR, WHERE RELEVANT. "KEYNOTES" APPLY ONLY WHERE INDICATED WITH THE "KEYNOTE" SYMBOL. REFER TO LEGEND.

3. INSTALL MECHANICAL MATERIALS AND EQUIPMENT TO MAINTAIN THEIR RESPECTIVE UL RATING AND SHALL CONFORM TO FACTORY MUTUAL STANDARDS AS APPLICABLE.

4. NOT ALL OFFSETS AND TRANSITIONS REQUIRED ARE SHOWN IN PIPING. FULLY COORDINATE THE PLUMBING WORK WITHIN ITSELF AND WITH ALL TRADES TO PROVIDE COMPLETE AND OPERABLE SYSTEMS.

STM	DESCRIPTION	DATE	APPR
1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD

NAVFAC

STATE OF MARYLAND
MELCHIZEDEK VILLAR
No. 22197
PROFESSIONAL ENGINEER
7/10/18
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC / B.L.T.L

ACTIVITY

SATISFACTORY TO DATE

DES EP '	DRW EP'	CHK DC '

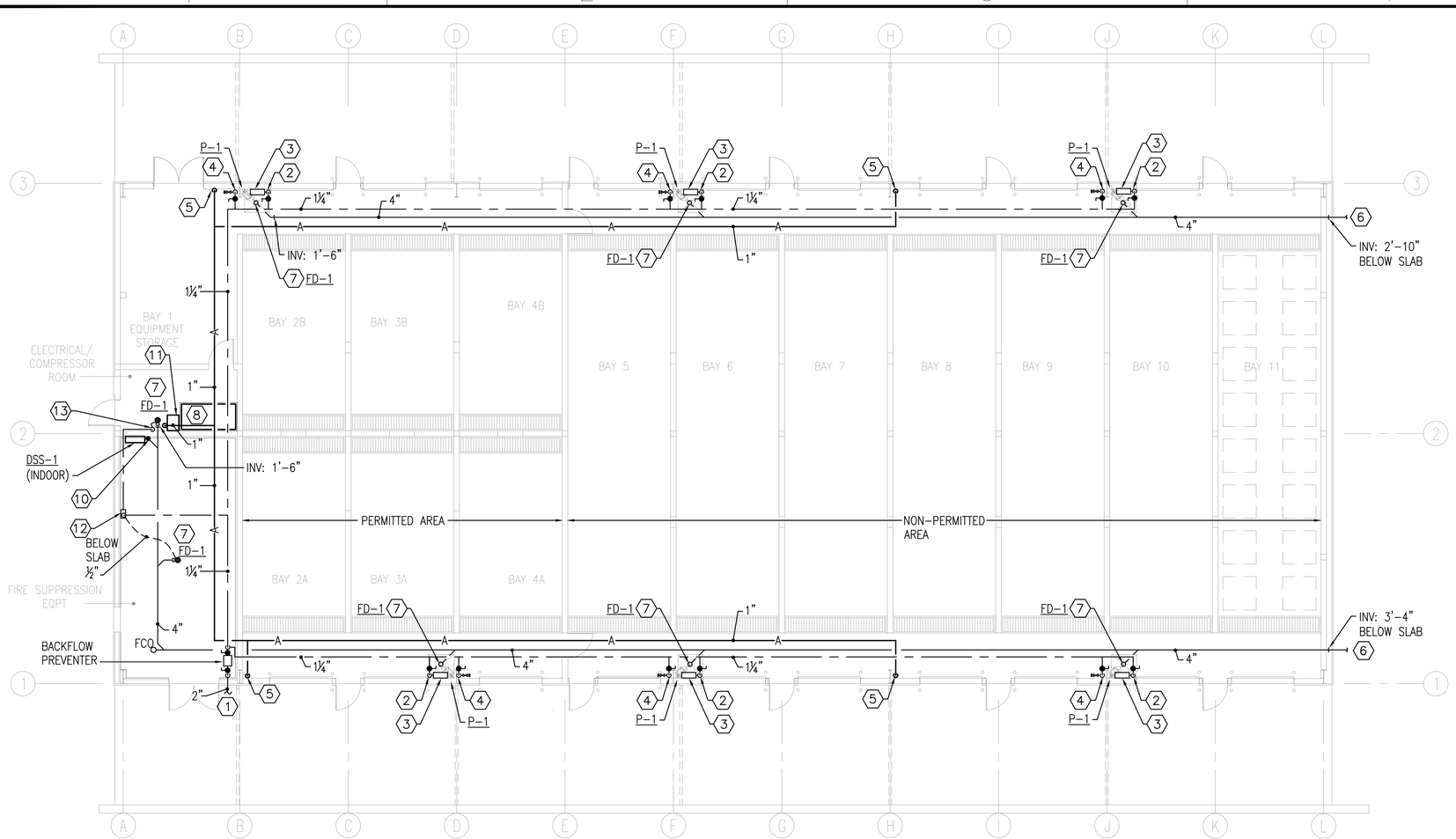
PROJECT MANAGER R PENARANDA
IPT TECH. BRANCH HEAD T FRAZIER
CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
IPT SOUTH ATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX
HAZ WASTE FACILITY B257/B259
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
PLUMBING DETAILS, NOTES, & SYMBOLS

SCALE: AS SHOWN
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 15122504
SHEET 73 OF 91

P-C001

DRAWFORM REVISION: 7 AUGUST 2009



1 P-C101 | P-C101

HWSF – PLUMBING PLAN

8' 4' 0' 8' 16'

KEYNOTES

1. INCOMING 2" CW SERVICE. SEE CIVIL DRAWING FOR CONTINUATION.
2. 1¼" CW DOWN TO EMERGENCY SHOWER FIXTURE.
3. EMERGENCY SHOWER ALARM SYSTEM.
4. ¾" CW DOWN TO HOSE BIBB ±36" ABOVE FINISHED FLOOR.
5. 1" COMPRESSED AIR PIPING DOWN. TERMINATE WITH SHUT-OFF VALVE, POINT-OF-USE FILTER, REGULATOR, AND QUICK RELEASE COUPLER FITTING ±36" ABOVE FINISHED FLOOR. SEE DWG P-C101 FOR DETAIL.
6. 4" WASTE BELOW SLAB TO HOLDING TANK. SEE CIVIL DRAWING FOR CONTINUATION BELOW GRADE.
7. 4" WASTE UP TO FLOOR DRAIN (FD-1).
8. AIR COMPRESSOR – 120-GALLON, 25HP, 83 CFM. FURNISHED WITH REFRIGERATED DRYER.
9. 4" WASTE UP TO FLOOR DRAIN (FD-1). PROVIDE WITH TRAP PRIMER CONNECTION.
10. ¾" CONDENSATE DRAIN DOWN TO 2"ø PIPE OPEN HUB DRAIN. EXTEND 2"ø PIPE ±6" ABOVE FINISHED FLOOR.
11. REFRIGERATED AIR DRYER
12. ELECTRONIC TRAP PRIMER VALVE.
13. ½" TRAP PRIMER LINE DOWN TIGHT AGAINST WALL TO FD-1.

GENERAL NOTES

1. INVERT BASED ON 0'-0" FINISHED FLOOR ELEVATION.

STATE OF TEXAS
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104375
LICENSED PROFESSIONAL ENGINEER

1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD
STM	DESCRIPTION	DATE	APPR

NAVFAC

STATE OF MARYLAND
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC / B.L.T.L

ACTIVITY

SATISFACTORY TO DATE

DES EP ' | DRW EP ' | CHK: DC '

PROJECT MANAGER R PENARANDA

IPT TECH. BRANCH HEAD T FRAZIER

CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
IPT SOUTH ATLANTIC
NAVFAC FACILITIES ENGINEERING COMMAND SOUTHEAST
NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX
HAZ WASTE FACILITY B257/B259
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
NEW STORAGE – PLUMBING PLAN

SCALE: AS SHOWN

EPROJECT NO.:

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
15122505

SHEET 75 OF 91

P-C101

DRAWFORM REVISION: 7 AUGUST 2009

FIRE ALARM SYSTEM GENERAL NOTES

I. GENERAL SCOPE:

A. THIS PROJECT WILL REQUIRE THE INSTALLATION OF A NEW ADDRESSABLE FIRE ALARM CONTROL PANEL, NEW HEAT DETECTION, NEW MANUAL PULL STATIONS, BUILDING TRANSCEIVER FOR CONNECTION TO BASE REPORTING STATION AND NEW MANUAL ABORT / SYSTEM RELEASE DEVICES FOR A HAZARDOUS WASTE FACILITY AT THE NAVAL AIR STATION IN CORPUS CHRISTI, TEXAS. THE NEW FIRE ALARM SYSTEM SHALL PROVIDE DETECTION AND RELEASING SERVICE FOR THE NEW HIGH EXPANSION FOAM SUPPRESSION SYSTEM.

II. REQUIREMENTS

A. THE INSTALLATION SHALL CONFORM TO THE INTENT OF NFPA 72 (2016 ED.), NFPA 11 (2016 ED.), UFC 6-300-01, CURRENT EDITION, THE LOCAL AUTHORITY HAVING JURISDICTION. THE FIRE ALARM CONTRACTOR SHALL CONFORM TO THESE PLANS, THE PROJECT SPECIFICATIONS, AND APPLICABLE REFERENCED DOCUMENTS.

B. SECONDARY POWER REQUIREMENTS: SEE PROJECT SPECIFICATION 28 31 74.00 20

C. ALL CIRCUITS SHALL BE "POWER LIMITED". CIRCUIT TYPE REQUIREMENTS: SEE PROJECT SPECIFICATIONS 28 31 74.00 20

D. WALL-MOUNTED NOTIFICATION HORN/STROBES ARE TO BE MOUNTED SO THAT THE ENTIRE LENS OF THE DEVICE IS NO LESS THAT 80" AFF AND NO GREATER THAN 96" AFF.

E. ALL NEW PULL STATIONS SHALL BE INSTALLED AT 48 INCHES ABOVE THE FINISH FLOOR.

F. ALL WIRING CONNECTIONS ARE TO BE IN SINGLE, DOUBLE, TRIPLE OR 4 INCH ELECTRICAL BOXES, AS NEEDED. WIRING CONNECTIONS OUTSIDE OF ELECTRICAL BOXES WILL NOT BE ALLOWED.

G. ALL WIRING ON THE INITIATION AND NOTIFICATION CIRCUITS ARE SUPERVISED POWER LIMITED.

H. SURGE SUPPRESSION DEVICES SHALL BE INSTALLED ON ALL CIRCUITS THAT ENTER OR EXIT THE BUILDING.

I. STROBE CIRCUITS SHALL BE SYNCHRONIZED EITHER THROUGH THE MAIN FACP OR SEPARATE SYNCHRONIZATION MODULES (AS NECESSARY).

III. CONDUIT AND WIRE

A. SEE PROJECT SPECIFICATIONS – 28 31 74.00 20

IV. EXECUTION

A. INSTALLATION:

1. INSTALLATION SHALL BE IN ACCORDANCE WITH THE NEC, NFPA 72, AND PROJECT SPECIFICATIONS, AS SHOWN ON THE DRAWINGS, AND AS RECOMMENDED BY THE MAJOR EQUIPMENT MANUFACTURER.

2. DURING CONSTRUCTION MEASURES SHALL BE TAKEN TO PROTECT HEAT DETECTORS FROM CONTAMINATION AND PHYSICAL DAMAGE UNTIL CONSTRUCTION ACTIVITIES ARE COMPLETE.

V. PROGRAMMING

1. A BASELINE PROGRAMMING MATRIX HAS BEEN INCLUDED ON THESE PLANS.

2. ALL SMOKE DETECTORS SHALL BE PROGRAMMED FOR ALARM VERIFICATION.

VII. TESTING & FINAL INSPECTION

1. SEE PROJECT SPECIFICATIONS – 28 31 74.00 20

VIII. SYSTEM MONITORING

1. SEE PROJECT SPECIFICATIONS – 28 31 74.00. 20

IX. GENERAL

1. THE ALARM CONTRACTOR WILL BE REQUIRED TO SUBMIT A "RECORD OF COMPLETION", PER NFPA 72, TO THE COR PRIOR TO FINAL COMPLETION, PER THE PROJECT SPECIFICATIONS.

2. THE FIRE ALARM CONTRACTOR IS REQUIRED TO MAINTAIN A COMPLETE AND ACCURATE AS-BUILT DRAWING SET ON SITE AT ALL TIMES.

3. ALL CONDUIT AND WIRING PENETRATIONS THROUGH FIRE RATED BARRIERS (INCLUDING WALLS AND FLOORS), AND SMOKE BARRIERS THAT EXTEND FROM FLOOR TO CEILING, SHALL BE SEALED WITH A UL LISTED FIRESTOPPING PENETRATION SYSTEM. THE MINIMUM PENETRATION RATING FOR FIRE RATED BARRIERS SHALL MATCH THE RATING OF THE WALL \ FLOOR \ BARRIER. SMOKE BARRIERS SIMPLY NEED TO BE SEALED TO PREVENT THE PASSAGE OF SMOKE THROUGH THE ASSEMBLY.

4. PRIOR TO FINAL PROJECT COMPLETION, ALL DEVICES SHALL BE LABELED ON THEIR EXTERIOR HOUSING SO THAT THE DEVICE NUMBER CAN BE DETERMINED BY VISUAL INSPECTION. ALL FIRE ALARM DEVICES, INCLUDING BUT NOT LIMITED TO DETECTORS, MODULES, HORNS, SPEAKERS, AND STROBES, SHALL HAVE A LABEL AFFIXED TO THEIR FRONT SURFACE. THESE LABELS SHALL CONFORM TO THE FOLLOWING:

I. THE LABELS SHALL HAVE LETTERS AT LEAST 1/4" HIGH.
II. THE LABELS SHALL MATCH THE DEVICE NUMBER SHOWN ON THE AS-BUILT DRAWINGS.
III. THE LABELS SHALL BE IDENTICAL TO THE DEVICE NUMBER PROGRAMMED INTO AND DISPLAYED ON THE FACP AND ALL REMOTE ANNUNCIATORS.

OUTPUTS: CONTROL UNIT | NOTIFICATION | BASE REPORTING | FOAM SUPPRESSION SYSTEM CONTROL

Column outputs:
2 ALARM ANNUNCIATION; 3 SUPERVISORY ANNUNCIATION; 4 TROUBLE ANNUNCIATION; 7 ACTIVATE BUILDING ALARM (HORN & WHITE STROBES); 8 ACTIVATE 30 SEC PRE DISCHARGE ALARM (BLUE BEACONS - ZONE 1); 9 ACTIVATE 30 SEC PRE DISCHARGE ALARM (BLUE BEACONS - ZONE 2); 11 TRANSMIT TO BASE CENTRAL STATION; 12 MONACO ZONE #1 - VALVE TAMPER; 13 MONACO ZONE #2 - SYSTEM SUPERVISORY; 14 MONACO ZONE #3 - MANUAL PULL STATION; 15 MONACO ZONE #4 - SMOKE DETECTION, PUMP ROOM; 16 MONACO ZONE #5 - WATER FLOW \ PUMP RUNNING; 17 MONACO ZONE #6 - FOAM SYSTEM ACTIVATION; 18 MONACO ZONE #7 - HEAT DETECTION - STORAGE AREA - ZONE #1; 19 MONACO ZONE #8 - HEAT DETECTION - STORAGE AREA - ZONE #2; 20 MONACO ZONE #9 - SYSTEM TROUBLE; 22 CLOSE OVERHEAD DOORS; 23 SHUT-DOWN BUILDING VENTILATION FANS; 24 SHUT-DOWN BUILDING VENTILATION LOUVERS; 26 RESET RELAY - OVERHEAD DOORS; 27 RESET RELAY - BUILDING VENTILATION FANS; 28 RESET RELAY - BUILDING VENTILATION LOUVERS; 30 RELEASE DELUGE \ FLOW CONTROL VALVE - FOAM SYSTEM - ZONE #1; 31 RELEASE DELUGE \ FLOW CONTROL VALVE - FOAM SYSTEM - ZONE #2; 33 SEND FIRE PUMP START SIGNAL; 34 CLOSE ASSOCIATED ZONE DELUGE \ FLOW CONTROL VALVE

INPUTS

INPUTS		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
	A																																		
SMOKE DETECTOR PUMP ROOM	B		X					X				X				X																			
FIRE PROTECTION VALVE TAMPER SWITCH (ALL)	C			X								X	X																						
WET PIPE SYSTEM FLOW SWITCH	D		X					X				X					X																		
	E																																		
MANUAL PULL STATION	F		X					X				X			X																				
HEAT DETECTOR - ZONE 1	G		X					X	X			X							X				X	X	X									X	
HEAT DETECTOR - ZONE 2	H		X					X		X		X								X			X	X	X									X	
	I																																		
	J																																		
FOAM SYSTEM MANUAL RELEASE STATION ZONE 1	K		X					X	X			X						X					X	X	X									X	
FOAM SYSTEM MANUAL RELEASE STATION ZONE 2	L		X					X		X		X						X					X	X	X									X	
FOAM SYSTEM MANUAL ABORT STATION	M			X								X															X	X	X						X
	N																																		
END OF 30 SEC PRE-DISCHARGE COUNTDOWN - ZONE #1	O																	X													X				
END OF 30 SEC PRE-DISCHARGE COUNTDOWN - ZONE #2	P																	X														X			
	Q																																		
FIRE PUMP RUNNING	R		X					X				X					X																		
FIRE PUMP LOSS OF POWER	S			X								X		X																					
FIRE PUMP PHASE REVERSAL	T			X								X		X																					
	U																																		
120 VAC SURGE SUPPRESSOR MONITOR	V			X								X		X																					
	W																																		
SYSTEM TROUBLE CONDITION	X				X							X									X														
SYSTEM RESET	Y																										X	X	X						
SOLENOID DISABLED ON DELUGE VALVE	Z				X							X									X														

PROJECT SPECIFIC NOTES:

1. THIS CHART IS TO BE USED AS A BASIC PROGRAMMING GUIDE ONLY. ALL OTHER PANEL PROGRAMMING FEATURES SHALL COMPLY WITH NFPA 72 AND THE MANUFACTURERS INSTRUCTIONS.

1 FA-C001 FA-C001 FIRE ALARM SEQUENCE OF OPERATIONS

NTS

SYM	DESCRIPTION	DATE	APPR
1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD

NAVFAC

STATE OF TEXAS
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A/E INFO

APPROVED

FOR COMMANDER NAVFAC / B.L.T.L.

ACTIVITY

SATISFACTORY TO DATE

DES EP | DRW EP | CHK DC

PROJECT MANAGER R PENARANDA

IPT TECH. BRANCH HEAD T FRAZIER

CHIEF ENG/ARCH (CORE)

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
IPT SOUTH ATLANTIC NAVAL AIR STATION CORPUS CHRISTI
HAZ WASTE FACILITY B257/B259 CORPUS CHRISTI, TX
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
FIRE ALARM GENERAL NOTES & DETIALS

SCALE: AS NOTED

EPROJECT NO.:

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 15122506

SHEET 76 OF 91

FA-C001

FIRE PROTECTION:
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NATHANIEL JACE HATCHER LICENSE No 59350 STATE OF FLORIDA PROFESSIONAL ENGINEER

7/27/2018

PLOT: 07\26\18

NATHANIEL J. HATCHER, TX #110657

DRAWFORM REVISION: 7 AUGUST 2009

1. Wall Assembly -- The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs -- Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing on all four sides.

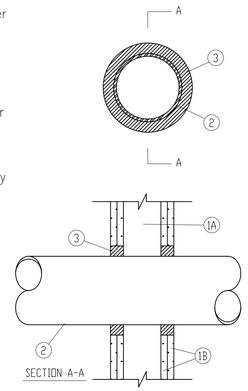
B. Gypsum Board* -- 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as Specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. for steel stud walls. Max diam of opening is 14-1/2 in. for wood stud walls. The F Rating of the firestop system is equal to the fire rating of the wall assembly.

2. Through-Penetrants -- One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

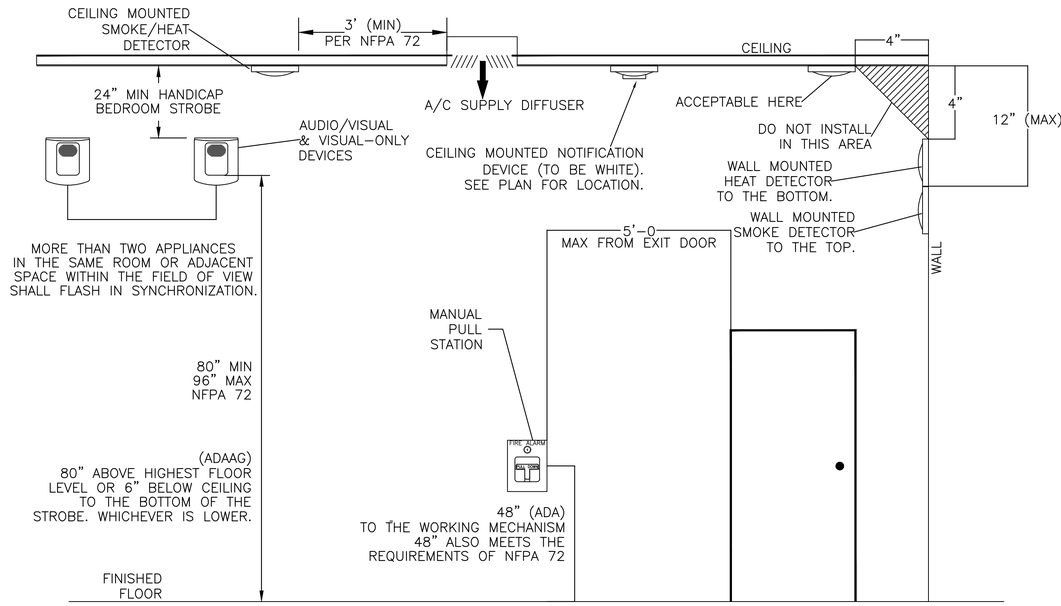
A. Steel Pipe -- Nom 30 in diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe -- Nom 30 in. diam (or smaller) cast or ductile iron pipe.
C. Conduit -- Nom 4 in diam (or smaller) steel electrical metallic tubing or 6 in. diam steel conduit.
D. Copper Tubing -- Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
E. Copper Pipe -- Nom 6 in. diam (or smaller) regular (or heavier) copper pipe.

