State of Florida

Public Service Commission

CAPITAL CIRCLE OFFICE CENTER • 2540 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32399-0850

-M-E-M-O-R-A-N-D-U-M-

DATE: March 27, 2012

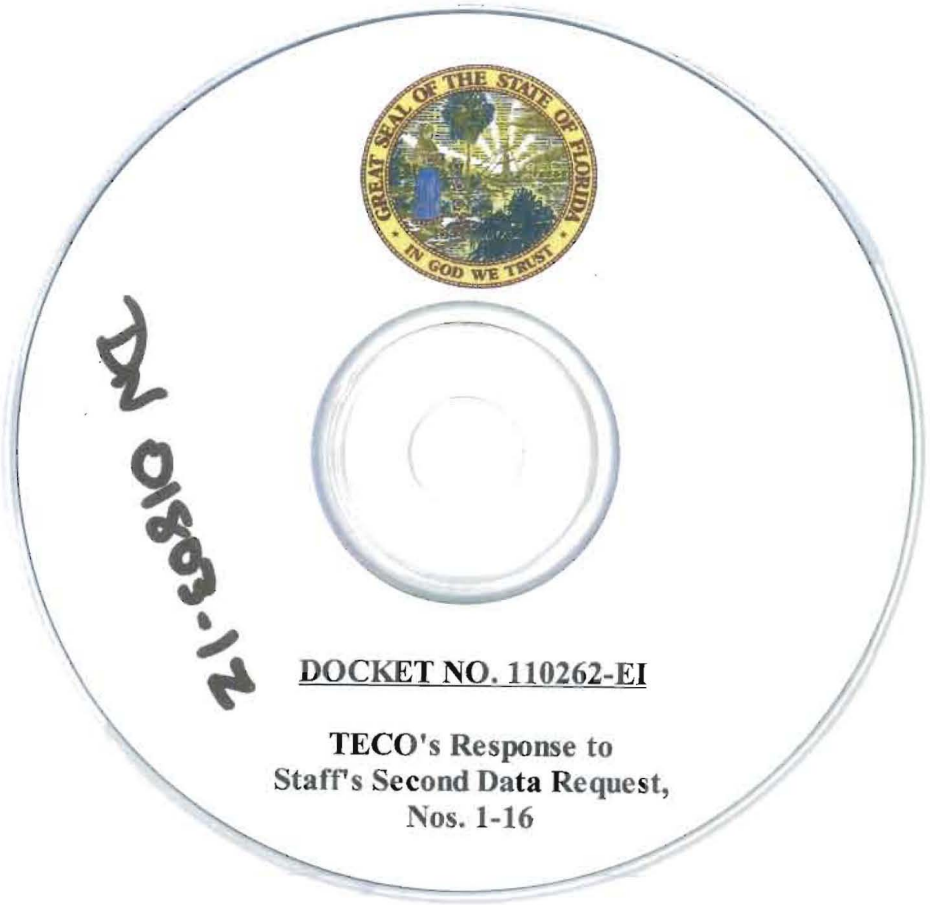
TO: Ann Cole, Commission Clerk, Office of Commission Clerk

FROM: Charles Murphy, Senior Attorney, Office of the General Counsel

RE: Docket Number 110262-EI - Petition for approval of new environmental program for cost recovery through Environmental Cost Recovery Clause, by Tampa Electric Company

Please place the attached CD in the above-referenced docket file. It contains a PDF file that is 169 pages and contains some pages that are in color. This information needs to be accessible through both the PSC website and internally through CMS.

CWM/tef



DOCKET NO. 110262-EI

TECO's Response to
Staff's Second Data Request,
Nos. 1-16

TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
REQUEST NO. 1
BATES STAMPED PAGE: 1
FILED: MARCH 23, 2012

1. At the March 13, 2012, agenda conference, TECO stated that the estimated net impact in 2015 of the new gypsum storage facility was in the range of $.12 to $.15. Please clarify to what these numbers refer (e.g., impact on a typical 1000 kWh residential customer bill, etc.). Please explain and provide all key assumptions that underlie these estimates.

A. The statement that the estimated net impact in 2015 of the new gypsum storage facility was in the range of $0.12 to $0.15 was referring to the net impact on the residential ECRC factor for 1,000 kWh. This estimate was based on the expected overall reduction in capital costs relative to existing capital costs. Specifically, for 2013 Tampa Electric will have 26 ongoing capital projects previously approved for recovery through the ECRC for an estimated total recovery of depreciation and return on capital of $63,422,712. In 2015, due to accumulated depreciation, those projects will have a reduced net investment thereby creating a reduction in recoverable capital costs. The estimated recoverable depreciation and return on capital amounts for 2015 is $59,247,073. That reduction, when compared to the increased capital costs for the new gypsum storage facility, will result in a net incremental increase to the 2015 residential ECRC factor of $0.11 for 1,000 kWh.