3. Fill, Void or Cavity Material* -- Sealant -- Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.

*Bearing the UL Classification Mark



1 FA-C002 FA-C002
FIRESTOP DETAIL – 1 & 2 HOUR BARRIER WALL
NTS



DETAIL NOTES:

A. NOT ALL DEVICES SHOWN ON THIS DETAIL APPLY TO THIS PROJECT. SEE THE PLAN VIEW LAYOUT OF THE FIRE ALARM SYSTEM TO VERIFY WHICH DEVICES APPLY, AND WHICH DO NOT.
B. CHECK WITH MANUFACTURER'S INSTALLATION SHEET FOR THE EXACT ROUGH-IN HEIGHTS, LOCATION OF BACK BOXES, AND WIRING REQUIREMENTS.

2 FA-C002 FA-C002
FIRE ALARM DEVICE MOUNTING GUIDE
NTS

FIRE PROTECTION:
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NATHANIEL JACE HATCHER LICENSE No 59350 STATE OF FLORIDA PROFESSIONAL ENGINEER
7/27/2018

PLOT: 07\26\18
NATHANIEL J. HATCHER, TX #110657

NO	DESCRIPTION	DATE	APPR
1	AMENDMENT 0001	07/27/18	RAD
0	ISSUED FOR BID	06/25/18	RAD

NAVFAC

STATE OF TEXAS SELVAKUMAR BUVANENDARAN 104375 LICENSED PROFESSIONAL ENGINEER

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A/E INFO

APPROVED

FOR COMMANDER NAVFAC / B.L.T.L.

ACTIVITY

SATISFACTORY TO DATE

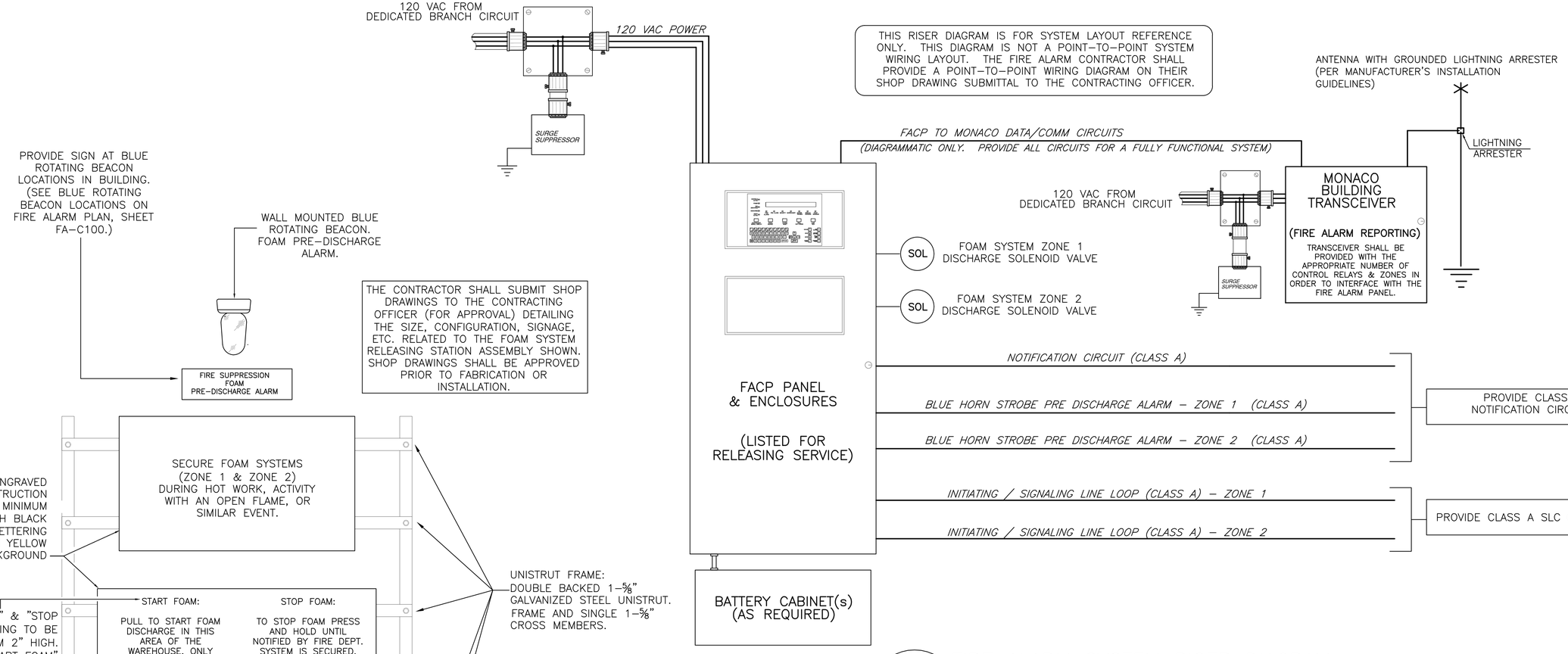
DES EP	DRW EP	CHK DC
PROJECT MANAGER	R PENARANDA	
IPT TECH. BRANCH HEAD	T FRAZIER	
CHIEF ENG/ARCH (CORE)		

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
IPT SOUTH ATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR STATION CORPUS CHRISTI
HAZ WASTE FACILITY B257/B259
CORPUS CHRISTI, TX
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
FIRE ALARM DETAILS

SCALE: AS NOTED
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 15122507
SHEET 77 OF 91

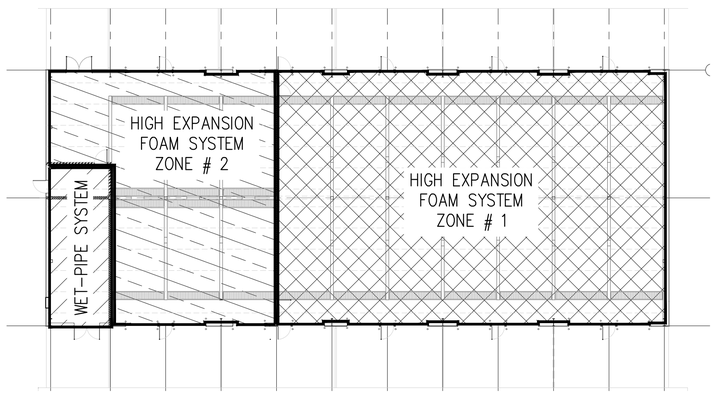
FA-C002

DRAWFORM REVISION: 7 AUGUST 2009



1 FA-C003 | FA-C003 — FIRE ALARM SYSTEM RISER DIAGRAM
NTS

2 FA-C003 | FA-C003 — FOAM SYSTEM MANUAL RELEASE & ABORT STATION
NTS



3 FA-C003 | FA-C003 — FOAM SYSTEM ZONE MAP
NTS

		07/27/18	RAD
		06/25/18	RAD
1	AMENDMENT 0001	DATE	APPR
0	ISSUED FOR BID		
SYM	DESCRIPTION		

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ACTIVITY

SATISFACTORY TO DATE

DES EP	DRW EP	CHK DC
PROJECT MANAGER	R PENARANDA	
IPT TECH. BRANCH HEAD	T FRAZIER	
CHIEF ENG/ARCH (CORE)	-	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
IPT SOUTH ATLANTIC
NAVAL FACILITIES ENGINEERING COMMAND
HAZ WASTE FACILITY B257/B259
NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX

HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
FIRE ALARM DETAILS, RISER DIAGRAM & FOAM SYSTEM ZONE MAP

SCALE: AS NOTED
EPROJECT NO.: -
CONSTR. CONTR. NO. -
NAVFAC DRAWING NO. 15122508
SHEET 78 or 91
FA-C003

DRAWFORM REVISION: 7 AUGUST 2009

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7/27/2018

PLOT: 07\26\18
NATHANIEL J. HATCHER, TX #110657

FIRE PUMP ROOM MONITORING

DESCRIPTION	TYPE
PUMP INLET CONTROL VALVE	SUPERVISORY (NORMALLY OPEN)
PUMP TEST HEADER CONTROL VALVE	SUPERVISORY (NORMALLY CLOSED)
PUMP OUTLET CONTROL VALVE	SUPERVISORY (NORMALLY OPEN)
FLOW METER ISO VALVE #1	SUPERVISORY (NORMALLY CLOSED)
FLOW METER ISO VALVE #2	SUPERVISORY (NORMALLY CLOSED)
JOCKEY PUMP CONTROL VALVE (INLET AND OUTLET)	SUPERVISORY (NORMALLY OPEN)
FIRE PUMP RUNNING	ALARM CONDITION
FIRE PUMP LOSS OF POWER	SUPERVISORY
FIRE PUMP PHASE REVERSAL	SUPERVISORY
FOAM SYSTEM – BOTH ZONE #1 AND ZONE #2 SURGE SUPPRESSION TANK CONTROL VALVE	SUPERVISORY (NORMALLY OPEN)
FOAM SYSTEM – BOTH ZONE #1 AND ZONE #2 DOWNSTREAM FOAM PROPORTIONER ISO VALVE	SUPERVISORY (NORMALLY OPEN)
FOAM SYSTEM – BOTH ZONE #1 AND ZONE #2 UPSTREAM FOAM PROPORTIONER ISO VALVE	SUPERVISORY (NORMALLY OPEN)
FOAM SYSTEM – BOTH ZONE #1 AND ZONE #2 FOAM CONCENTRATE CONTROL VALVE	SUPERVISORY (NORMALLY OPEN)
FOAM SYSTEM – BOTH ZONE #1 AND ZONE #2 OS&Y CONTROL VALVE	SUPERVISORY (NORMALLY OPEN)
FOAM TEST HEADER CONTROL VALVE	SUPERVISORY (NORMALLY CLOSED)
WET–PIPE CONTROL VALVE – ZONE #3	SUPERVISORY (NORMALLY OPEN)
WET–PIPE FLOW SWITCH – ZONE #3	ALARM – CONDITION

FIRE ALARM DEVICE LEGEND

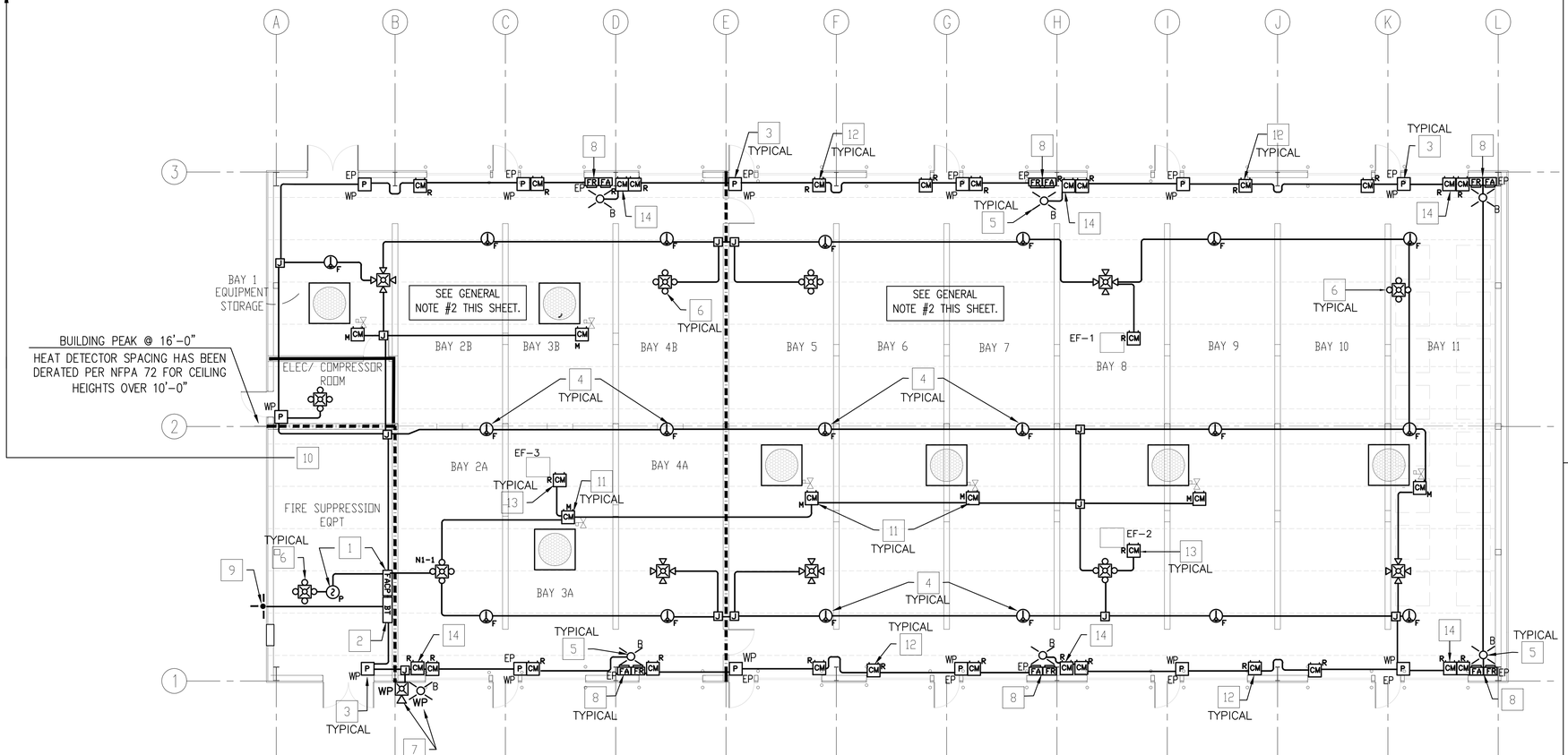
- HIGH EXPANSION FOAM GENERATOR
- FACP – FIRE ALARM CONTROL PANEL
- BT – BUILDING TRANSCIEVER (MONACO)
- EP P / WP P – EXPLOSION PROOF/WEATHER PROOF MANUAL PULL STATION
- WP P – WEATHER PROOF FIRE ALARM MANUAL PULL STATION
- EP FS FA – FOAM SYSTEM MANUAL RELEASE & ABORT STATION (EXPLOSION PROOF RELEASE & ABORT STATION)
- WIRELESS ANTENNA
- CEILING MOUNTED WHITE STROBE
- 195°F FIXED TEMPERATURE HEAT DETECTOR
- PHOTOELECTRIC SMOKE DETECTOR
- CEILING MOUNTED WHITE HORN/STROBE (WHITE)
- B – WALL MOUNTED BLUE ROTATING BEACON (PRE–DISCHARGE ALARM)
- WP – EXTERIOR WALL MOUNTED HORN/STROBE (WHITE)
- CM – CONTROL MODULE (M = MONITOR MODULE / R = RELAY MODULE)
- WP B – EXTERIOR WEATHER PROOFED WALL MOUNTED BLUE ROTATING BEACON (PRE–DISCHARGE ALARM)
- J – JUNCTION BOX
- 2–HOUR RATED FIRE WALL
- 1–HOUR RATED FIRE WALL
- "EP" – "EXPLOSION PROOF DEVICES & INSTALLATION MEETING CLASS 1, DIVISION 2 REQUIREMENTS FOR NFPA 70.

KEYNOTES

1. FIRE ALARM CONTROL PANEL (FACP) LOCATION. PROVIDE A SMOKE DETECTOR AT THE FACP LOCATION, AS INDICATED. COORDINATE WITH OTHER EQUIPMENT AT THIS WALL–MOUNTED LOCATION.
2. PROVIDE NEW MONACO BUILDING TRANSCEIVER. COORDINATE WITH OTHER EQUIPMENT AT THIS WALL–MOUNTED LOCATION.
3. PROVIDE A NEW FIRE ALARM MANUAL PULL STATION AT EACH EXIT, AS INDICATED. NEW PULL STATIONS ARE EITHER TO BE WEATHER PROOF OR WEATHER PROOF/EXPLOSION PROOF, AS INDICATED ON THE PLAN.(TYPICAL)
4. PROVIDE NEW FIXED TEMPERATURE 195°F HEAT DETECTOR AT LOCATIONS INDICATED. HEAT DETECTOR SPACING SHALL BE DERATED PER NFPA 72 FOR CEILING HEIGHTS OVER 10'–0".
5. PROVIDE WALL MOUNTED BLUE ROTATING BEACON AT LOCATIONS INDICATED ON PLAN. BLUE ROTATING BEACONS ARE USED TO NOTIFY 30 SECOND PRE–DISCHARGE ALARM INDICATION FOR BUILDING OCCUPANTS. (TYPICACL)
6. PROVIDE NEW FIRE ALARM NOTIFICATION DEVICE (WALL OR CEILING MOUNTED, AS INDICATED ON THE PLAN). MOUNT CEILING NOTIFICATION DEVICES ON THE DROP CEILING OR BOTTOM OF STRUCTURAL BEAM/JOIST/PURLIN, WHICHEVER IS LOWER FOR THE GIVEN AREA. (TYPICAL)
7. PROVIDE NEW EXTERIOR NOTIFICATION DEVICE, AS INDICATED. ALL EXTERIOR NOTIFICATION DEVICES TO BE PROVIDED WITH THE MANUFACTURER'S ASSOCIATED WEATHERPROOF BACK–BOX. SEAL ALL PENETRATIONS IN EXTERIOR WALL MEMBRANE WITH SILICON SEALANT TO ELIMINATE THE POTENTIAL FOR WATER INTRUSION INTO THE WALL OR BACK–BOX.
8. PROVIDE A NEW FOAM SYSTEM MANUAL RELEASE AND ABORT STATION AT LOCATIONS INDICATED ON PLAN. SEE DETAIL '2' ON SHEET FA–C003. COORDINATE LOCATION OF FOAM RELEASE STATION WITH OTHER EQUIPMENT TO AVOID CONFLICTS.
9. PROVIDE A NEW MONACO WIRELESS TRANSCEIVER ANTENNA AT LOCATION INDICATED.
10. PROVIDE NEW FIRE PUMP ROOM FIRE ALARM MONITORING AS INDICATED.
11. MONITOR THE ISOLATION VALVES FOR EACH OF THE NEW HIGH EXPANSION FOAM GENERATORS.
12. PROVIDE RELAY MODULE INTERFACE WITH THE OVERHEAD DOORS. INITIATE CLOSE OF OVERHEAD DOORS UPON 30 SEC PRE–DISCHARGE ALARM ACTIVATION.
13. PROVIDE RELAY CONTROL INTERFACE WITH THE BUILDING EXHAUST\VENTILATION FAN SYSTEM IN THE STORAGE BAYS AREA. SHUT–DOWN EXHAUST\VENTILATION FAN SYSTEM PRIOR TO HIGH EXPANSION FOAM SYSTEM DISCHARGE.
14. PROVIDE RELAY CONTROL INTERFACE WITH BUILDING LOW LEVEL VENTILATION LOUVERS. LOW LEVEL LOUVERS ARE TO CLOSE PRIOR HIGH EXPANSION FOAM SYSTEM DISCHARGE.

GENERAL NOTES:

1. ALL STROBE DEVICES ARE TO BE SET FOR A MINIMUM OF 75 CANDELA.
2. ALL FIRE ALARM DEVICES, CONDUIT, WIRING, ETC. INSTALLED BELOW AN ELEVATION OF 10'–0" ABOVE FINISHED FLOOR SHALL BE RATED FOR; AND MEET THE REQUIREMENTS OF, NFPA 70 CLASS 1, DIVISION 2 CLASSIFIED AREAS. THE CLASS 1, DIVISION 2 DEFINED AREA APPLIES TO THE WAREHOUSE STORAGE AREAS, NOT THE ELECTRICAL/COMPPRESSOR ROOM OR THE FIRE SUPPRESSION EQUIPMENT ROOM.



NORTH

1 FA–C100 | FA–C100

FIRE ALARM PLAN

SCALE: 1/8"=1'–0"

NO	DESCRIPTION	DATE	APPR
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HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY

FIRE ALARM PLAN

SCALE: AS NOTED
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.
15122509
SHEET 79 OF 91

FA–C100

DRAWFORM REVISION: 7 AUGUST 2009

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7/27/2018

PLOT: 07\26\18
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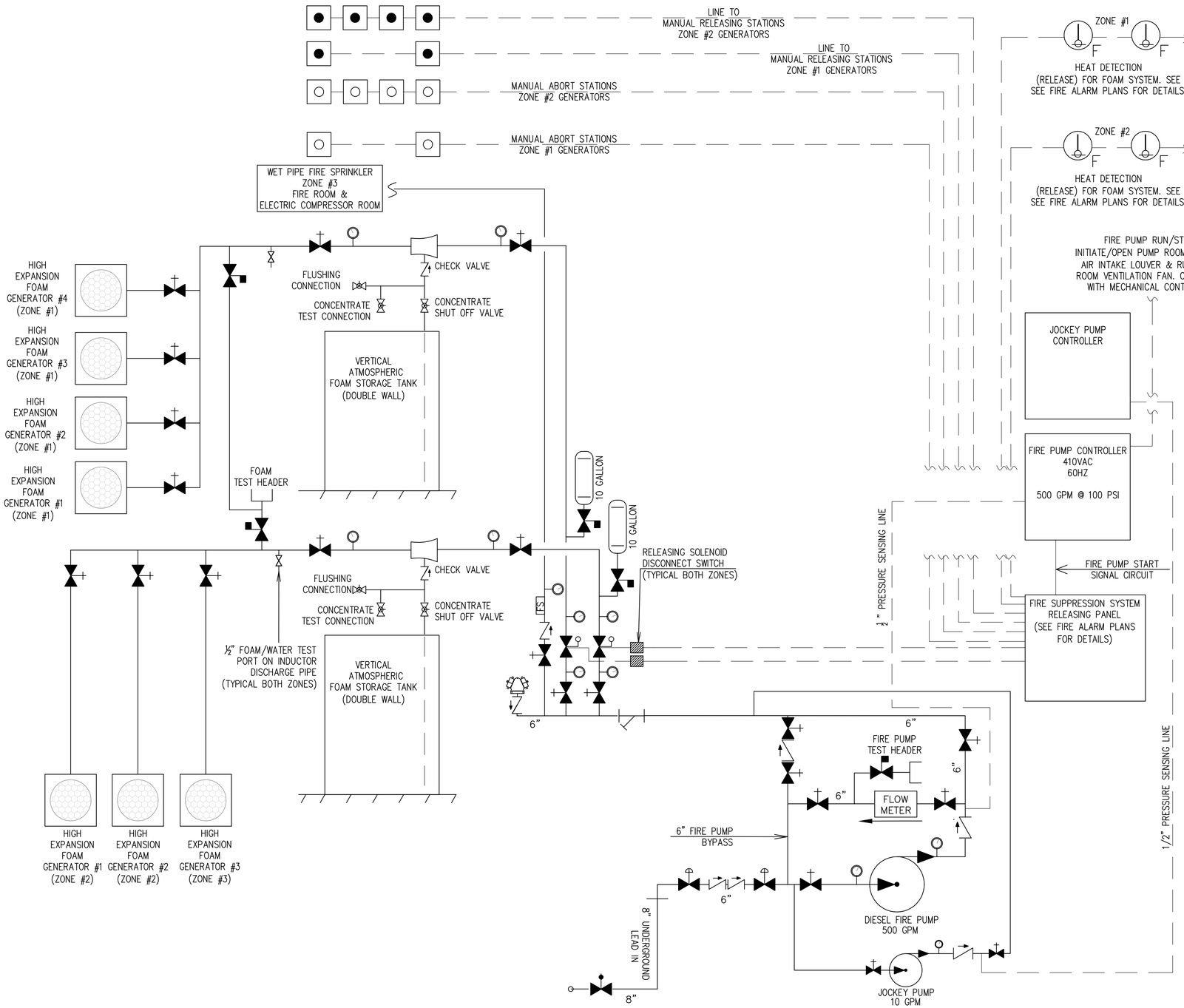

1 FX-C003 | FX-C003

FIRE SUPPRESSION PIPING AND INSTRUMENTATION DIAGRAM (P&ID)

NOT TO SCALE

P&ID SYMBOLS

- GATE VALVE, OS&Y TYPE
- GATE VALVE, PIV TYPE
- BUTTERFLY VALVE (INDICATING) WITH BUILT IN TAMPER SWITCH
- CHECK VALVE
- BALL VALVE (STAINLESS STEEL)
- PUMP (FIRE PUMP/ JOCKEY PUMP)
- HIGH EXPANSION FOAM PROPORTIONER / INDUCTOR
- FLOW CONTROL VALVE – TRIM PACKAGE FOR REMOTE RESETTING, ELECTRIC RELEASING, & OPENING / CLOSING SPEED CONTROL.
- STRAINER
- SURGE SUPPRESSION TANK
- PRESSURE GAUGE
- FOAM DISCHARGE STOP / ABORT SWITCH
- FOAM SYSTEM RELEASE SWITCH
- HIGH EXPANSION FOAM GENERATOR
- REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTER (OS&Y CONTROL VALVES)
- FLOW METER — FLOW METER
- FIRE DEPARTMENT CONNECTION (5" STORZ)
- RELEASING SOLENOID DISCONNECT SWITCH (TYPICAL BOTH ZONES)
- FOAM/WATER TEST PORT (TYPICAL BOTH ZONES)

SYM	DESCRIPTION	DATE	APPR
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HAZ WASTE FACILITY B257/B259
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
FIRE SUPPRESSION P&ID SCHEMATIC

SCALE: AS NOTED
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.
15122517
SHEET 87 OF 91
FX-C003
DRAWFORM REVISION: 7 AUGUST 2009

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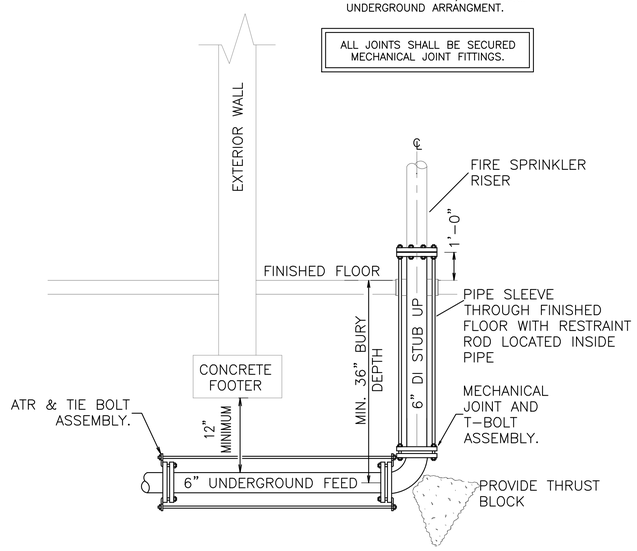
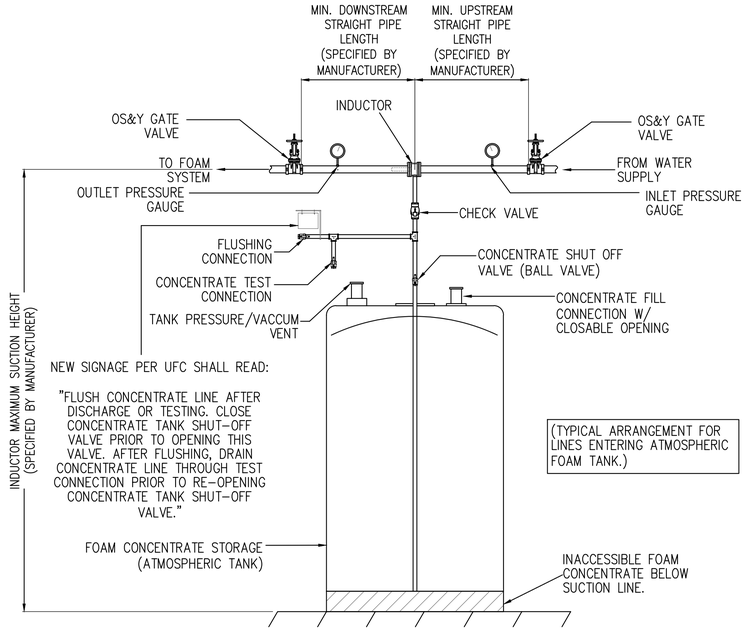


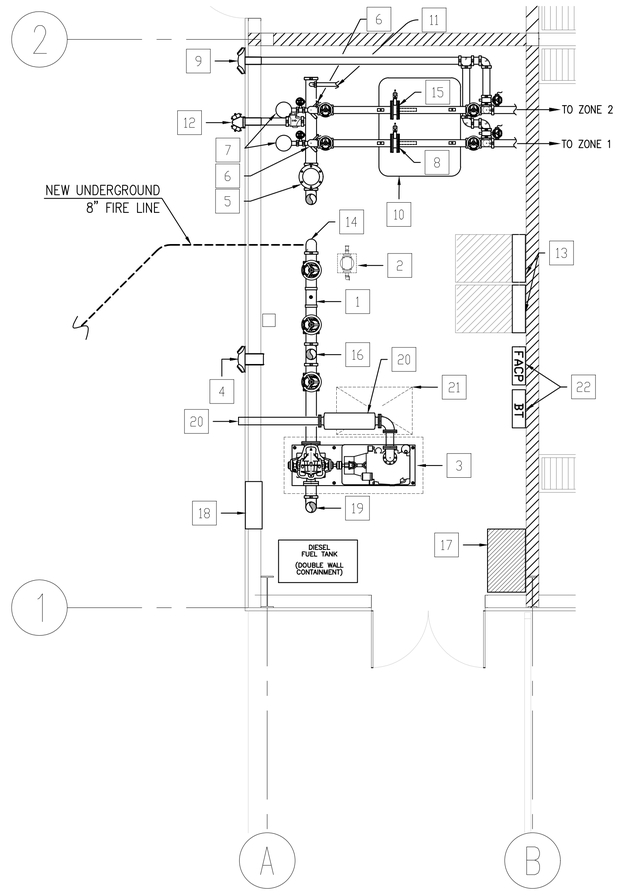
2 FX-C004 | FX-C004 — UNDERGROUND DUCTILE IRON LEAD-IN DETAIL

NTS



3 FX-C004 | FX-C004 — HIGH EXPANSION FOAM INDUCTOR \ CONCENTRATE TANK DETAIL

NTS



NORTH

1 FX-C004 | FX-C004 — FIRE SUPPRESSION ROOM LAYOUT

2'1'0 4'

SCALE: 1/4"=1'-0"

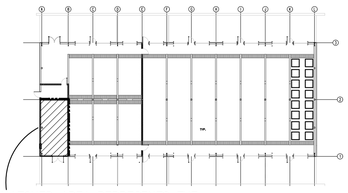
KEYNOTES

1. NEW 6" RPZ BACKFLOW PREVENTER.
2. NEW JOCKEY PUMP.
3. NEW 500 GPM DIESEL FIRE PUMP.
4. FIRE PUMP TEST HEADER LOCATION, MOUNT ON EXTERIOR WALL AS INDICATED. SEE P&ID ON SHEET FX-C003
5. NEW STRAINER.
6. NEW FLOW CONTROL VALVE LOCATED IN THE VERTICAL RISE. SEE P&ID ON SHEET FX-C003.
7. NEW SURGE SUPPRESSION TANK LOCATION.
8. NEW HIGH EXPANSION FOAM PROPORTIONER / INDUCTOR LOCATION ABOVE NEW VERTICAL ATMOSPHERIC FOAM STORAGE TANK. (INDUCTOR FOR ZONE 1)
9. FOAM TEST HEADER LOCATION, MOUNT ON EXTERIOR WALL AS INDICATED.
10. NEW ATMOSPHERE HIGH EXPANSION FOAM STORAGE TANK.
11. WET-PIPE FIRE SPRINKLER SYSTEM RISER FEEDS UPRIGHT HEADS PROTECTING THE FIRE SUPPRESSION EQUIPMENT ROOM AND THE ELECTRICAL /COMPRESSOR ROOM.
12. 5" STORZ FIRE DEPARTMENT CONNECTION MOUNTED ON THE EXTERIOR WALL, AS INDICATED.
13. FIRE PUMP CONTROLLER AND JOCKEY PUMP CONTROLLER LOCATIONS.
14. NEW 8" STUB UP LOCATION.
15. NEW HIGH EXPANSION FOAM PROPORTIONER / INDUCTOR LOCATION ABOVE NEW VERTICAL ATMOSPHERIC FOAM STORAGE TANK. (INDUCTOR FOR ZONE 2)
16. FIRE PUMP BYPASS, SEE P&ID ON SHEET FX-C003.
17. PROPOSED (24" DEEP) SPACE FOR DOMESTIC BACKFLOW.
18. NEW WALL LOUVER FOR THE DIESEL ENGINE MAKE UP AIR. (SEE MECHANICAL PLANS AND SPECIFICATIONS)
19. SEE P&ID SCHEMATIC DETAIL ON SHEET FX-C003 FOR PIPING CONFIGURATION.
20. NEW RESIDENTIAL MUFFLER & ENGINE EXHAUST.
21. NEW BATTERY PACK.
22. FIRE ALARM CONTROL PANEL & ASSOCIATED WIRELESS TRANSCEIVER.

GENERAL NOTES

1. INSTALL ALL NEW DEVICES PER MANUFACTURER, PROJECT SPECIFICATIONS, AND APPLICABLE CODES.

KEY PLAN



HATCHED AREA REPRESENTS THE AREA SHOWN IN FIRE SUPPRESSION ROOM LAYOUT (DETAIL 1 ON THIS SHEET).

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7/27/2018

PLOT: 07\26\18
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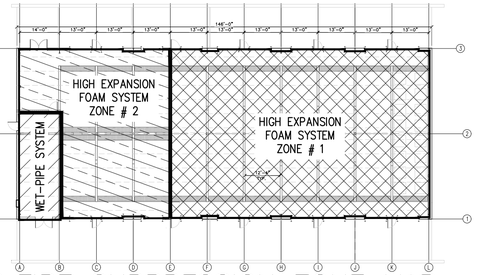
FIRE SUPPRESSION PUMP ROOM LAYOUT

SCALE: AS NOTED
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.
15122518
SHEET 88 OF 91
FX-C004

DRAWFORM REVISION: 7 AUGUST 2009

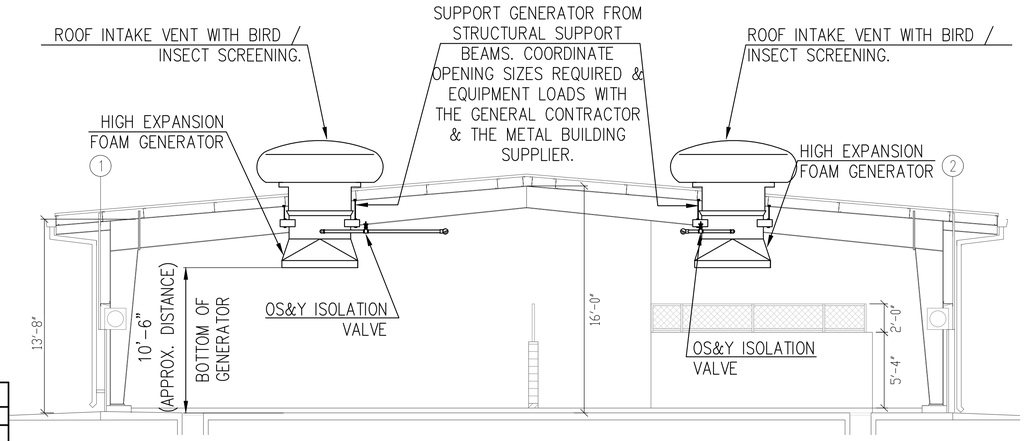


3 FX-C100 FX-C100

FIRE SUPPRESSION ZONE MAP

NTS

SPRINKLER HEAD LEGEND									
TYPE	RESPONSE	"K"	NPT	TEMP.	FINISH-HD/ESC	SYMBOL	COUNT	SPARE	COMMENTS
UPRIGHT	QUICK	8.0	3/4"	286°	BRASS	O	5	2	
				(SPARES NOT INCLUDED) TOTAL HEADS			5		



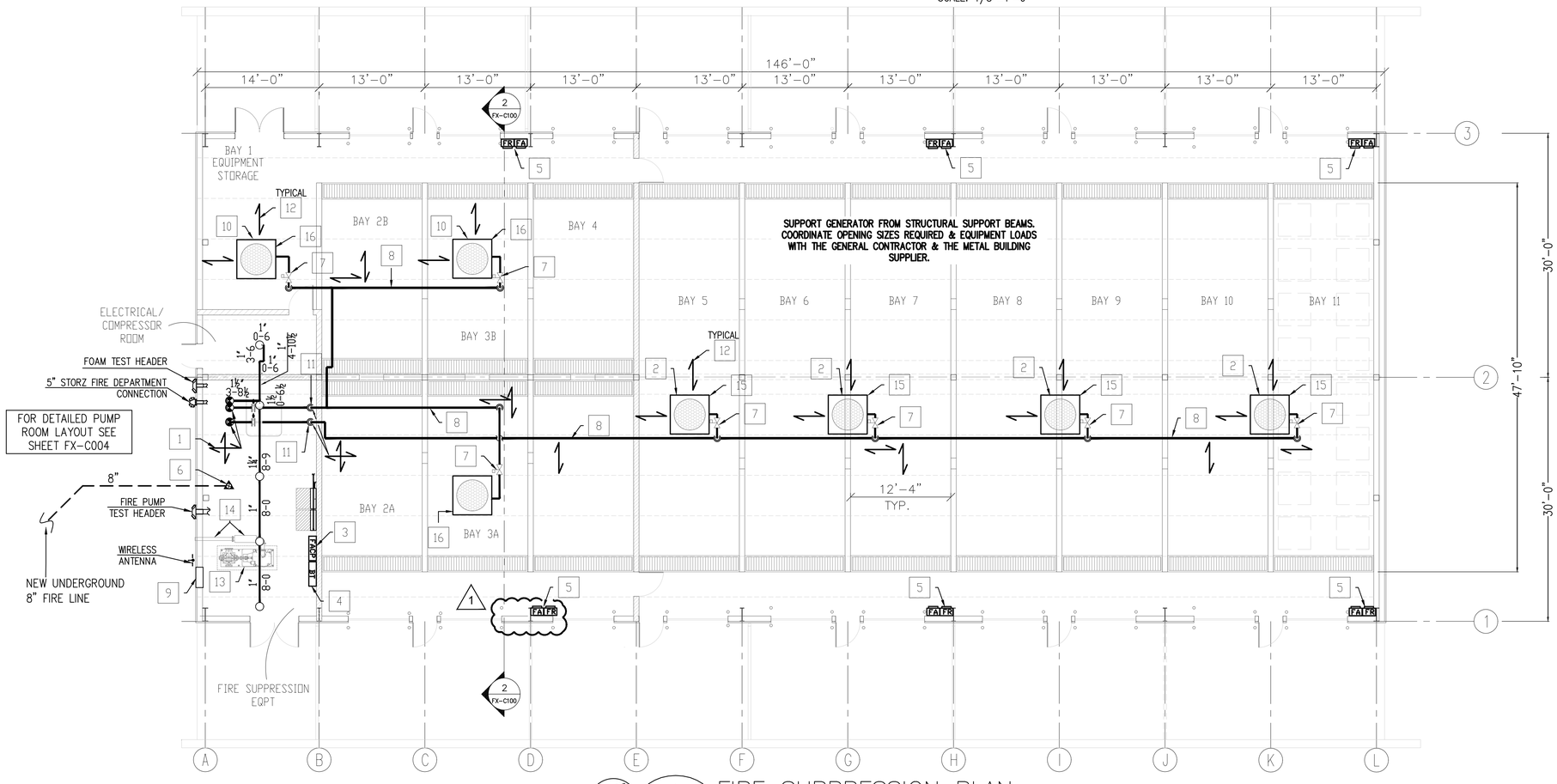
2 FX-C100 FX-C100

FIRE SUPPRESSION SIMPLE SECTION

NORTH

2 1 0 4 8

SCALE: 1/8"=1'-0"



1 FX-C100 FX-C100

FIRE SUPPRESSION PLAN

NORTH

2 1 0 4 8

SCALE: 1/8"=1'-0"

KEYNOTES

1. FIRE SUPPRESSION ROOM, INCLUDING:
   a. 2-HOUR EXTERIOR WALL RATING. ALL OPENINGS PROTECTED FOR 2-HOUR RATING.
   b. 500 GPM DIESEL FIRE PUMP.
   c. HIGH-X FOAM PROPORTIONING EQUIPMENT (INDUCTOR)
   d. FOAM SOLUTION STORAGE TANK. (ATMOSPHERIC)
   e. FOAM SYSTEM FLOW CONTROL VALVE.
   f. FIRE ALARM CONTROL & RELEASING PANEL WITH MONACO TRANSCEIVER.
   g. FIRE PROTECTION BACKFLOW PREVENTER.
2. NEW HIGH EXPANSION FOAM GENERATORS. (ZONE 1)
3. NEW FIRE ALARM CONTROL PANEL. SEE FIRE ALARM SHEETS.
4. NEW MONACO TRANSCEIVER. SEE FIRE ALARM SHEETS.
5. FOAM SYSTEM MANUAL RELEASE AND ABORT STATION.
6. 8" STUB UP LOCATION. SEE SHEET FX-C004 FOR PUMP ROOM LAYOUT.
7. OS&Y ISOLATION VALVE WITH TAMPER SWITCH PROVIDED AS ISOLATION VALVE SERVING EACH GENERATOR.
8. ALL PIPING MUST BE PITCHED TO DRAIN BACK TO THE SYSTEM MAIN DRAIN OR AUXILIARY DRAIN
9. NEW LOUVER FOR DIESEL ENGINE MAKE UP AIR.
10. HIGH EXPANSION FOAM GENERATORS. (ZONE 2)
11. OFFSET UP AND RUN PIPE "TIGHT" TO STRUCTURE. PROVIDE 4-WAY SWAY BRACING AT THE TOP OF THE RISER.
12. SWAY BRACE ALL FOAM GENERATORS. (BOTH DIRECTIONS)
13. NEW 500 GPM DIESEL FIRE PUMP.
14. NEW RESIDENTIAL MUFFLER AND EXHAUST.
15. THE FIRE PROTECTION CONTRACTOR AND GENERAL CONTRACTOR SHALL COORDINATE LOADS WITH THE BUILDING MANUFACTURER/SUPPLIER. PROVIDE REQUIRED SUPPORT FOR THE FOAM GENERATORS, ROOF INTAKE VENTS, MISC. DUCTWORK AND HANGAR ATTACHMENTS, AS REQUIRED TO INSTALL THE NEW FOAM GENERATORS. FINAL EQUIPMENT LOADS AND SIZES SHALL BE CONFIRMED AND COORDINATED BETWEEN TRADES/SUPPLIERS. THE 'BASIS OF DESIGN' ESTIMATED LOAD FOR THIS FOAM GENERATOR IS APPROX 875 LBS. CONFIRM ACTUAL WEIGHT/LOAD WITH APPROVED EQUIPMENT.
16. SEE KEYNOTE 15 FOR COORDINATION REQUIREMENTS. THE 'BASIS OF DESIGN' FOR THIS FOAM GENERATOR ASSEMBLY IS APPROXIMATELY 750 LBS. CONFIRM ACTUAL WEIGHT/LOAD WITH APPROVED EQUIPMENT.