2. (a) Please provide any correspondence between the Company and DEP or EPA regarding the need for scrubbers at Big Bend in order to satisfy environmental regulations.

(b) Please provide a pinpoint citation to each legal authority requiring TECO to install the scrubbers at the Big Bend Station and explain how the requirement applies.

A. a. Correspondence between Tampa Electric Company, the U. S. Environmental Protection Agency ("EPA") and the Florida Department of Environmental Protection ("DEP") concerning the need for scrubbers to serve Big Bend Units 1 – 4 is voluminous and covers many years since prior to the EPA's issuance of Prevention of Significant Deterioration ("PSD") Permit No. PSD-FL-040 to Tampa Electric on October 15, 1981 to construct Big Bend Unit 4, down through current and on-going monitoring and reporting. The scrubber serving Big Bend Unit 4 is the EPA approved technology required to meet the emission limit and sulfur removal percentage established as the Best Available Control Technology ("BACT") in Permit No. PSC-FL-040, referred to above. A copy of that permit and a sampling of other relevant correspondence accompany this response. Over the years many items of correspondence between Tampa Electric and EPA and DEP regarding the need for scrubbers serving Tampa Electric's coal-fired units at Big Bend Station have been reviewed by the Commission and its Staff to help form the basis for ECRC cost recovery approvals of the construction, operation and modifications of these scrubbers. They include documents relating to the addition of a scrubber to serve Big Bend Units 1 and 2 and the conversion of the Big Bend Unit 4 scrubber to serve both Big Bend Units 3 and 4.

While the time frame for this response has not permitted the collection, sorting and presentation of all prior correspondence between Tampa Electric and EPA and DEP, the attached representative samples indicate the detailed nature of these communications. Tampa Electric has previously provided copies of its Consent Decree with EPA, issued February 29, 2000, which memorializes the settlement of the EPA's complaint regarding the company's Big Bend Units' compliance with the Clean Air Act. See, e.g., Order No. PSC-07-0499-FOF-EI issued June 11, 2007 in Docket No. 050958-EI in which the Commission approved Tampa Electric's Big Bend Flue Gas Desulfurization System Reliability Program to better enable Tampa Electric to operate its coal units in compliance with the Consent Decree's requirements. As that order indicates, under the requirements set forth paragraph 40 of the Consent Decree, the company cannot operate its base load coal units at Big Bend Station without scrubbing the flue gas from those units. To the extent that Staff believes that further examples

of correspondence between the company and EPA and DEP are necessary, Tampa Electric will attempt to gather and present that information.

b. The construction and operation of Big Bend Unit 4 including the FGD systems was authorized pursuant to the provisions of the Florida Electrical Power Plant Siting Act, section 403.501, et seq., Florida Statutes. The Conditions of Certification PA79 issued by the Florida Governor and Cabinet sitting as the Siting Board require among other things the installation and operation of a scrubber. The U.S. Environmental Protection Agency (EPA) pursuant to the Clean Air Act Amendments of 1977, issued a Prevention of Significant Deterioration PSD (PSD-FL-040) permit to Tampa Electric on October 15, 1981 to construct Big Bend Unit 4. The PSD process includes the establishment of the best available control technology (BACT). The BACT determination made by EPA for Big Bend Unit 4 was an emission limit requiring the installation and operation of a scrubber to control sulfur dioxide emissions.

For Big Bend Units 1 and 2, the SO_2 emission reductions set forth in Phase II of the Clean Air Act Amendments of 1990 (CAAA) were the legal authority requiring Tampa Electric to install a scrubber to serve these two units. In a July 11, 1999 order[1] the Commission approved the scrubber jointly serving Big Bend Units 1 and 2 for ECRC cost recovery based on the Commission's finding that the scrubber was the most cost-effective alternative for compliance with the SO_2 reductions required under Phase II of the CAAA.

The scrubber serving Big Bend Units 3 and 4 likewise was required for compliance with the SO_2 reduction requirements of the CAAA. In an August 14, 1996 order the Commission approved for ECRC cost recovery the Big Bend Unit 3 flue gas desulfurization integration which was a project for scrubbing the flue gas from Big Bend Unit 3 by modifying the scrubber that had previously served Unit 4 so that it could serve both Units 3 and 4.[2] The Commission specifically found that the project satisfies the requirements of both Phase I and Phase II of the CAAA.