FIRE SUPPRESISON LEGEND

- HIGH EXPANSION FOAM GENERATOR
- FACP – FIRE ALARM CONTROL PANEL
- BT – BUILDING TRANSCIEVER (MONACO)
- P – FIRE ALARM MANUAL PULL STATION
- FA FR – FOAM SYSTEM MANUAL RELEASE & ABORT STAITON
- – WIRELESS ANTENNA

FIRE SUPPRESSION PIPING LEGEND

- 4" / 10-0 – PIPE SIZE / PIPE LENGTH IN FEET-INCHES
- [10-6] – ELEVATION ABOVE FINISHED FLOOR (FEET-INCHES)
- FIRE SPRINKLER SYSTEM RISER LOCATION
- FIRE SPRINKLER STUB-UP LOCATION
- DENOTES PIPE RISE UP OR DOWN
- PIPING CAP
- LATERAL SWAY BRACE
- LONGITUDUINAL SWAY BRACE
- 4 SWAY BRACE

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SATISFACTORY TO DATE

DES EP	DRW EP	CHK DC
PROJECT MANAGER	R PENARANDA	
IPT TECH. BRANCH HEAD	T FRAZIER	
CHIEF ENG/ARCH (CORE)		

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
@T SOUTH ATLANTIC

NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
NAVAL AIR STATION CORPUS CHRISTI
CORPUS CHRISTI, TX

HAZ WASTE FACILITY B257/B259
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
FIRE SUPPRESSION PLAN

SCALE: AS NOTED
EPROJECT NO.:
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.
15122519
SHEET 89 OF 91

FX-C100

DRAWFORM REVISION: 7 AUGUST 2009

Geotechnical Engineering Report

Hazardous Waste Storage and Transfer Facility

Naval Air Station

Corpus Christi, Texas

July 18, 2018

Terracon Project No. 90185088

Prepared for:

Gulf Coast Architectural Group, Inc.
Pensacola, Florida

Prepared by:

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Terracon

Environmental • Facilities • Geotechnical • Materials

July 18, 2018

Mr. Rad Delaney, AIA, LEED AP, F.SAME
Gulf Coast Architectural Group, Inc.
2510 West Cervantes Street
Pensacola, Florida 32505

Re: Geotechnical Engineering Report
Hazardous Waste Storage and Transfer Facility
Naval Air Station
Corpus Christi, Texas
Terracon Project No. 90185088

Dear Mr. Delaney:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. We appreciate the opportunity to be of service to you on this project and look forward to contributing to the ongoing success of this project with Materials Testing services during construction. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.
(Firm Registration: TX F3272)

Arindam Barkataki, P.E.
Department Manager

Gregory P. Stieben, P.E., D.GE
Senior Consultant

STATE OF TEXAS
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AB/GPS/mhb – 90185088

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EXECUTIVE SUMMARY

This geotechnical study has been performed for the proposed Hazardous Waste Storage and Transfer Facility to be located at Naval Air Station in Corpus Christi, Texas. A total of six soil borings were drilled at the site to depths of about 20 feet below the existing grade. Based on the information obtained from our subsurface exploration, the site can be developed for the proposed project. Pertinent geotechnical considerations include the following:

- The soils encountered in the borings are typically loose to medium dense Sand, Silty Sand, and Clayey Sand. Stiff to very stiff Lean Clay was also encountered in some of the borings.
- The Potential Vertical Rise (PVR) at this site is less than ½ inch in its present conditions.
- Groundwater was encountered in the borings during our drilling operations between depths of about 4 and 4½ feet below the ground surface.
- The proposed building may be supported on shallow foundations such as slab-on-grade or spread footings after reworking of the subgrade.
- The 2015 International Building Code seismic site classification for this site is D.
- Both asphalt and concrete pavement may be considered.

GEOTECHNICAL ENGINEERING REPORT
HAZARDOUS WASTE STORAGE AND TRANSFER FACILITY
NAVAL AIR STATION
CORPUS CHRISTI, TEXAS

TERRACON PROJECT NO. 90185088

JULY 18, 2018

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) is pleased to submit our Geotechnical Engineering Report for the proposed Hazardous Waste Storage and Transfer Facility to be located at the Naval Air Station in Corpus Christi, Texas. The project scope was performed in general accordance with Terracon Proposal No. P90185088R2, dated April 24, 2018.

The purposes of this report are to describe the subsurface conditions observed at the borings drilled for this study, analyze and evaluate the test data, and provide recommendations with respect to:

- subsurface soil conditions
- earthwork
- seismic considerations
- groundwater conditions
- foundation design and construction
- pavement recommendations

2.0 PROJECT INFORMATION

2.1 Site Location and Description

Item	Description
Location	The project site is located at the northeast corner of Avenue D and Crecy Street in the Naval Air Station in Corpus Christi, Texas.
Existing improvements	The site is located adjacent to the existing Bldgs. 257 and 259. We understand the site was previously occupied by a building supported on shallow spread footings.
Current ground cover	The site is covered with concrete pavement, as well as previous building slabs.
Existing topography	Relatively level.

2.2 Project Description

Item	Description
Project	We understand a pre-engineered metal building is planned. The building will be about 60 by 147 ft in plan. A canopy addition is also planned at the nearby Bldg. 259.

Item	Description
Loads	Maximum anticipated gravity loads are 50 kips.
Finished Floor Elevation (FFE)	FFE = 14.2 feet.
Foundations	We have assumed the building will be supported on a shallow foundation, similar to other buildings at the NAS. We understand the floor slab will be designed based on a modulus of subgrade reaction of 150 pci.
Landscaping	We understand no landscaping beds will be placed near the building.
Pavement	We anticipate both asphalt and concrete pavement will be considered.

3.0 SUBSURFACE CONDITIONS

3.1 Site Geology

The Corpus Christi Sheet (1975) of the Geologic Atlas of Texas published by the Bureau of Economic Geology at the University of Texas at Austin has mapped the Barrier Island and Beach Deposit (Qbb) near the site vicinity. The Barrier Island and Beach Deposit generally consists of mostly fine-grained sand.

3.2 Typical Profile

Subsurface conditions were evaluated by drilling six borings at the project site. The boring locations were staked in the field by a client's representative. Based on the results of the soil borings, subsurface conditions on the project site can be generalized as follows:

Stratum	Approximate Depth of Stratum (feet)	Material Encountered	Consistency/Density
---	0 to 0.7	CONCRETE SLAB: 6" to 8" Thick	---
I	0.5 to 8	SAND (SP-SM) and SILTY SAND (SM); tan	Loose to Medium Dense
II	4 to 13	CLAYEY SAND (SC) and SANDY LEAN CLAY (CL); light brown to tan	Loose to Medium Dense / Stiff to Very Stiff
III	8 to 20	SILTY SAND (SM)	Very Loose to Medium Dense
IV	13 to 20	LEAN CLAY (CL), tan to light gray	Medium Stiff to Stiff

Conditions encountered at each boring location are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for the borings can be found on the boring logs in Appendix A of this report.

3.3 Groundwater

The boreholes were observed while drilling and after completion for the presence and level of groundwater. The water levels observed are noted on the attached boring logs, and are summarized below.

Boring Number	Depth to Groundwater Following Drilling (feet)
B-1	4
B-2	4
B-3	4
B-4	4½
B-5	4
B-6	4

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. Groundwater information is presented on the boring logs in Appendix A.

3.4 Environmental Screening

As described in Appendix A of this report, Terracon monitored the jobsite during our drilling operation using an Organic Vapor Meter equipped with a Photoionization Detector (OVM/PID), as well as for potentially explosive conditions using an explosimeter. The monitoring was done strictly as a precautionary measure to protect our workers' safety. The monitoring revealed non-detectable levels of organic vapors and did not indicate potentially explosive conditions. It should be noted that this field screening should not be construed as any form of environmental evaluation of the site; it was done strictly for worker protection. Our scope did not include environmental sampling/testing or decontamination of the drilling or sampling equipment.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION.

The following recommendations are based upon the data obtained from our field and laboratory programs, project information provided to us and on our experience with similar subsurface and site conditions.

4.1 Geotechnical Considerations

The desired foundation systems may be used at this site provided the building pads and foundations are designed and constructed as recommended in this report. Terracon would be pleased to discuss other foundation alternatives with you upon request.

The foundations being considered must satisfy two independent engineering criteria with respect to the subsurface conditions encountered at this site. One criterion is the foundation system must be designed with an appropriate factor of safety to reduce the possibility of a bearing capacity failure of the soils underlying the foundation when subjected to axial and lateral load conditions. The other criterion is movement of the foundation system due to compression (consolidation or shrinkage) or expansion (swell) of the underlying soils must be within tolerable limits for the structures.

4.1.1 Potential Vertical Rise

Based on our findings, the subsurface soils at this site generally exhibit a very low expansion potential. Based on the information developed from our field and laboratory programs and on method TEX-124-E in the Texas Department of Transportation (TxDOT) Manual of Testing Procedures, we estimate that the subgrade soils in the building area exhibit a Potential Vertical Rise (PVR) of about ½ inch or less in its present condition. We consider this to be essentially a "non-expansive" site. The actual movements could be greater than the values presented in this report if inadequate drainage, ponded water, and/or other sources of moisture are allowed to infiltrate beneath the structure after construction.

4.1.2 Demolition Considerations

We understand the existing pavement at this site will be removed prior to construction. Additionally, we understand the site was previously occupied by a building and its footings are still in place. In addition, we suspect previous underground utilities are likely still present within the footprint area of the planned structure.

Removal of existing footings and utilities will likely create large unwanted voids. We consider it acceptable to leave the existing shallow footings in place, provided any concrete elements are cut off and removed within 1 foot of any proposed new concrete elements to prevent the development of a "hard spot". Shallow existing utility lines within the proposed building pad should be removed; however, deeper lines may remain in place provided they are grouted shut.

It is important that all subsurface voids formed from the removal of foundation elements or utility lines be backfill completely with moisture conditioned, compacted, engineered fill as described in the **Earthwork** section of this report. It is our experience that improperly backfilled excavations can cause significant settlement under and around the proposed structures. As an alternative to compacted soil backfill, a flowable fill material may be considered. Flowable fill, or slurry, when properly designed provides a competent subgrade and can still be readily excavated if the utilities require repair or maintenance. In addition, flowable fill does not need to be placed in lifts, compacted, or tested.

4.1.3 Dewatering

Dewatering may become necessary if groundwater water is encountered during excavation. At the time of drilling, groundwater was encountered between depths of about 4 to 4½ feet below the existing grade. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The groundwater level should be maintained at 2 feet below all compaction surfaces. We believe a sump pump system will likely be sufficient for dewatering. However, if flows are greater than anticipated, an actual dewatering system may be necessary and should be designed by a specialty dewatering contractor. The design, installation, operation, and maintenance of the dewatering system shall be the responsibility of the contractor.

4.2 Earthwork

The following presents recommendations for general site preparation, building pad preparation and placement of engineered fills on the project. The recommendations presented for design and construction of earth supported elements including foundations, slabs and pavements are contingent upon following the recommendations outlined in this section. Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

4.2.1 General Site Preparation

We understand the existing concrete pavement at the site will be removed. Prior to construction, any unsuitable materials should be removed from the construction area. Wet or dry material should either be removed or moisture conditioned and compacted. The exposed subgrade should be proof-rolled where possible to aid in locating loose or soft areas. Proof-rolling can be performed with a 15-ton roller or fully loaded dump truck. Soft, dry and low-density soil should be removed or compacted in place prior to placing fill.

Construction operations may encounter difficulties due to the wet or soft surface soils becoming a general hindrance to equipment due to rutting and pumping of the soil surface, especially during and soon after periods of wet weather. If the subgrade cannot be adequately compacted to minimum densities as described in the **Compaction Requirements** section of this report, one of the following measures may be required:

- removal and replacement with select fill;
- chemical treatment of the soil to dry and increase the stability of the subgrade; or
- drying by natural means if the schedule allows.

In our experience with similar soils in this area, chemical treatment (such as cement) may be an effective method to increase the supporting value of wet and weak subgrade. Terracon should be contacted for additional recommendations if chemical treatment of the soils is needed.

4.2.2 Pad Preparation

We understand that the floor slab will be ground-supported. The recommendations below assumed the FFE is at or near the existing grades. Recommendations for building pad preparation are presented below.

- Remove existing pavement and strip any unsuitable material from the building pad area. The building pad area is defined as the area that extends at least 3 feet beyond the perimeter of the building, including any movement sensitive flatwork that abuts the structure such as entryway and sidewalks. Excavate the on-site soils to a depth of at least 1 foot and remove from the building pad area. Stockpile these excavated on-site soils for reuse.

- Remove any exposed existing foundation elements to a level at least 1 foot below any proposed foundations.

- The exposed subgrade in the building area should be proofrolled with at least a 15-ton roller, or fully loaded dump truck, to evidence any weak yielding zones. A Terracon geotechnical engineer or his/her representative should be present to observe proofrolling operations.

- After proofrolling and the replacement of weak yielding zones with competent soil, scarify and moisture condition the top 8 inches of subgrade to between -2 and +3 percentage points of the optimum moisture content and compact to at least 95 percent of the maximum dry density determined in accordance with ASTM D 698.

- Place (reuse) the stockpiled on-site soil in the pad area in loose lifts of no more than 8 inches. Each lift should be moisture conditioned between -2 and +3 percentage points of the optimum moisture content, and then compacted to at least 95 percent of the maximum dry density determined in accordance with ASTM D 698.

- If grades are to be raised further, then select fill or on-site soil meeting the requirements of select structural fill should be placed to achieve the Finished Building Pad Elevation (FBPE). Recommendations for select fill are included in the **"Fill Materials and Placement"** section of this report. Select fill should be placed in loose lifts of no more than 8 inches, moisture conditioned to between -2 and +3 percentage points of the optimum moisture content, and compact to at least 95 percent of the maximum dry density determined in accordance with

ASTM D 698. The sandy soils may prove to be difficult to compact and have a low cohesion. As a result, these soils may slough excessively when trenched and may affect site access. If this is a concern, these soils can be removed and replaced with cohesive select fill or mixed with cement. The means and method to achieve an adequate building pad are the responsibilities of the contractor. The upper 6 inches of the building pad may be constructed with granular select fill to achieve a higher subgrade modulus value. It also provides a better all-weather working surface.

- Place at least 1 foot of moisture conditioned and compacted granular select fill to achieve a modulus of subgrade reaction of at least 150 pci, as discussed later.

4.2.3 Fill Materials and Placement

Select fill and on-site soils should meet the following criteria.

Fill Type [1]	USCS Classification	Acceptable Location for Placement
Granular Select Fill [2]	Varies	All locations and elevations.
Select Fill [3]	CL, SC, GC	All locations and elevations.
On-Site Soil	SC, SP-SM	SC and SP-SM soils may be used as select fill provided they meet the select fill criteria.

1	Prior to any filling operations, samples of the proposed borrow and on-site materials should be obtained for laboratory moisture-density testing. The tests will provide a basis for evaluation of fill compaction by in-place density testing. A qualified soil technician should perform sufficient in-place density tests during the filling operations to evaluate that proper levels of compaction, including dry unit weight and moisture content, are being attained. Controlled, compacted fill should consist of approved materials that are free of organic matter and debris or materials exceeding 4 inches in maximum dimension.
2	Granular select fill should be crushed limestone base material or crushed concrete with a maximum size of 3 inches. Plasticity Index should range from 5 to 20. Maximum aggregate size should be 3 inches.
3	Select fill should consist of a low plasticity, cohesive or granular soils with a Plasticity Index (PI) between 7 and 20 percent. Maximum aggregate size should be 3 inches.

4.2.4 Compaction Requirements

After proofrolling, and just prior to placement of any fill material, including select fill and on-site soils, the exposed subgrade within the construction area should be evaluated for moisture and density. If the moisture, density, and/or the requirements do not meet the criteria described in the table below, the subgrade should be scarified to a depth of 6 inches; moisture adjusted and compacted to at least 95 percent of the Standard Effort (ASTM D 698) maximum dry density.

Item	Description
Fill Lift Thickness	All fill should be placed in thin, loose lifts of about 8 inches, with compacted thickness not exceeding 6 inches.
Compaction of On-Site Soils, Select Fill and Granular Select Fill	95 percent of the material's Standard Proctor maximum dry density (ASTM D 698).
Moisture Content of On-Site Soils, Select Fill and Granular Select Fill	The materials should be moisture conditioned between -2 and +3 percentage points of the optimum moisture content.
[1]	Unless otherwise noted within this report all compaction requirements are provided above.

4.2.5 Grading and Drainage

Effective drainage should be provided during construction and maintained throughout the life of the development. During construction, the building pad will be excavated below adjacent grades, creating the potential for ponded water. We recommend some form of dams or dikes be provided to prevent any surface flow into the excavation. Additionally, any Stormwater that enters the excavation should be promptly pumped out. A series of sumps/pumps should be included in the construction requirements. After building construction, we recommend verifying final grades to document that effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted as necessary, as part of the structure's maintenance program.

Water permitted to pond next to the structure can result in distress in the structure including unacceptable differential floor slab movements, cracked slabs and walls, and roof leaks. Building slab and foundation performances described in this report are based on effective drainage for the life of the structure and cannot be relied upon if effective drainage is not maintained.

Flatwork and pavements will be subject to post-construction movement. Maximum grades practical should be used for paving and flatwork to prevent water from ponding. Allowances in final grades should also consider post-construction movement of flatwork, particularly if such movement would be critical. Where paving or flatwork abuts the structure, effectively seal and maintain joints to prevent surface water infiltration. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a grade of at least three to five percent for at least 10 feet from perimeter walls (Except in areas where ADA ramps are required; these should comply with state and local regulations). Backfill against grade beams, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of construction debris to reduce the possibility of moisture infiltration.

Collect roof runoff in drains or gutters. Discharge roof drains and downspouts onto pavements and/or flatwork which slope away from the structure or extend downspouts a minimum of 5 feet away from building.

4.2.6 Construction Considerations

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. Based upon the subsurface conditions determined from the geotechnical exploration, subgrade soils exposed during construction are anticipated to be relatively stable. However, the stability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. If unstable conditions develop, workability may be improved by scarifying and drying. Over excavation of wet zones and replacement with granular materials may be necessary. Lightweight excavation equipment may be required to reduce subgrade pumping. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance.

All temporary excavations should be sloped or braced as required by Occupational Health and Safety Administration (OSHA) regulations to provide stability and safe working conditions. Temporary excavations will probably be required during grading operations. The grading contractor, by his contract, is usually responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of the excavations as required, to maintain stability of both the excavation sides and bottom. All excavations should comply with applicable local, state and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards.

4.3 Foundations

Based upon the subsurface conditions, a shallow foundation system may be used to support the building provided the subgrade is prepared as discussed in **Building Pad Preparation** section of this report. Recommendations for a slab-on-grade foundation and spread footing foundations are provided in the following sections, along with other geotechnical considerations for this project.

4.3.1 Slab-on-Grade Foundations

A slab-on-grade foundation may be considered to support the proposed building. Parameters commonly used to design this type of foundation are provided on the table below. The slab foundation design parameters presented on the table below are based on the criteria published by the Wire Reinforcing Institute (WRI). These are essentially empirical design methods and the recommended design parameters are based on our understanding of the proposed project, our interpretation of the information and data collected as a part of this study, our area experience, and the criteria published in the WRI design manual.

Conventional Method	Prepared Subgrade [1]
Net Allowable Bearing Pressures [2]	2,000 psf
Subgrade Modulus (k) (On-site soil)	80 pci
Potential Vertical Rise (PVR) [1]	< ½ inch
Settlement	< 1 inch

WRI Method	
Design Plasticity Index (PI) [3]	18
Climatic Rating (C_w)	16
Unconfined Compressive Strength	1.0 tsf
Soil Climate Support Index (1-C)	0.04

1	Based on preparing the pads as discussed in this report.
2	The net allowable bearing pressures provided above include a Factor of Safety (FS) of 3.
3	The WRI effective PI is equal to the near surface PI if that PI is greater than all of the PI values in the upper 15 feet.

We recommend that grade beams bear at least 24 inches below final exterior grade. Beams should have a minimum width of 15 inches. These recommendations are for proper development of bearing capacity for the continuous beam sections of the foundation system. These recommendations are not based on structural considerations. Grade beam depths may need to be greater than recommended herein for structural considerations and should be properly evaluated and designed by the Structural Engineer. The grade beams or slab portions may be thickened and widened to serve as spread footings at concentrated load areas.

For a slab foundation system designed and constructed as recommended in this report, post construction settlements should be less than 1 inch. Settlement response of a select fill supported slab is influenced more by the quality of construction than by soil-structure interaction. Therefore, it is essential that the recommendations for foundation construction be strictly followed during the construction phases of the building pad and foundation.

The use of a vapor retarder is recommended beneath concrete slabs-on-grade that will be covered with moisture sensitive or impervious coverings, or when the slabs will support equipment sensitive to moisture. The slab designer and slab contractor should refer to ACI 302 for procedures and cautions about the use and placement of a vapor retarder.

4.3.2 Floor Slab

Several design methods use the modulus of subgrade reaction, k, to account for soil properties in design of flat, floor slabs. The modulus of subgrade reaction is a spring constant that depends on the kind of soil, the degree of compaction, and the moisture content.

The desired k-value for slab support can be used by constructing the building pad as discussed in this report. We understand a design k-value of 150 pci is required. As noted below, a thicker layer of granular select fill can be used to increase the slab support (k-value), if necessary.

Select Fill Type	Granular Select Fill Thickness [2]	k-value
Granular Select Fill Material [1]	12 inches	150 pci
	18 inches	200 pci
	24 inches	250 pci

1	Recommendations are provided in the Fill Material Requirements section of this report.
2	Granular Select Fill Thickness is the depth immediately beneath the floor slab.

The use of a vapor retarder should be considered beneath concrete slabs-on-grade that will be covered with wood, tile, carpet or other moisture sensitive or impervious coverings, or when the slabs will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 for procedures and cautions about the use and placement of a vapor retarder.

Floor Slab Loads and Abrasion – Portions of the floor slab may be subjected to forklift traffic. ACI 360 Design of Slabs on Grade discusses slab foundations and forklift type traffic in more detail. Modulus of Subgrade Reaction, k, values are provided above that can be used to analyze/design the floor slab with regard to forklift traffic.

The abrasion resistance to forklift traffic should also be considered for the floor slab. The required abrasion resistance will be in part due to the frequency of the forklift traffic loading, but also on the weight, wheel configuration, and wheel type of forklifts. Some techniques used to increase the floor slab abrasion resistance include:

- Increasing the compressive strength of the concrete;
- Using a more durable aggregate in the concrete mix design (such as, a traprock or chert aggregate versus a limestone aggregate);
- Specifying a surface treatment and finish (such as, using a traprock or metallic aggregate treatment or topping with a hard steel trowel finish); and
- A combination of these techniques.

Forklift traffic can create significant distress in the floor slab if the slab is not properly designed for the loading conditions.

4.3.3 Slab-on-Grade Construction Considerations

The shallow foundations should preferably be neat excavated. Excavation should be accomplished with a smooth-mouthed bucket. If a toothed bucket is used, excavation with this bucket should be stopped 6 inches above the final bearing surface and the excavation completed with a smooth-mouthed bucket or by hand labor. If neat excavation is not possible then the foundation should be overexcavated and formed. All loose materials should be

removed from the overexcavated areas and filled with lean concrete or compacted cement stabilized sand (two sacks cement to one cubic yard of sand) or flowable fill. If grade beam excavation starts caving, then the foundation contractor should be prepared to use forms.

To reduce the potential for water infiltration into the excavations and to minimize disturbance to the bearing area, we recommend that concrete and steel be placed as soon as possible after the excavations are completed. Excavations should not be left open for more than 36 hours. The bearing surface of the footings should be evaluated after excavation is completed and immediately prior to placing concrete. If not, a seal slab consisting of lean concrete should be poured to protect the exposed foundation soils. The bearing surface should be excavated with a slight slope to create an internal sump for runoff water collection and removal. If surface runoff water in excess of 1 inch accumulates at the bottom of the excavation, it should be pumped out prior to concrete placement. Under no circumstances should water be allowed to adversely affect the quality of the bearing surface.

4.3.4 Spread Footings

Spread footings may be used to support the building. Design recommendations for shallow foundations for the proposed structures are presented in the table below.

Description	Parameters
Net allowable bearing pressure [1]	2,000 psf
Minimum width	30 inches
Minimum embedment below finished grade for bearing	36 inches
Allowable Net passive pressure [2]	250 pcf, equivalent fluid density
Ultimate coefficient of sliding friction [3]	0.40

[1] The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. Assumes any soft soils, if encountered, will be undercut and replaced with compacted structural fill. Based upon a minimum Factor of Safety of 3.

[2] The spread footing foundation excavation sides must be nearly vertical and the concrete should be placed neat against these vertical faces for the passive earth pressure values to be valid. If the loaded side is sloped or benched, and then backfilled, the allowable passive pressure will be significantly reduced. Passive resistance in the upper 12 inches of the soil profile should be neglected.

[3] We recommend a factor of safety of 2 to be applied to the ultimate value.

For properly sized footings, we expect the total settlements to be less than 1 inch. Differential settlements may be about one-half of the total settlement. The spread footings can provide some uplift resistance for those structures subjected to wind or other induced structural loading. The uplift resistance of a spread footing may be computed using the effective weight of the soil

above the spread footing along with the weight of the spread footing and structure. A soil unit weight of 120 pcf may be assumed for the on-site soils placed above the footing, provided the fill is properly compacted.

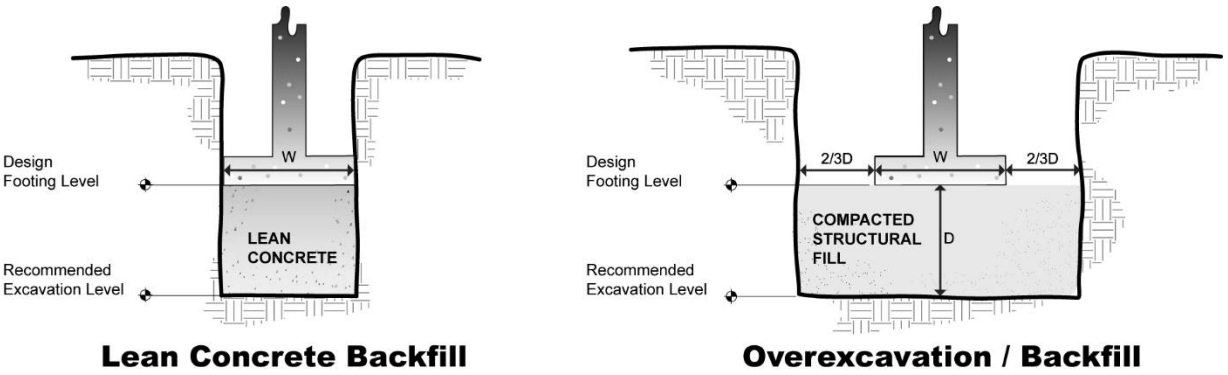
4.3.5 Spread Footings Construction Considerations

Spread footing foundations should be neatly excavated. Excavation should be accomplished with a smooth-mouthed bucket. If a toothed bucket is used, excavation with this bucket should be stopped 6 inches above the final bearing surface and the excavation completed with a smooth-mouthed bucket or by hand labor. If neat excavation is not possible then the foundation should be over excavated and formed. All loose materials should be removed from the over excavated areas and filled with lean concrete or compacted cement stabilized sand (two sacks cement to one cubic yard of sand) or flowable fill. If footing excavation starts caving, then the foundation contractor should be prepared to use forms.

Steel and concrete for spread footings should be placed within 36 hours of excavation. If not, a seal slab consisting of lean concrete should be constructed to protect the exposed foundation soils. The bearing surface should be excavated with a slight slope to create an internal sump for runoff water collection and removal. If surface runoff water accumulates at the bottom of the excavation, it should be pumped out prior to concrete placement. Under no circumstances should water be allowed to adversely affect the quality of the bearing surface.

If the spread footing is buried, backfill above the foundation may be the excavated on-site soils or select fill soils. Backfill soils should be compacted to at least 95 percent of the maximum dry unit weight as determined by the standard moisture/density test (ASTM D 698) at moisture contents ranging from -2 to +3 percentage points of the optimum moisture content. The backfill should be placed in thin, loose lifts not to exceed 8 inches, with compacted thickness not to exceed 6 inches.

If unsuitable bearing soils are encountered in footing excavations, the excavation could be extended deeper to suitable soils and the footing could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. As an alternative, the footings could also bear on properly compacted structural backfill extending down to the suitable soils. Overexcavation for compacted structural fill placement below footings should extend laterally beyond all edges of the footings at least 8 inches per foot of overexcavation depth below footing base elevation. The overexcavation should then be backfilled up to the footing base elevation with well graded granular material placed in lifts of 8 inches or less in loose thickness (6 inches or less if using hand-guided compaction equipment) and compacted to at least 98 percent of the material's standard effort maximum dry density (ASTM D 698). The overexcavation and backfill procedure is described in the following figure.



NOTE: Excavations in sketches shown vertical for convenience. Excavations should be sloped as necessary for safety.

4.3.6 Foundation Construction Monitoring

The performance of the foundation system for the proposed structure will be highly dependent upon the quality of construction. Thus, we recommend that fill pad compaction and foundation installation be monitored full time by an experienced Terracon soil technician under the direction of our Geotechnical Engineer. During foundation installation, the base should be monitored to evaluate the condition of the subgrade. We would be pleased to develop a plan for compaction and foundation installation monitoring to be incorporated in the overall quality control program.

4.4 Sumps and Pits

We understand some shallow sumps and pits may be installed. We have assumed they will be restricted from movement by the floor slab and bottom slab, respectively. As a result, the walls will need to be designed for "At-Rest" lateral earth pressure conditions. The below grade walls should be designed for the lateral pressures that will be exerted on the walls by the earthen materials being retained plus any surcharge loads which may occur during or after construction, as outlined in the following table.

The wall design should consider the drainage condition. If a drain system is provided to reduce the potential for hydrostatic water pressures from developing behind the walls, they may be designed without hydrostatic forces. However, if no drain is provided, the design pressure should include hydrostatic forces.

Below-Grade Earth Pressure Coefficients

Earth Pressure Conditions	Coefficient for Backfill Type	Equivalent Fluid Density (Without Hydrostatic Forces) (pcf)	Equivalent Fluid Density (With Hydrostatic Forces) (pcf)	Lateral Pressure Due to Surcharge Loading (pcf) [2]
At-Rest (Ko)	Granular - 0.46	55	90	(0.46)S
At-Rest (Ko)	Select Lean Clay - 0.58	70	95	(0.58)S
At-Rest (Ko)	On-Site Soil - 0.70 [1]	85	105	(0.70)S

[1] If on-site soil is used, it should be free of debris.

[2] Surcharge loading, S, in psf.

Backfill placed against wall structures should consist of granular soils or low plasticity cohesive soils. For the granular earth pressure values to be valid, the granular backfill must extend out from the base of the wall at an angle of at least 60 degrees from vertical.

4.5 Seismic Considerations

Description	Value
2015 International Building Code Site Classification (IBC) [1]	D

[1] The site class definition was determined using SPT N-values and shear strength in conjunction with Table 1613.5.5 in the 2015 IBC based on a 150-ft boring previously drilled at the nearby Powertrain Phase 2 site, about 1,300 ft from this site.

4.6 Slab Evaluation

4.6.1 Slab Thickness

Terracon measured the slab thickness at each of the boring locations. In addition, thickness checks were made at five locations (P-1 through P-5) using a Hilti TE 60ATC hammer drill equipped with a ¾-inch bit. The locations of the slab penetrations are shown on Exhibit A-2. The measure slab thicknesses are tabulated below. Upon completion, the resulting holes were patched with ready mix concrete (borings) or high-strength grout (hammer drill penetrations).

Location	Slab Thickness (inches)
B-1	8
B-2	8
B-3	7
B-4	6
B-5	6
B-6	7
P-1	9.0
P-2	6.0
P-3	6.5
P-4	7.1
P-5	6.0

Note: Thicknesses at the boring locations are rounded to the nearest 1 inch.

4.6.2 Reinforcement Survey

A survey of the steel reinforcement in the concrete elements was made at various locations with a Hilti PS-200 *FerroScan* device at five locations. In addition to bar spacing, the *FerroScan* will

provide an estimate of reinforcement diameters. The scan images are presented in Appendix D, and included the interpreted reinforcement spacing and sizes.

The scans indicated reinforcing spacing of 6 by 6 inches, suggesting wire mesh. The FerroScan cannot determine reinforcement sizes any small than 3/8 inch (#3 bar). Therefore, it is possible the reinforcement could consist of #3 bars on 6-inch centers; however, based on the consistency of the spacing, we are reasonably confident the reinforcement consists of wire mesh.

4.7 Pavements

We understand flexible and rigid pavements will be used on this project. Flexible pavement designs are presented based on the American Association of State Highway and Transportation Officials' (AASHTO) *Guide for Design of Pavement Structures* (1993). We understand the ESAL count will be minor for this project, less than 10,000, as indicated by the Civil Engineer for the pavement design. Other design methods may yield somewhat different pavement thickness values. The final pavement design should be determined by the project Civil Engineer.

4.7.1 Subgrade Preparation

Prior to placing any fill, any vegetation, loose topsoil, and any otherwise unsuitable materials should be removed from the new pavement areas. After stripping, the subgrade should be proof-rolled where possible to aid in locating loose or soft areas. Proof-rolling can be performed with a 15-ton roller or fully loaded dump truck. Wet, soft, low-density or dry material should either be removed or moisture conditioned and recompacted to the moisture contents and densities described in section **Compaction Requirements** prior to placing fill.

4.7.2 Design Recommendations

The thickness of each course is a function of subgrade strength, anticipated traffic volume, design life, serviceability factors, and frost susceptibility. Based on laboratory test results and our experience with previous projects in the area, a California Bearing Ratio (CBR) value of 7 was used for the underlying sandy soils. We recommend the following pavement sections be considered for this project.

	FLEXIBLE PAVEMENT SYSTEM (inches)
Hot Mix Asphaltic Concrete	2
Granular Base Material	8

	RIGID PAVEMENT SYSTEM (inches)
Reinforced Concrete	6
Granular Base Material	4

Proper perimeter drainage is very important and should be provided so infiltration of surface water from unpaved areas surrounding the pavement is minimized. We do not recommend installation of landscape beds or islands in the pavement areas. Such features provide an avenue for water to enter the pavement section and underlying soil subgrade. Water penetration usually results in degradation of the pavement section with time as vehicular traffic traverses the affected area.

Curbs should extend through the base and at least 3 inches into the soil subgrade below the base course. This will help reduce migration of subsurface water into the pavement base course from adjacent areas. A crack sealant compatible to both asphalt and concrete should be provided at all concrete-asphalt interfaces.

The pavement section has been designed using generally recognized structural coefficients for the pavement materials. These structural coefficients reflect the relative strength of the pavement materials and their contribution to the structural integrity of the pavement. If the pavement does not drain properly, it is likely that ponded water will infiltrate the pavement materials resulting in a weakening of the materials. As a result, the structural coefficients of the pavement materials will be reduced and the life and performance of the pavement will be shortened. The Asphalt Institute recommends a minimum of 2 percent slope for asphalt pavements. The importance of proper drainage cannot be overemphasized and should be thoroughly considered by the project team.

4.7.3 Pavement Section Materials

Presented below are selection and preparation guidelines for various materials that may be used to construct the pavement sections. Submittals should be made for each pavement material. The submittals should be reviewed by the Geotechnical Engineer and appropriate members of the design team and should provide test information necessary to verify full compliance with the recommended or specified material properties.

- **Hot Mix Asphaltic Concrete Surface Course -** The asphaltic concrete surface course should be plant mixed, hot laid Type C or D Surface. The asphaltic concrete base course should also be plant mixed, hot laid Type A or B. Each mix should meet the master specifications requirements of 2014 TxDOT Standard Specifications Item 341, Item SS 3224 (2011) and specific criteria for the job mix formula. The mix should be compacted between 91 and 95 percent of the maximum theoretical density as measured by TEX-227-F. The asphalt cement content by percent of total mixture weight should fall within a tolerance of ±0.3 percent asphalt cement from the specific mix. In addition, the mix should be designed so 75 to 85 percent of the voids in the mineral aggregate (VMA) are filled with asphalt cement. The grade of the asphalt cement should be PG 70-22 or higher performance grade. Aggregates known to be prone to stripping should not be used in the hot mix. If such aggregates are used measures should be taken to mitigate this concern. The mix should have at least 70 percent strength retention when tested in accordance with TEX-531-C.

Pavement specimens, which shall be either cores or sections of asphaltic pavement, will be tested according to Test Method TEX-207-F. The nuclear-density gauge or other methods which correlate satisfactorily with results obtained from project pavement specimens may be used when approved by the Engineer. Unless otherwise shown on the plans, the Contractor shall be responsible for obtaining the required pavement specimens at their expense and in a manner and at locations selected by the Engineer.

- **Concrete -** Concrete should have a minimum 28-day design compressive strength of 4,000 psi.

- **Granular Base Material -** Base material may be composed of crushed limestone base/crushed concrete meeting all of the requirements of 2014 TxDOT Item 247, Type A, Grade 1-2; including triaxial strength. The material should be compacted to at least 95 percent of the maximum dry density as determined in accordance with ASTM D 1557 at moisture contents ranging from -2 and +3 percentage points of the optimum moisture content.

- **Moisture Conditioned Subgrade -** The subgrade should be scarified to a depth of 6 inches and then moisture conditioned and compacted as recommended in the **Compaction Requirements** section of this report.

Details regarding subgrade preparation, fill materials, placement and compaction are presented in **Earthwork** section under subsections **Fill Materials and Placement** and **Compaction Requirements**.

4.7.4 Pavement Joints and Reinforcement

The following is recommended for all concrete pavement sections in this report. Refer to ACI 330 “Guide for Design and Construction of Concrete Parking Lots” for additional information.

Item	Description
Distributed Reinforcing Steel	No. 3 reinforcing steel bars at 18 inches on-center-each-way, Grade 60. It is imperative that the distributed steel be positioned accurately in the pavement cross section, namely 2 inches from the top of the pavement.
Contraction Joint Spacing	12.5 feet each way for pavement thickness of 5 to 5.5 inches. 15 feet each way for pavement thickness of 6 inches or greater. Saw cut control joints should be cut within 6 to 12 hours of concrete placement.
Contraction Joint Depth	At least ¼ of pavement thickness.
Contraction Joint Width	One-fourth inch or as required by joint sealant manufacturer.

Item	Description
Construction Joint Spacing	To attempt to limit the quantity of joints in the pavement, consideration can be given to installing construction joints at contraction joint locations, where it is applicable.
Construction Joint Depth/Width	Full depth of pavement thickness. Construct sealant reservoir along one edge of the joint. Width of reservoir to be ¼ inch or as required by joint sealant manufacturer. Depth of reservoir to be at least ¼ of pavement thickness.
Isolation Joint Spacing	As required to isolate pavement from structures, etc.
Isolation Joint Depth	Full depth of pavement thickness.
Isolation Joint Width	One-half to 1 inch or as required by the joint sealant manufacturer.
Expansion Joint	In this locale, drying shrinkage of concrete typically significantly exceeds anticipated expansion due to thermal affects. As a result, the need for expansion joints is eliminated provided all joints (including saw cuts) are sealed. Construction of an unnecessary joint may be also become a maintenance problem. All joints should be sealed. If all joints, including sawcuts, are not sealed then expansion joints should be installed.

All construction joints have dowels. Dowel information varies with pavement thickness as presented as follows:

Pavement Thickness	6 inches
Dowels	¾ inch diameter
Dowel Spacing	12 inches on center
Dowel Length	14 inches long
Dowel Embedment	6 inches

4.8 Corrosion Considerations

Steel and concrete elements in contact with soil possibly are subject to degradation due to corrosion or chemical attack. Therefore, buried steel and concrete elements should be designed to resist corrosion and degradation based on accepted practices. We performed analytical tests on selected soil samples to evaluate the soil corrosion potential. The test results are presented in Appendix B of this report and are summarized in the following table.

Boring No.	Approximate Depth, feet	pH	Total Chloride, ppm	Sulfate, ppm	Sulfide, ppm	Electrical Resistivity, ohm-cm	Oxidation/ Reduction Potential, mV
B-1	4 – 6	8.08	40	236	<5	4,760	120
B-6	0 – 2	9.12	40	162	<5	3,610	115

General discussions regarding the corrosion of steel and the degradation of concrete with respect to the results of the analytical tests are provided in the following sections of this report.

4.8.1 Steel

The corrosion potential of steel is influenced by electrical resistivity, chloride ion concentration, and pH. Corrosion of steel is more likely in soil environments with low resistivity, high chloride ion concentrations, or low pH. The following table presents general guidelines for estimating the corrosion potential of steel as a function of chloride ion concentration, pH, and electrical resistivity.[1]

Resistivity, ohm-cm	Chloride Content, ppm	pH	Corrosion Potential
0 – 1,000	>500	0 – 4.5	Very High
1,000 – 2,000		4.5 – 5.5	High
2,000 – 5,000	<500	5.5 – 6.5	Moderate
> 5,000		> 6.5	Mild

Each of the columns in the above table should be used independently of the others for estimating corrosion potential. For example, it is not necessary to have a resistivity between 0 and 1000 ohm-cm and a pH between 0 and 4.5 to indicate a Very High potential for corrosion potential. The results indicate that the potential for corrosion due to chloride ion concentration may be mild to moderate and is mild due to pH in the samples tested. Based on the electrical resistivity results, the corrosion potential for buried steel is generally moderate.

4.8.2 Concrete

The degradation of concrete is caused by chemical agents in the soil or groundwater that react with concrete to either dissolve the cement paste or precipitate compounds which cause cracking and flaking. The concentration of water-soluble sulfates in the soils is a good indicator of the potential for chemical attack of concrete. Sulfate concentrations in soil can be used to evaluate the need for protection of concrete based on the following table.[2]

Water Soluble Sulfate Content In Soil, (percent by mass)	Water Soluble Sulfate Content In Soil, (ppm)	Severity of Potential Exposure
> 2.0	> 10,000	Class 3
0.2 – < 2.0	1,500 – 10,000	Class 2
>0.1 – < 0.2	150 – 1,500	Class 1
0.0 – 0.1	0 – 150	Class 0

[1] Palmer, J.F. (1974), "Soil Resistivity Measurements and Analysis", Materials Performance, Vol.13.
[2] ACI Guide to Durable Concrete 201.2R-08, (June 2008).

The results of sulfate tests on the selected soil samples from this study indicate the potential for exposure of concrete, based on sulfate ion concentrations, is Class 0 in the site soils. According to ACI, the use of Type II, or equivalent, cement should be appropriate.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur away from our boring, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided. Prospective subcontractors should familiarize themselves with the conditions at the site and retain their own experts to interpret the data in this report and perform additional testing and/or inspection as they deem necessary prior to bidding.

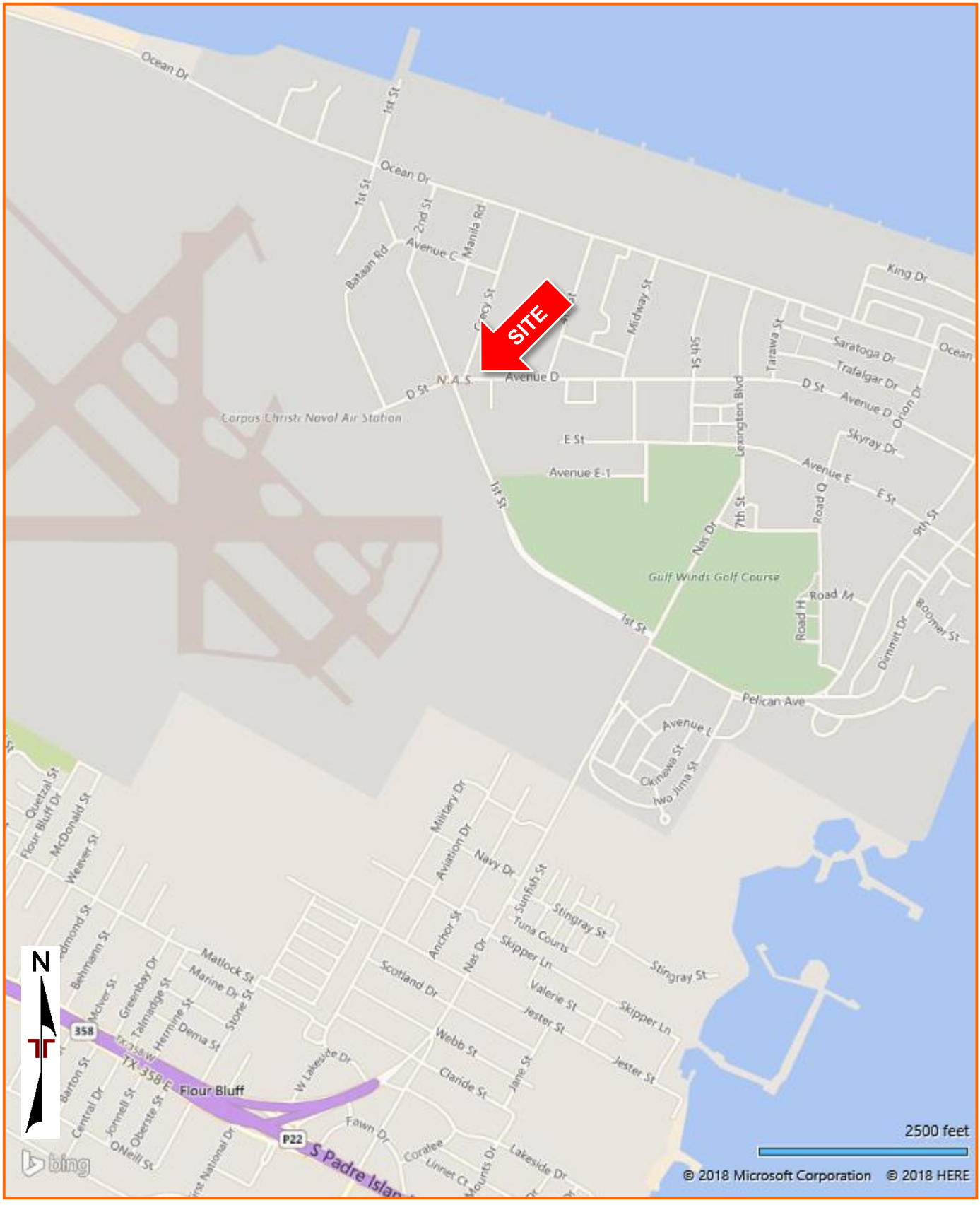
The scope of services for this project does not include, either specifically or by implication, any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. It should be noted that environmental screening done during our field investigation should not be construed as any form of environmental evaluation of the site; it was done strictly for worker protection. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A

SITE LOCATION

Hazardous Waste Storage and Transfer Facility ■ Corpus Christi, Texas
July 12, 2018 ■ Terracon Project No. 90185088



ROAD MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

Hazardous Waste Storage and Transfer Facility ■ Corpus Christi, Texas
July 12, 2018 ■ Terracon Project No. 90185088

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

FIELD EXPLORATION DESCRIPTION

Borings

The boring locations were staked in the field by a client's representative. A truck-mounted, rotary drill rig equipped with continuous flight augers was used to advance the boreholes. Soil samples were obtained using split-barrel sampling procedures. In the split-barrel sampling procedure, a standard 2-inch O.D. split-barrel sampling spoon is driven into the ground with a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the standard penetration resistance value. These values are indicated on the borings logs at the depths of occurrence. If the sampler was driven less than the final 12 inches, the N value is recorded on the logs as the number of blows and amount of penetration.

Sample Handling and Boring Logs

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the boring logs attached to this report includes soil descriptions, consistency evaluations, boring depths, sampling intervals, and groundwater conditions. Our field representative prepared the field logs as part of the drilling operations. The field logs included visual classifications of the materials encountered during drilling and our field representative interpretation of the subsurface conditions between samples. Each boring log included with this report represents the engineer's/geologist's interpretation of the field logs and include modifications based on visual observations and testing of the samples in the laboratory.

Environmental Screening

The scope of services for our geotechnical engineering services did not include addressing any environmental issues pertinent to the site. During the proposal stage, we were notified that a groundwater contamination plume consisting of trichloroethylene (TCE) had previously been identified at a nearby location. It was anticipated that the contaminant would not be present at the current project site. However, as a precautionary measure to protect our workers' safety, Terracon monitored the jobsite using an Organic Vapor Meter equipped with a Photoionization Detector (OVM/PID), as well as for potentially explosive conditions using an explosimeter. The jobsite monitoring was performed by a Terracon Environmental Staff member with OSHA 40-hour Hazardous Waste Operations and Emergency Response training. The monitoring revealed non-detectable levels of organic vapors and did not indicate potentially explosive conditions.

It should be noted that this field screening should not be construed as any form of environmental evaluation of the site; it was done strictly for worker protection. Our scope did not include environmental sampling/testing or decontamination of the drilling or sampling equipment.

BORING LOG NO. B-1

PROJECT: Hazardous Waste Storage and Transfer Facility

CLIENT: Gulf Coast Architectural Group, Inc.
Pensacola, Florida

SITE: Naval Air Station Corpus Christi
Corpus Christi, Texas

LOCATION See Exhibit A-2

Latitude: 27.695° Longitude: -97.278°

DEPTH	GRAPHIC LOG		WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.8		**PAVEMENT SECTION:** 8" Thick Concrete						
		STRATUM I **SAND (SP-SM)**; tan, medium dense			5-6-7 N=13	11		
			▽		4-4-6 N=10	20		7
5.0								
		STRATUM II **CLAYEY SAND (SC)**; light brown to tan, loose			3-4-5 N=9	20		
					4-4-4 N=8	40	28-19-9	22
8.0								
		STRATUM III **SILTY SAND (SM)**; light brown to tan, very loose to medium dense			3-5-11 N=16	18		
		- tan to light gray below 13 feet			1-1-2 N=3	27		
					2-2-2 N=4	23	29-17-12	45
20.0		***Boring Terminated at 20 Feet***						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite
Surface capped with concrete

Notes:

WATER LEVEL OBSERVATIONS

▽ *4 ft during drilling*

5 ft at completion of drilling

Terracon
6911 Blanco Rd
San Antonio, TX

Boring Started: 05-16-2018 | Boring Completed: 05-16-2018

Drill Rig: CME 75 | Driller: EnviroCore

Project No.: 90185088 | Exhibit: A-4

BORING LOG NO. B-2

PROJECT: Hazardous Waste Storage and Transfer Facility

CLIENT: Gulf Coast Architectural Group, Inc. Pensacola, Florida

SITE: Naval Air Station Corpus Christi Corpus Christi, Texas

LOCATION See Exhibit A-2

Latitude: 27.6951° Longitude: -97.2779°

DEPTH	GRAPHIC LOG	DESCRIPTION	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.8		**PAVEMENT SECTION:** 8" Thick Concrete						
		STRATUM I **SAND (SP-SM)**; tan, medium dense			5-8-10 N=18	10		
			▽		4-5-6 N=11	22		
4.0		**STRATUM II** **CLAYEY SAND (SC)**; light brown to tan, medium dense			4-4-6 N=10	20	29-14-15	
					4-5-5 N=10	35		
8.0		**STRATUM III** **SILTY SAND (SM)**; light brown to tan, very loose to medium dense			7-11-9 N=20	17	NP	36
					1-1-2 N=3	27		
18.0		**STRATUM IV** **LEAN CLAY (CL)**; tan to light gray, medium stiff			2-3-4 N=7	21	29-18-11	
20.0		***Boring Terminated at 20 Feet***						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite
Surface capped with concrete

Notes:

WATER LEVEL OBSERVATIONS

▽ *4 ft during drilling*

Terracon
6911 Blanco Rd
San Antonio, TX

Boring Started: 05-16-2018 | Boring Completed: 05-16-2018

Drill Rig: CME 75 | Driller: EnviroCore

Project No.: 90185088 | Exhibit: A-5

BORING LOG NO. B-3

PROJECT: Hazardous Waste Storage and Transfer Facility

CLIENT: Gulf Coast Architectural Group, Inc. Pensacola, Florida

SITE: Naval Air Station Corpus Christi Corpus Christi, Texas

LOCATION See Exhibit A-2

Latitude: 27.695° Longitude: -97.2778°

DEPTH	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.6	**PAVEMENT SECTION:** 7" Thick Concrete						
	STRATUM I **SAND (SP-SM)**; tan, loose			3-4-4 N=8	10		7
		▽		2-3-4 N=7	20		
5				4-4-5 N=9	18		
6.0	**STRATUM II** **LEAN CLAY (CL)**; light brown to tan, very stiff, sandy			5-9-9 N=18	17	NP	82
9.0	**STRATUM III** **SILTY SAND (SM)**; light brown to tan, loose to medium dense			2-7-7 N=14	30		
10							
				1-2-3 N=5	28		
15							
				2-4-5 N=9	20		41
20	***Boring Terminated at 20 Feet***						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite
Surface capped with concrete

Notes:

WATER LEVEL OBSERVATIONS

▽ *4 ft during drilling*

Terracon
6911 Blanco Rd
San Antonio, TX

Boring Started: 05-16-2018 | Boring Completed: 05-16-2018

Drill Rig: CME 75 | Driller: EnviroCore

Project No.: 90185088 | Exhibit: A-6

BORING LOG NO. B-4

PROJECT: Hazardous Waste Storage and Transfer Facility

CLIENT: Gulf Coast Architectural Group, Inc. Pensacola, Florida

SITE: Naval Air Station Corpus Christi Corpus Christi, Texas

LOCATION See Exhibit A-2

Latitude: 27.6949° Longitude: -97.2776°

DEPTH	GRAPHIC LOG	DESCRIPTION	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.5		**PAVEMENT SECTION:** 6" Thick Concrete						
		STRATUM I **SILTY SAND (SM)**; tan, medium dense - with concrete and chert fragments at the surface			29-15-13 N=28	21		
					4-6-6 N=12	20		27
			▽		3-5-5 N=10	21		
8.0					4-6-6 N=12	16		
		STRATUM II **LEAN CLAY (CL)**; light brown to tan, very stiff, sandy			5-10-11 N=21	14	40-18-22	
13.0		**STRATUM III** **SILTY SAND (SM)**; light brown to tan, loose			2-2-2 N=4	25		32
18.0		**STRATUM IV** **FAT CLAY (CH)**; tan to light gray, medium stiff			2-3-3 N=6	24	36-18-18	
20.0		***Boring Terminated at 20 Feet***						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite
Surface capped with concrete

Notes:

WATER LEVEL OBSERVATIONS

▽ *4.5 ft during drilling*

Terracon
6911 Blanco Rd
San Antonio, TX

Boring Started: 05-16-2018 | Boring Completed: 05-16-2018

Drill Rig: CME 75 | Driller: EnviroCore

Project No.: 90185088 | Exhibit: A-7

BORING LOG NO. B-5

PROJECT: Hazardous Waste Storage and Transfer Facility

CLIENT: Gulf Coast Architectural Group, Inc.
Pensacola, Florida

SITE: Naval Air Station Corpus Christi
Corpus Christi, Texas

LOCATION See Exhibit A-2

Latitude: 27.6948° Longitude: -97.2775°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.5	**PAVEMENT SECTION:** 6" Thick Concrete							
	STRATUM I **SILTY SAND (SM)**; tan, loose to medium dense			X	4-5-6 N=11	7		
			▽	X	2-4-3 N=7	23		9
		5		X	3-6-8 N=14	16		
				X	6-8-10 N=18	17		
8.0								
	STRATUM II **LEAN CLAY (CL)**; light brown to tan, stiff, sandy			X	4-5-6 N=11	17	NP	
		10						
13.0								
	STRATUM IV **FAT CLAY (CH)**; tan to light gray, medium stiff, with sand			X	2-3-2 N=5	23	46-20-26	72
		15						
				X	2-3-4 N=7	22	24-18-6	
20.0		20						
	Boring Terminated at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite
Surface capped with concrete

Notes:

WATER LEVEL OBSERVATIONS

▽ *4 ft during drilling*

Terracon
6911 Blanco Rd
San Antonio, TX

Boring Started: 05-16-2018 | Boring Completed: 05-16-2018

Drill Rig: CME 75 | Driller: EnviroCore

Project No.: 90185088 | Exhibit: A-8

BORING LOG NO. B-6

PROJECT: Hazardous Waste Storage and Transfer Facility

CLIENT: Gulf Coast Architectural Group, Inc. Pensacola, Florida

SITE: Naval Air Station Corpus Christi Corpus Christi, Texas

LOCATION See Exhibit A-2

Latitude: 27.695° Longitude: -97.2775°

DEPTH	GRAPHIC LOG		WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.6		**PAVEMENT SECTION:** 7" Thick Concrete						
		STRATUM I **SILTY SAND (SM)**; tan, loose to medium dense		X	5-10-9 N=19	8		
			▽	X	2-4-4 N=8	21		7
5				X	4-5-6 N=11	19		
				X	4-6-8 N=14	17	NP	22
8.0								
		STRATUM II **LEAN CLAY (CL)**; light brown to tan, stiff, sandy		X	3-5-9 N=14	35		
10.0								
10		**STRATUM III** **SILTY SAND (SM)**; light brown to tan, very loose						
				X	1-1-2 N=3	27		35
15								
18.0								
		STRATUM IV **FAT CLAY (CH)**; tan to light gray, medium stiff		X	2-3-4 N=7	21	39-23-16	61
20								
20.0		***Boring Terminated at 20 Feet***						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite
Surface capped with concrete

Notes:

WATER LEVEL OBSERVATIONS

▽ *4 ft during drilling*

Terracon
6911 Blanco Rd
San Antonio, TX

Boring Started: 05-16-2018 | Boring Completed: 05-16-2018

Drill Rig: CME 75 | Driller: EnviroCore

Project No.: 90185088 | Exhibit: A-9

APPENDIX B

LABORATORY TESTING

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in this Appendix. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Selected soil samples obtained from the site were tested for the following engineering properties:

- Moisture Content
- Atterberg Limits
- Percent Finer than the Nº 200 Mesh (75-µm) Sieve
- Moisture Density Relationship
- California Bearing Ratio (CBR) Tests
- Corrosion Suite Tests

Sample Disposal

All samples were returned to our laboratory. The samples not tested in the laboratory will be stored for a period of 30 days subsequent to submittal of this report and will be discarded after this period, unless other arrangements are made prior to the disposal period.

Laboratory Compaction Characteristics of Soil

Sample Information

Sample Number:	N/A	Material Designation:	SM
Boring Number:	N/A	Test Method:	ASTM D698
Sample Location:	N/A	Test Procedure:	C
Depth (ft):	0 to 2	Sample Preparation:	Wet
		Rammer: Mechanical	X
		Manual	

Sample Description: Tan Silty Sand

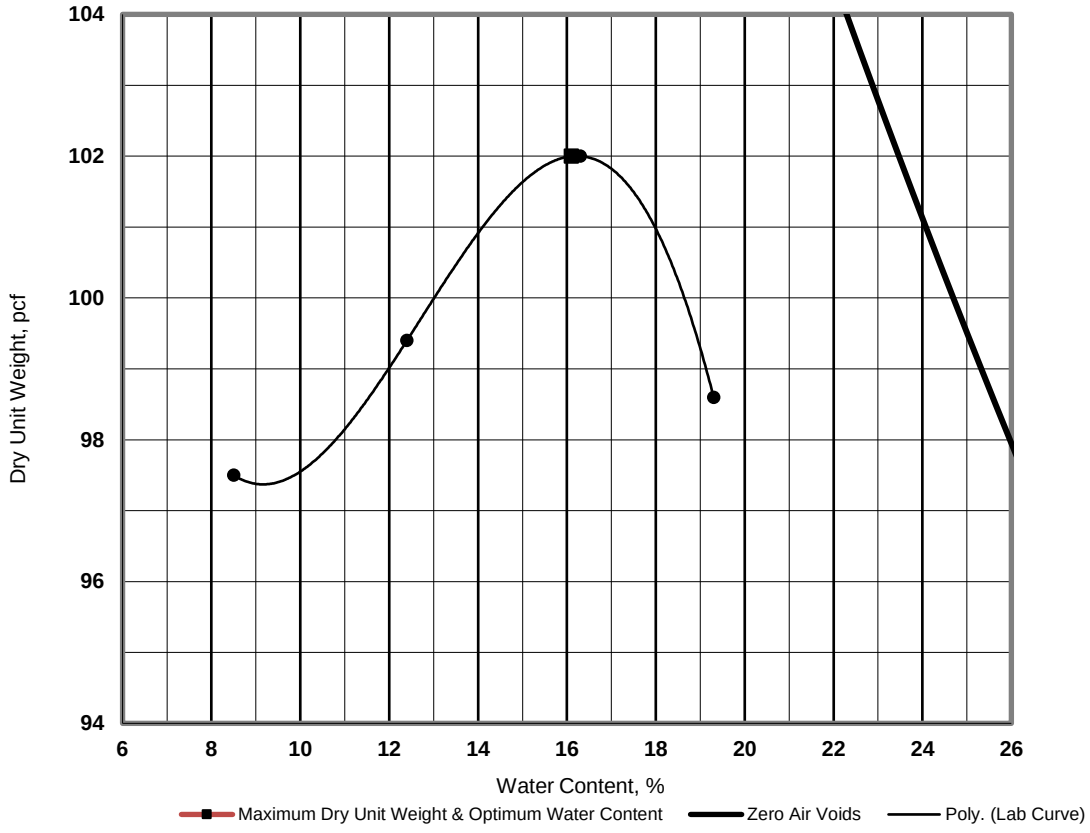
Atterberg Limits:

Liquid Limit:	
Plastic Limit:	
Plasticity Index:	NP
Natural Moisture (%):	15

TEST RESULTS

Maximum Dry Unit Wt.:	102.0	pcf
Optimum Water Content:	16.1	%

Zero air voids for specific gravity of 2.65



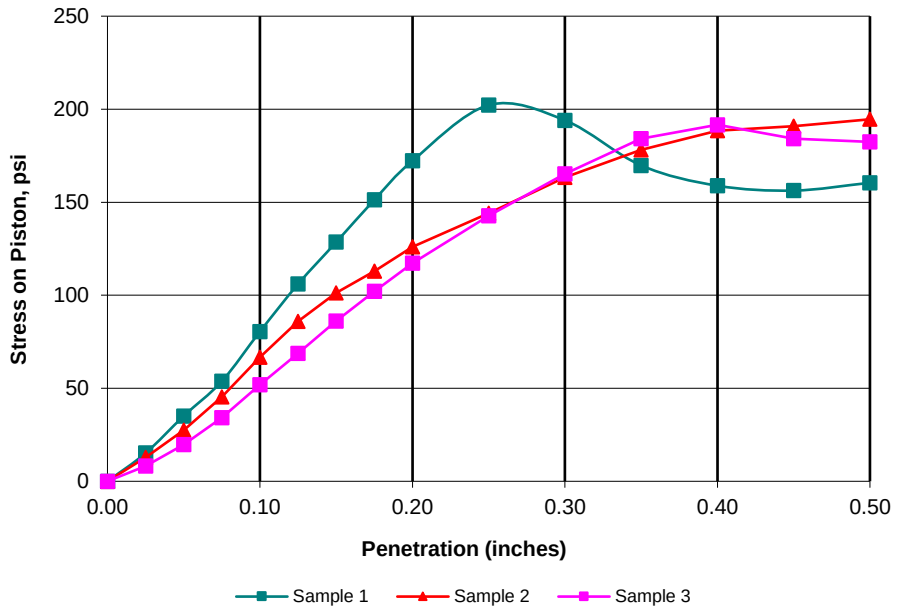
Project Mngr.: TA	Project No.: 90185088	Terracon Consulting Engineers and Scientists	Laboratory Standard Proctor Test	EXHIBIT
Drawn By: N/A	Scale: As Shown		Hazardous Waste Storage & Transfer Facility	
Checked By: GPS	File No.: 90185088		Naval Air Station	B-2
Approved By: GPS	Date: 5/25/2018	6911 Blanco Road San Antonio, TX 78216 (210) 641-2112 (210) 641-2124	Corpus Christi, Texas	

California Bearing Ratio of Laboratory-Compacted Soils

Sample Information

Sample Number:	N/A	Proctor Method:	D698
Boring Number:	N/A	Maximum Dry Density (pcf):	102.0
Sample Location:	N/A	Optimum Moisture (%):	16.1
Depth:	0 to 2	Liquid Limit:	
Test Method:	ASTM D1883	Plasticity Index:	

Material Description: Tan Silty Sand



Test information

Surcharge Wgt (lbs):	
Soaked:	X
Unsoaked:	
Length of Soak (hrs):	96
Load Penetration Curve Correction Required:	No

Test Results

Test Sample No.	1	2	3	4
Density Data				
Dry Density before Soaking, (pcf)	101.7	94.1	99.2	
Degree of Compaction, (%)	99.7	92.3	97.3	
Dry Density after Soaking, (pcf)	103.3	86.1	100.2	
Moisture Content, (%)				
Before Compaction	15.7	16.2	42.7	
After Compaction	17.1	22.5	16.4	
Top 1" After Soaking	16.8	18.6	17.3	
Average After Soaking	15.8	35.7	16.9	
Swell, (%)	0.0	0.0	0.0	0.0
Bearing Ratio				
@ 0.100 inch	8.1	6.7	5.2	
@ 0.200 inch	11.5	8.4	7.8	

Project Mngr. TA	Project No. 90185088	Terracon Consulting Engineers and Scientists	CBR of Lab Compacted Soils	EXHIBIT
Drawn By:	Scale As Shown		Hazardous Waste Storage & Transfer Facility	
Checked By: GPS	File No. 90185088	6911 Blanco Road San Antonio, TX 78216	Naval Air Station	B-3
Approved By: GPS	Date: 5/25/2018	(210) 641-2112 (210) 641-2124	Corpus Christi, Texas	

ALAMO ANALYTICAL LABORATORIES, LTD.

Date: *25-May-18*

Analytical Results Report

Client: Terracon Consultants, Inc.
Collection Date: 5/18/2018
Lab Order: 1805150
Matrix: SOLID
Project ID:
Lab ID: 1805150-01A
Project Name: 90185088 Hazardous Waste
Client Sample ID: B-1 4-6 Gray Sandy Clay

Analyses	Result	Report Limit	Units	Dilution	Date Analyzed
SULFIDE IN SOIL			**C105**		Analyst: **YK**
Sulfide	< 5	5	0=neg,1=pos	1	18-May-18
OXIDATION-REDUCTION POTENTIAL			**D1498**		Analyst: **YK**
Oxidation-Reduction Potential	120	-180.	millivolts	1	21-May-18
RESISTIVITY			**SM2330B**		Analyst: **YK**
Resistivity	4760	0.0001	ohms-cm	1	22-May-18
CORROSIVITY BY PH			**SW9045B**		Analyst: **YK**
pH at 25 o C	8.08	0.1	pH Units	1	22-May-18
TEX-620-J			**TX620J**		Analyst: **YK**
Chloride	40	5	mg/Kg	1	25-May-18
TEX-620-J			**TX620J**		Analyst: **YK**
Sulfate	236	25	mg/Kg	1	25-May-18

Approved by: **Report of Laboratory Analysis**

ALAMO ANALYTICAL LABORATORIES, LTD.

Date: *25-May-18*

Analytical Results Report

Client: Terracon Consultants, Inc.
Collection Date: 5/18/2018
Lab Order: 1805150
Matrix: SOLID
Project ID:
Lab ID: 1805150-02A
Project Name: 90185088 Hazardous Waste
Client Sample ID: B-6 0-2 Gray Sand

Analyses	Result	Report Limit	Units	Dilution	Date Analyzed
SULFIDE IN SOIL			**C105**		Analyst: **YK**
Sulfide	< 5	5	0=neg,1=pos	1	18-May-18
OXIDATION-REDUCTION POTENTIAL			**D1498**		Analyst: **YK**
Oxidation-Reduction Potential	115	-180.	millivolts	1	21-May-18
RESISTIVITY			**SM2330B**		Analyst: **YK**
Resistivity	3610	0.0001	ohms-cm	1	22-May-18
CORROSIVITY BY PH			**SW9045B**		Analyst: **YK**
pH at 25 o C	9.12	0.1	pH Units	1	22-May-18
TEX-620-J			**TX620J**		Analyst: **YK**
Chloride	40	5	mg/Kg	1	25-May-18
TEX-620-J			**TX620J**		Analyst: **YK**
Sulfate	162	25	mg/Kg	1	25-May-18

Approved by: 

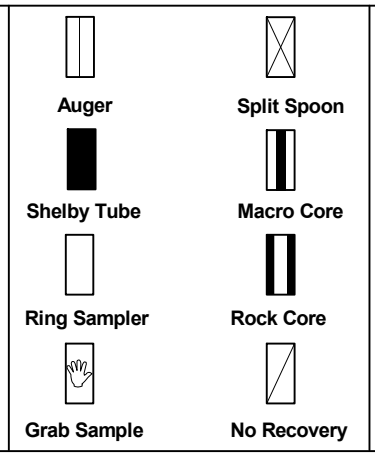
Report of Laboratory Analysis

APPENDIX C

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength, Qu, tsf**	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**
Very Loose	0 - 3	0 - 6	Very Soft	less than 0.25	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	0.25 to 0.50	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	0.50 to 1.00	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	1.00 to 2.00	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	2.00 to 4.00	15 - 30	19 - 42
			Hard	> 4.00	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines Classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

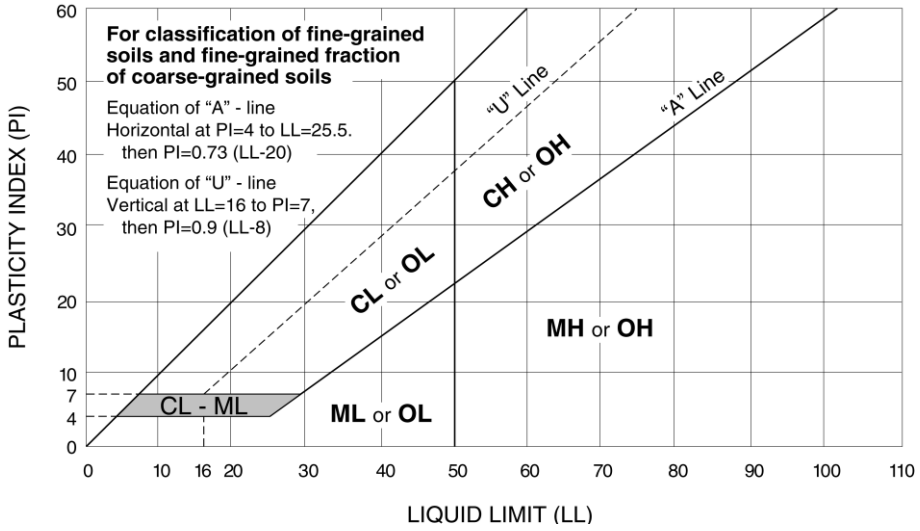
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

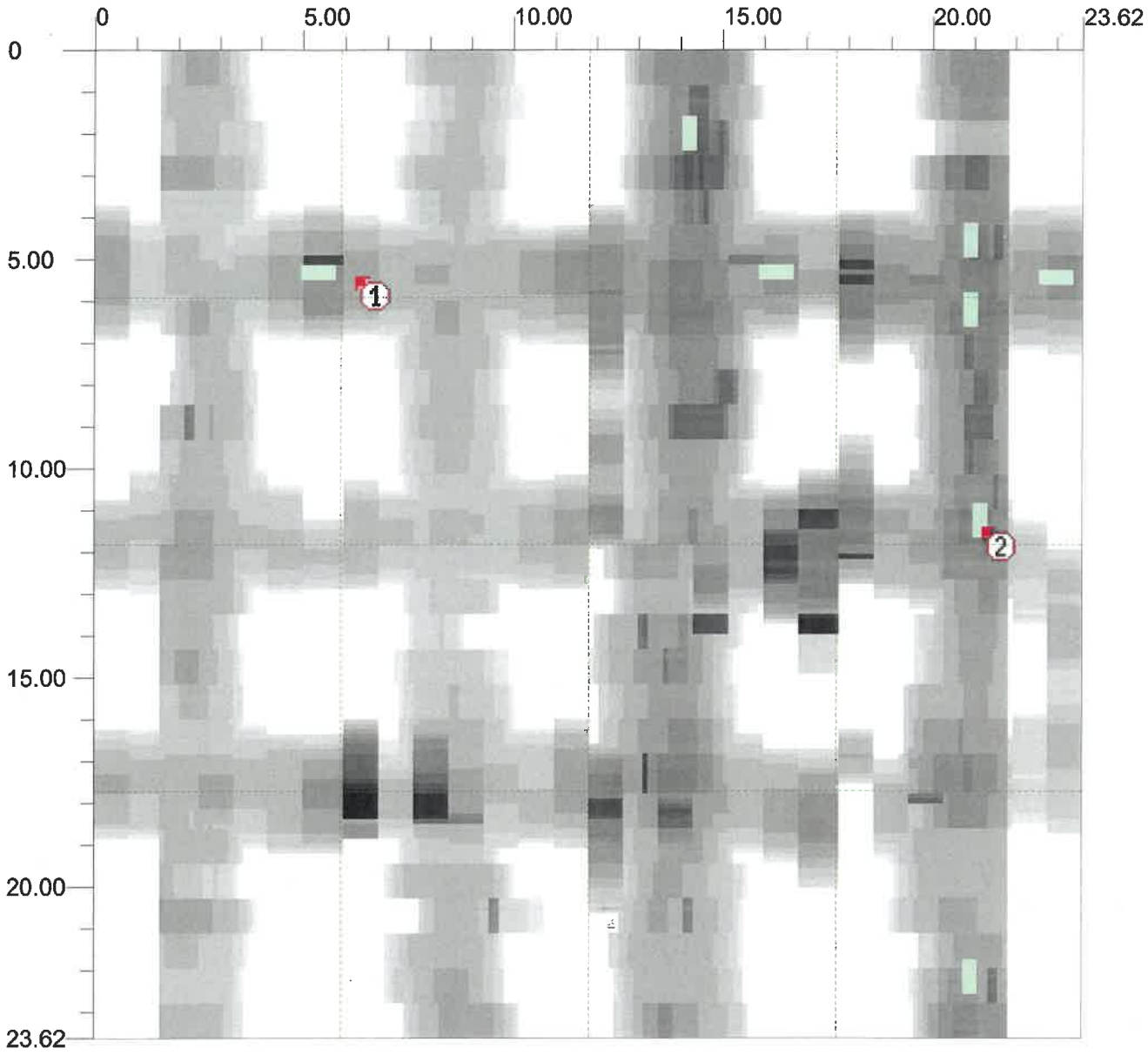
[Q] PI plots below "A" line.



APPENDIX D

Imagescan: FS000931.XFF

Date / Time: 2018-05-16 13:03:12 SSN: 00708010 [in]



Customer: Gulf Coast Architectural Group, Inc

Location: Hazardous Waste Storage (scan #1) Operator: N.Gunn

Comment:

Scan shows reinforcing 6" spacing size is not able to be verified. Wire reinforcing cannot be measured for size.

File Storage: D:\Projects\Prj00005\FS000931.XFF

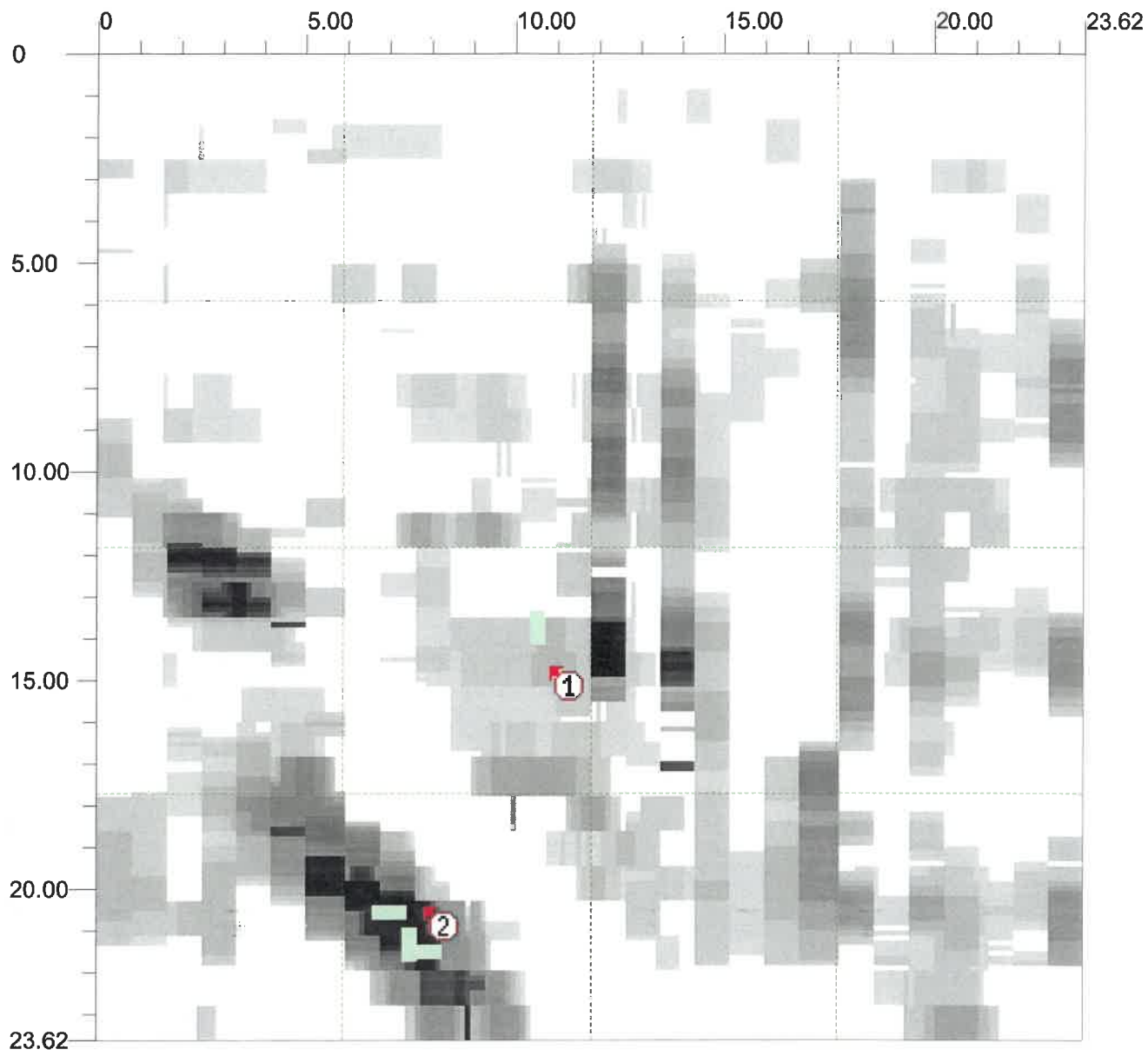
Project: 90185088

Imagescan: FS000931.XFF

Marker:	x: [in]	y: [in]	Comment:
1	6.31	5.45	Horizontal reinforcing has 3.74" concrete cover
2	21.30	11.49	Vertical reinforcing has 3.62" concrete cover

Imagescan: FS000932.XFF

Date / Time: 2018-05-16 13:05:24 SSN: 00708010 [in]



Customer: Gulf Coast Architectural Group, Inc

Location: Hazardous Waste Storage (scan #2) Operator: N.Gunn

Comment:

Scan shows reinforcing 6" spacing size is not able to be verified. Wire reinforcing cannot be measured for size

File Storage: D:\Projects\Prj00005\FS000932.XFF

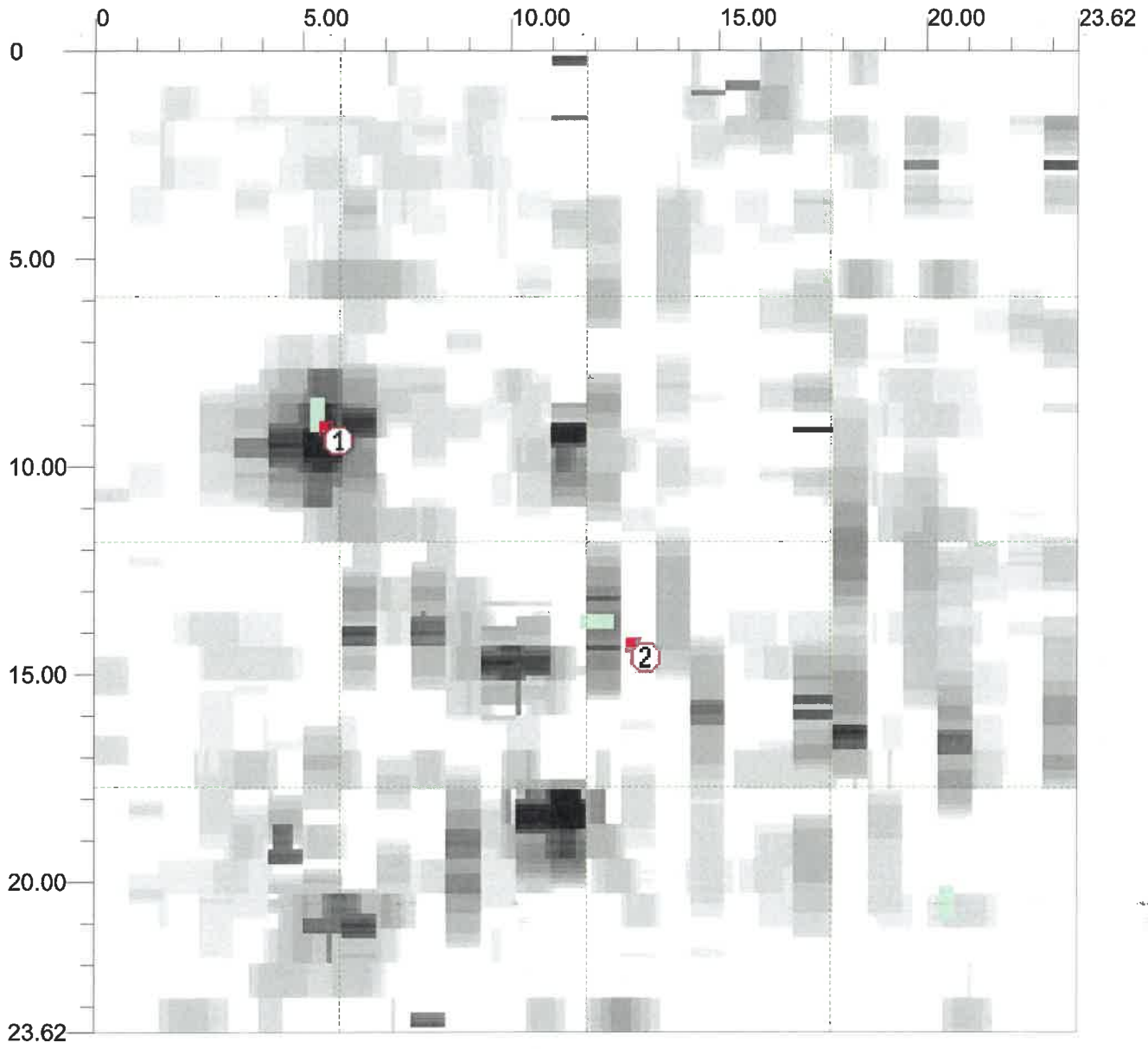
Project: 90185088

Imagescan: FS000932.XFF

Marker:	x: [in]	y: [in]	Comment:
1	10.89	14.78	Vertical reinforcing has 4.96" concrete cover
2	7.87	20.55	Horizontal reinforcing has 3.35" concrete cover

Imagescan: FS000933.XFF

Date / Time: 2018-05-16 13:07:39 SSN: 00708010 [in]



Customer: Gulf Coast Architectural Group, Inc

Location: Hazardous Waste Storage (scan #3) Operator: N.Gunn

Comment:

Scan shows reinforcing 6" spacing size is not able to be verified. Wire reinforcing cannot be measured for size

File Storage: D:\Projects\Prj00005\FS000933.XFF

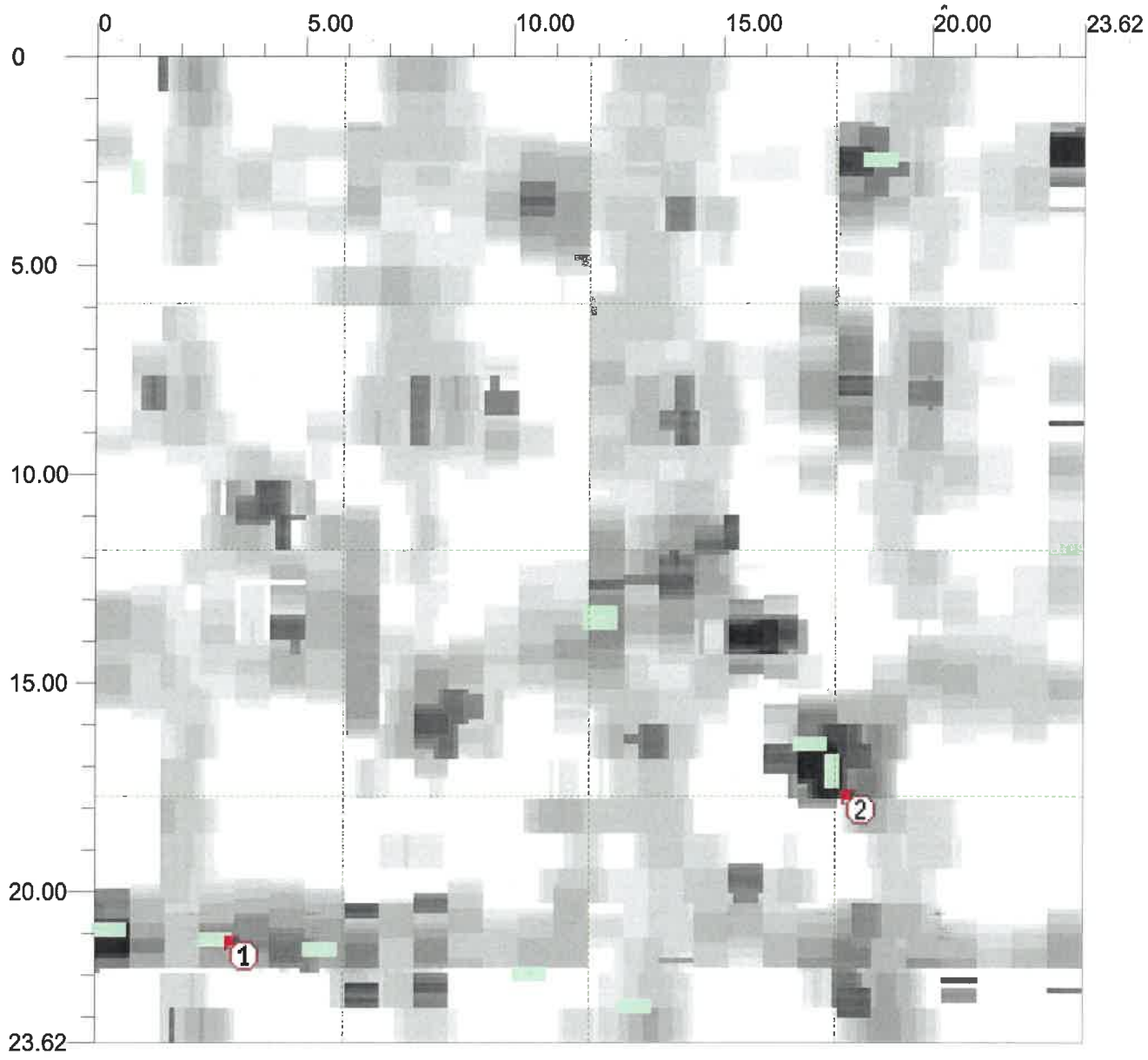
Project: 90185088

Imagescan: FS000933.XFF

Marker:	x: [in]	y: [in]	Comment:
1	5.45	8.95	Vertical reinforcing has 3.35" concrete cover
2	12.84	14.24	Horizontal reinforcing has 3.70" concrete cover

Imagescan: FS000934.XFF

Date / Time: 2018-05-16 13:09:45 SSN: 00708010 [in]



Customer: Gulf Coast Architectural Group, Inc

Location: Hazardous Waste Storage (scan #4) Operator: N.Gunn

Comment:

Scan shows reinforcing 6" spacing size is not able to be verified. Wire reinforcing cannot be measured for size

File Storage: D:\Projects\Prj00005\FS000934.XFF

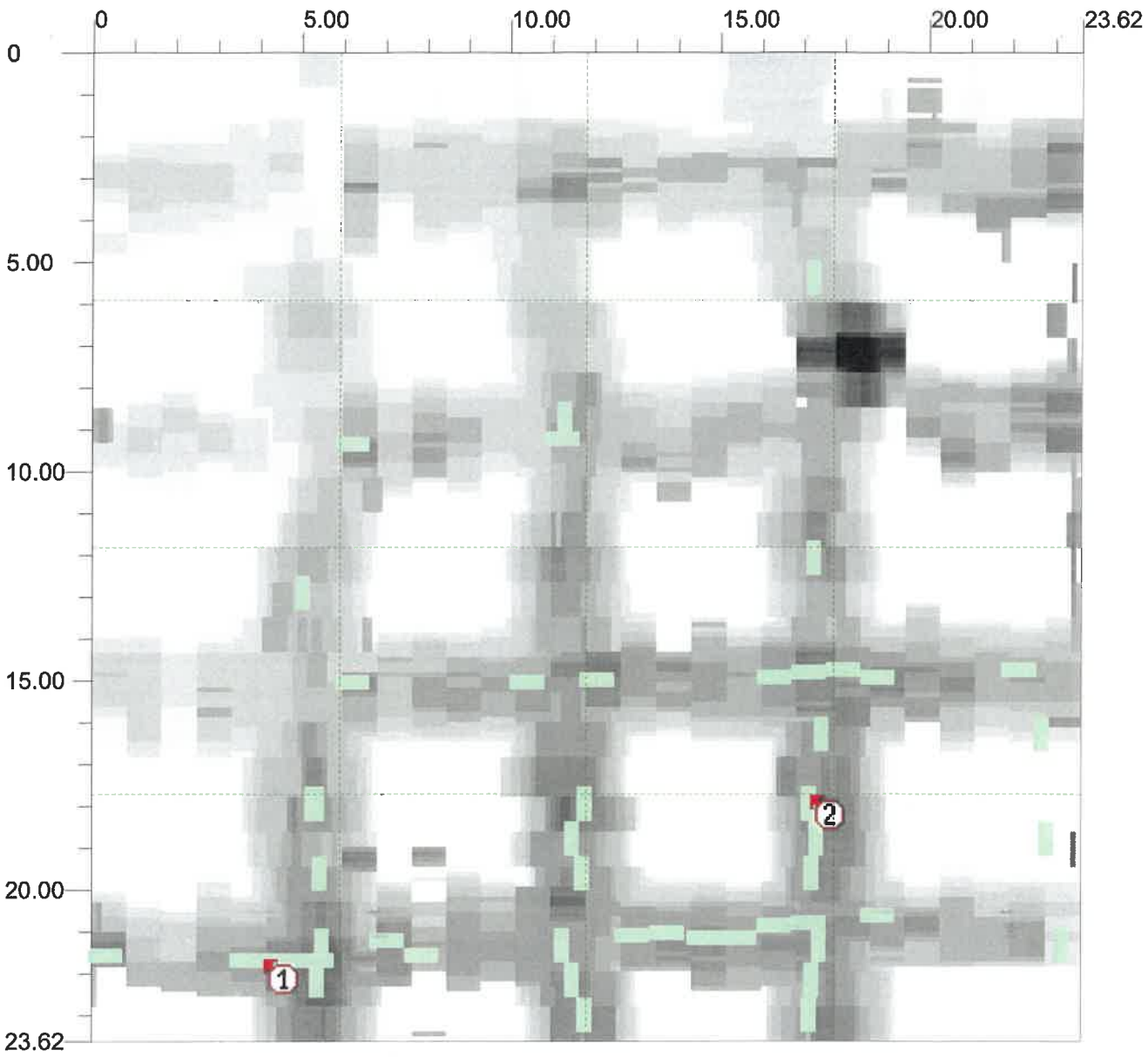
Project: 90185088

Imagescan: FS000934.XFF

Marker:	x: [in]	y: [in]	Comment:
1	3.13	21.20	Horizontal reinforcing has 3.86" concrete cover
2	17.96	17.69	Vertical reinforcing has 3.58" concrete cover

Imagescan: FS000935.XFF

Date / Time: 2018-05-16 13:11:27 SSN: 00708010 [in]



Customer: Gulf Coast Architectural Group, Inc

Location: Hazardous Waste Storage (scan #5) Operator: N.Gunn

Comment:

Scan shows reinforcing 6" spacing size is not able to be verified. Wire reinforcing cannot be measured for size.

File Storage: D:\Projects\Prj00005\FS000935.XFF

Project: 90185088

Imagescan: FS000935.XFF

Marker:	x: [in]	y: [in]	Comment:
1	4.15	21.79	Horizontal reinforcing has 3.19" concrete cover
2	17.26	17.85	Vertical reinforcing has 3.19" concrete cover

Part B
Attachment H
Closure Plan

Closure Plan for The Hazardous Waste Storage Facility at Naval Air Station Corpus Christi

Regulatory Requirements

This Closure Plan is in accordance with the requirements of 40 CFR Part 264, Subpart G (per 30 TAC Chapter 335.152(a)(5)). RCRA and Texas Risk Reduction Program (TRRP) TRRP-30 TAC 350 require a similar closure performance standard as found in 40 CFR 246.111- 264.114 and in 30 TAC 350.2(h) and documented in TRPP Compatibility with RCRA (TRRP-3). This plan identifies all steps that will be necessary to completely close the Hazardous Waste Storage Facility. Closure plans are required for hazardous waste management facilities to ensure that all facilities are closed in a manner that (1) controls, minimizes the need, or eliminates escape of hazardous waste or constituents into the environment, and (2) minimizes the need for post closure maintenance. As required in 40 CFR 264.110, a closure plan has been developed covering hazardous waste management operations at the Hazardous Waste Storage Facility, Naval Air Station (NAS) Corpus Christi, Corpus Christi, Texas. This plan conforms to the standard of closure found in TRRP (30 TAC 350),"closure without release". This plan identifies steps necessary to completely close the facility at any time during its intended life and/or at the end of its intended life. This Closure Plan must be amended when:

- Changes in the operating procedures, technology, standard engineering practices or design affect the closure plan;

- In conducting partial or final closure activities, unexpected events require a modification of the approved closure plan; or

- NAS Corpus Christi requests the Executive Director to apply alternative requirements to a regulated unit.

NAS Corpus Christi will maintain an on-site copy of the approved closure plan and all revisions to the plan until the Certification of Closure Completeness has been submitted and accepted by the Texas Commission on Environmental Quality (TCEQ). NAS Corpus Christi will notify the TCEQ at least 45 days prior to the date the storage facility expects to start closure (40 CFR Part 264.112(d). Upon completion of closure, NAS Corpus Christi will submit to the TCEQ, a certification by the facility and by an independent registered Professional Engineer in the State of Texas, that the facility has been closed in accordance with the specifications in the approved closure plan.

The Environmental Office at NAS Corpus Christi will maintain the most recent version of the Closure Plan. Copies of the plan will also be transmitted to the Executive Director of the TCEQ.

At a maximum, the hazardous waste storage facility will contain 21,120 gallons of waste.

Closure Performance Standard

This Closure Plan follows TRRP-3 guidance (as updated) and was developed to ensure that the facility will not require further maintenance control to prevent environmental contamination due to this storage facility. It minimizes or eliminates threats to human health and the environment. It confirms that escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainwater, or waste decomposition products to soil, groundwater, surface waters, or atmosphere will not occur. If there is evidence of any spills or leaks at the time of closure, samples will be taken and analyzed to identify the extent of contamination in the soil, and if necessary, in the groundwater. The clean-up level for potential release will be the TRRP critical protective concentration levels (PCLs) found at https:// www.tceq.texas.gov/remediation/trrp/trrppcls.html.

Figure 3 in TRRP-12 (Affected Property Assessment Requirements) will be used to identify contaminated soil affected by material handled at this storage facility in excess of the TRRP critical PCL. Contaminated soil will be excavated, removed, and disposed at a permitted Treatment Storage and Disposal Facility (TSDF) or other approved facility. Any contaminated groundwater affected by material handled at this storage facility will be remediated for the chemicals of concern found to emanate from this storage facility. Any monitoring, remediation, and/or disposal of groundwater will be based on applicable industry, EPA and TCEQ standards.

The design of the Hazardous Waste Storage Facility (HWSF) provides for containment of internal spills or leaks. The design includes floors sloped towards containment sumps located across the entrance and back ends of each storage bay. The HWSF Contingency Plan requires the immediate removal of contaminated soil in the event of a spill or leak during loading, unloading, or transfers to the HWSF. The Contingency Plan also requires the immediate cleanup and decontamination of HWSF surfaces in the event of a spill within the facility. Based on these measures, soil and groundwater contamination is not likely to occur.

Hazardous Waste Storage Facility Final Closure

NAS Corpus Christi expects to perform closure of the storage facility when all the containers are removed for final disposal and the facility will no longer be used as a hazardous waste storage facility. Procedures for final closure, including container removal, decontamination and clean-up activities are described below.

Inventory Removal

The influx of waste will cease when preparation for decontamination begins. The existing waste will be inventoried by NAS Corpus Christi personnel and transferred to a RCRA permitted TSDF.

Decontamination

Upon removal of all waste containers, the hazardous waste storage facility will be decontaminated by rinsing the floors and sumps with a high-pressure water spray as necessary to remove contaminants of concern (COC). Rinse water will be collected in the sumps for analysis. An accredited environmental laboratory will test rinse water after each rinse to verify decontamination. If analysis verifies that decontamination is not complete, the rinsing procedure will continue until analysis verifies that decontamination is complete. After each rinse has been made, all collected rinse water will be containerized for removal and disposal either at the onsite Industrial Wastewater Treatment plant or, if needed, at an off-site TSDF or off-site wastewater treatment facility.

Decontamination verification shall be determined by chemical analysis of the rinse water. The rinse water shall be analyzed for the parameters shown in the Decontamination Water and Soil Chemical Analysis Parameters Table shown below. The concrete floor will be declared "clean" with no further need of decontamination when the latest rinse water analysis shows COC concentrations below the critical PCL for the parameters presented below.

If the collected decontamination water is shown to contain levels of pollutant at or below the permitted discharge standards for NAS Corpus Christi Industrial Wastewater Treatment Plant (IWTP) effluent, then it may be sent to the inflow box of the IWTP for treatment and disposal to the sanitary sewer. If decontamination water is shown to contain levels of the chemicals of concern sufficient to classify the water as hazardous, it will be sent to a RCRA permitted hazardous waste disposal facility.

The facility decontamination will be accomplished under the supervision of NAS Corpus Christi Environmental Office personnel. During the decontamination procedures, all personnel will wear the personal protective equipment (PPE) deemed appropriate for the situation. Prior to leaving the site, all personnel will remove and discard PPE items that cannot be cleaned and reused, and the materials will be sealed in a container and shipped for disposal at a TSDF.

Decontamination Water and Soil Chemical Analysis Parameters (in accordance with the TRRP lab methods)

pH

Total Metals - RCRA 8 (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver)

Cyanide

Toluene

Methyl-Ethyl Ketone (MEK)

n-Butyl Alcohol Xylene

Isopropyl Alcohol

1,1,1,-Trichloroethane

Acetone

Perchloroethylene

Methylene Chloride

Soil Sampling Protocol

Soil samples will be collected by hand auger at intervals not more than thirty feet (smaller intervals are acceptable) around the exterior of the storage facility and at a distance of two feet from the facility to a depth range of one to two feet, and analyzed for the parameters shown in the Decontamination Water and Soil Chemical Analysis Parameters shown above. Soil found to exceed applicable critical PCLs or the Texas background concentrations will be excavated and containerized for off-site disposal at a permitted TSDF and replaced with "uncontaminated" soil.

The soils surrounding the Hazardous Waste Storage Facility shall be considered "contaminated" if the storage facility soil parameter concentrations are greater than the critical PCLs.

Closure Certification Report

The Certification Closure Report shall be sealed by a State of Texas registered Professional Engineer in accordance with 40 CFR Part 264.115. Final rinse water chemical analysis, soil sample analysis, and critical PCL values shall be included in this report. The report shall certify that the facility was closed according to the details in this plan, in accordance with the requirement set forth in 40 CFR Part 264, 30 TAC 335.152(A)(5), and in accordance with good engineering practice. The closure certification report will be submitted within 60 days of completing final facility closure.

Milestone Dates

Milestone dates are shown below on the schedule of events for closure. These dates are based from an arbitrary day zero which is the day closure activity actually is started.

Schedule of Events for Closure Action Taken	Days After Proposed Start of Closure
1. Start Closure – Stop Receiving Waste	0
2. Notify TCEQ prior to sampling activities	10
3. Test, Certify, and Ship Final Waste for Disposal	90
4. Clean Hazardous Waste Storage Facility - Decontamination	120
5. Process Decontamination Rinse Water in IWTP or ship Off-Site	120
6. Sample and Analyze Soil Surrounding Storage Facility, if necessary	150
7. Prepare and Submit Closure Certification Report	180

Within 180 days following the acceptance of the last volume of waste, all closure activities must be completed as per the above plans. The TCEQ may approve a longer closure period if it can be demonstrated that:

1. Required closure will, of necessity, take longer the 180 days to complete, and
2. All necessary steps have been taken to eliminate threat to the environment.

Post Closure

No post closure monitoring or post closure activities are anticipated since all hazardous waste will be removed and the residual removed as part of the closure plan.

Part B
Attachment J
Unsuitable Site Characteristics Report

30 TAC 335.204(a) Unsuitable Site Characteristics for Storage or Processing Facilities

(1). **Flooding:** Although parts of NAS Corpus Christi reside within the 100-year floodplain, the Hazardous Waste Storage Facility does not. See Attachment B of this application for the Topographic Map, which also shows the boundary of the 100-year floodplain. The boundary of the 100-year floodplain was derived from the FEMA Map dated March 2004 for Corpus Christi.

(2). **Wetlands:** See the Integrated Natural Resources Management Plan (INRMP) 2019 Update, Section 2 for NAS Corpus Christi, signed September 2019. NAS Corpus Christi does contain wetlands within its boundaries, but the New Hazardous Waste Storage Facility is not located in or near any wetlands. See attached Figure 2-4 from the INRMP.

(3). **Recharge Zone:** The Final Preliminary Assessment, NAS Corpus Christi Texas, April 2005. Malcom Pirnie, Inc., Pages 3-4, Section 3.6, Hydrogeology states:

The depth to groundwater at NAS Corpus Christi ranges between 4 and 16 feet bgs. This shallow groundwater zone is subject to salt-water intrusion due to the three bays surrounding the activity. The water table aquifer (to approximately 200 feet bgs) is predominantly sand material overlying a clay zone with low permeability. Shallow groundwater that has total dissolved concentrations has been found at locations on the activity between 300 and 11,000 milligrams per liter; however, there are no identified users of this groundwater zone. Artesian aquifers underlying NAS Corpus Christi (250 to 2,800 feet bgs) are moderately to highly saline and, therefore, have limited potential use. Potable water for the activity is supplied from Lake Corpus Christi, 40 miles to the northwest.

(4). **Regional Aquifer:** See Appendix B of the 2007 Compliance Plan, Attachment I of the Part B Permit, for Geology and Hydrogeology information. Also, see Engineering Report, Attachment G, for secondary containment that precludes mitigation to groundwater from spills, leaks, and discharges.

(5). **Soil:** See Engineering Report, Attachment G of this application, for secondary containment that precludes mitigation to groundwater or surface water from spills, leaks, and discharges.

(6). **Direct Lake Drainage:** The Hazardous Waste Storage Facility is not located within 1 mile of a lake that is used to supply public drinking water through a public water system. See Attachment B of this application, Plain View Map of NAS Corpus Christi.

(7). **Geologic Processes:** NAS Corpus Christi is on the Gulf Coast, which is subject to hurricanes and associated wind and water. See attached USGS Quaternary Faults and Folds Database map which indicates the activity is not in an active earthquake area.

(8). **Critical Habitat:** The Hazardous Waste Storage Facility is not located in critical habitat for any endangered species of plant or animal. See Integrated Natural Resources Management Plan 2019 Update, Section 2 for NAS Corpus Christi, signed September 2019. See attached Figure 2-4 from the INRMP.

(9). **Location Near Faults:** The Hazardous Waste Storage Facility is not located within 30 feet of the upthrown side or 50 feet of the downthrown side of any actual or inferred surface expression of a fault. See attached USGS National Seismic Hazard Maps, 2014.

Legend

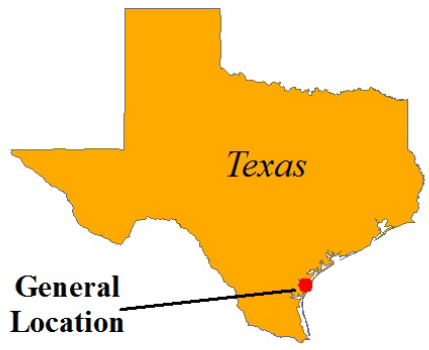
- Installation Area
- Building
- Airfield
- Road

Opportunities

- Undeveloped
- Parking Area

Constraints

- 100-Year Floodplain
- 500-Year Floodplain
- Wetlands surveyed in 2004
- Additional Wetlands (National Wetlands Inventory)
- Clear Zone
- Piping Plover Critcal Habitat
- Waterbody
- Drainage



0 0.25 0.5 1 Miles
0 0.25 0.5 1 Kilometers

Sources: Navy 2012, ESRI 2011, USGS, Water Resources Division 2012, USFWS National Wetlands Inventory 2012, and Texas Natural Resources Information System 2012a.

Figure 2-4. Main Station Opportunties and Constraints.

Date: April 2013

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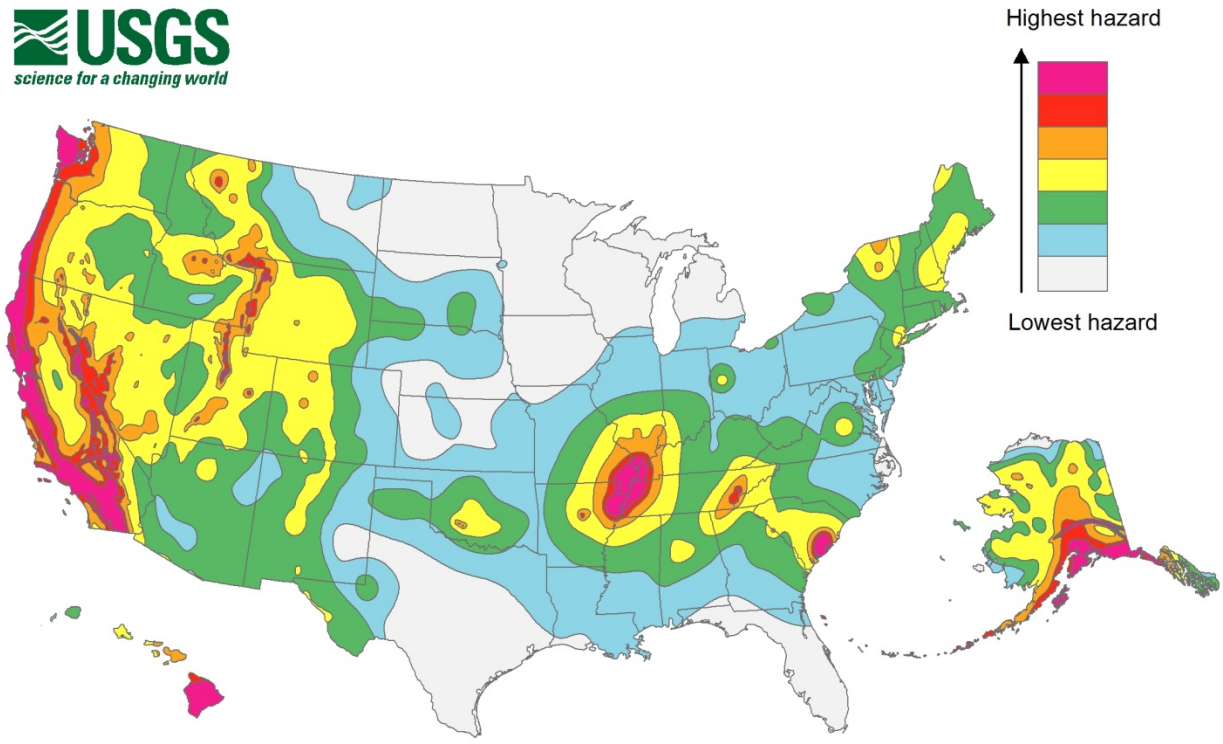
USGS Quaternary Faults and Folds Database

USGS National Seismic Hazard Map 2014



Part B
Attachment L
Air Emissions Report

NAS Corpus Christi does not have process vents or operate any equipment at the Hazardous Waste Storage Facility, that could cause leaks into the atmosphere. NAS Corpus Christi does not store hazardous waste in tanks or surface impoundments. Storage of hazardous waste is limited to containers. NAS Corpus Christi only uses containers that meet the applicab1e DOT regulations on packaging hazardous materials for transportation. Waste stabilization/treatment does not occur in any containers. To further control air pollutant emissions, containers are kept closed except to add, remove, or sample waste

To maintain compliance with RCRA Subpart CC to control volatile organic air emissions from hazardous "Waste in containers, NAS Corpus Christi meets Container Level 1 standards by using only DOT-certified 55 gallon containers or smaller for storage of any waste stream regulated by Subpart CC (containing 500 parts per million by weight [ppmw] volatile organic compounds [VOCs] or more). Though larger containers are in use at the Hazardous Waste Storage Facility, they are not used for storage of any waste stream regulated by Subpart CC.

Containers are equipped with a cover that forms a continuous barrier over the container openings so that when the cover device is secured in the closed position, there are no visible holes, gaps, or other open spaces into the interior of the container. Container covers remain closed except for the time necessary to add, remove, or sample waste. In addition, container covers are installed within 15 minutes of completing necessary activities or whenever the person performing the unloading operation leaves the immediate vicinity of the container. Containers used are free of dents, bulges, rust and or other types of damages which compromise structural integrity; thereby, making them unsuitable for containing hazardous wastes. Only containers meeting DOT performance standards set forth in 49 CFR Part 173 will be used at the Hazardous Waste Storage Facility.

To document compliance with these management practices, containers and covers are inspected weekly. Defective containers are immediately replaced. Hazardous Waste Storage Facility weekly inspections require inspectors to notate confirmation that containers inspected are properly closed.

> I, C.C. Jason, certify that the requirements of 40 CFR Part §264, Subpart CC, are met for all containers subject to control.
>
> *[Signature]* _____ *[Date]* _____.