The scrubbers serving Big Bend Units 1 – 4 are also required for compliance with Tampa Electric's Consent Decree with the United States Environmental Protection Agency (EPA), issued February 29, 2000. Specifically, under the requirements set forth in paragraph 40 of the Consent Decree, Tampa Electric cannot operate its base load coal units at Big Bend Station without scrubbing the flue gas from those Units. Since the scrubber serving Unit 3 also serves Unit 4, this effectively precludes operating Unit 4 unscrubbed, as well. In a June 11,

[1] Order No. PSC-99-0075-FOF-EI issued January 11, 1999 in Docket No. 980693-EI, Re: Tampa Electric Company
[2] Order No. PSC-96-1048-FOF-EI issued August 14, 1996 in Docket No. 960683-EI, Re: Tampa Electric Company

2000 order[3] the Commission approved for ECRC cost recovery Tampa Electric's Big Bend Flue Gas Desulfurization System Reliability Program (FGD Reliability Program) for improved reliability of the scrubbers on Big Bend Units 1, 2 and 3 in order to enable the company to comply with the above-referenced provisions of the Consent Decree.

[3] Order No. PSC-07-0499-FOF-EI issued in Docket No. 050958-EI, In Re: Petition for Approval of New Environmental Program for Cost Recovery Through Environmental Cost Recovery Clause by Tampa Electric Company.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OCT 15 1981

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Heywood A. Turner
Senior Vice President Production
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601

Re: PSD-FL-040 / Tampa Electric Company
Big Bend Station, Unit 4

Dear Mr. Turner:

The review of your March 1980 application to construct a coal-fired steam electric generating unit (Unit 4) located at Big Bend Station near Ruskin, Florida, has been completed. The construction is subject to rules for the Prevention of Significant Air Deterioration (PSD) contained in 40 C.F.R. §52.21.

We have determined that the construction as described in the application meets all applicable requirements of the PSD regulations. Accordingly, enclosed with this letter is your permit package including a Permit to Construct, Part I: Specific Conditions, and Part II: General Conditions. This authorization to construct is based solely on the requirements of 40 C.F.R. §52.21 and does not apply to other permits issued by this or any other agency.

This final permit decision is subject to appeal under 40 C.F.R. §124.19 by petitioning the Administator of the EPA within 30 days after receipt of this notice of the final permit decision. The petitioner must submit a statement of reasons for the appeal and the Administrator must decide on the petition within a reasonable time period. If the petition is denied, the permit becomes immediately effective. The petitioner may then seek judicial review.

Authority to construct this facility will take effect on the date specified in the permit. The complete analysis which justifies this approval has been fully documented for future reference is necessary. Any questions concerning this approval may be directed to Mr. Richard Schutt, Chief, Permit Processing Section, at 404/881-2017.

Sincerely yours,

for

Howard D. Zeller
Acting Director
Enforcement Division

cc: Mr. Steve Smallwood, FL DER

OCT 1981
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A Q M

Permit No.: PSD-FL-040

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

PERMIT TO CONSTRUCT UNDER THE RULES FOR THE
PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY

Pursuant to and in accordance with the provisions of Part C, Subpart 1 of the Clean Air Act, as amended, 42 U.S.C. § 7470 et seq., and the regulations promulgated thereunder at 40 C.F.R. § 52.21, as amended at 45 Fed. Reg. 52676, 52735-41 (August 7, 1980),

Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601

is hereby authorized to construct/modify a stationary source at the following location:

Big Bend Station, Unit 4
Tampa Electric Company
Ruskin, Florida

UTM Coordinates: 361.6 East, 3075.0 North

Upon completion of this authorized construction and commencement of operation/production, this stationary source shall be operated in accordance with the emission limitations, sampling requirements, monitoring requirements and other conditions set forth in the attached Specific Conditions (Part I) and General Conditions (Part II).

This permit shall become effective on November 14, 1981.

If construction does not commence within 18 months after the effective date of this permit, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time this permit shall expire and authorization to construct shall become invalid.

This authorization to construct/modify shall not relieve the owner or operator of the responsibility to comply fully with all applicable provisions of Federal, State, and Local law.

10/15/81
Date Signed

Howard D. Zeller
Acting Director
Enforcement Division

PART I: SPECIFIC CONDITIONS

1. The proposed steam generating station shall be constructed and operated in accordance with the capabilities and specifications of the application including the 417 megawatt net generating capacity and the 4330 MMBtu/hr heat input rate.

2. Emissions shall not exceed the allowable emission limits listed in Table 1 for SO_2, NO_x, PM, and CO.

3. Compliance with the boiler allowable emission limits required in Condition 2 will be demonstrated with performance tests conducted in accordance with the provisions of 40 CFR 60.46a, 48a and 49a, including applicable test methods, sampling procedures, sample volumes, sampling periods, etc. Compliance with opacity limits on the limestone and flyash handling system baghouse, the limestone day silos and the flyash silos will be determined with EPA reference method 9 (Appendix A, 40 CFR 60). These facilities are exempted from mass emission rate compliance tests unless opacity limits are exceeded or the Administrator (or his representative) otherwise determines that such performance testing is required. All facilities will operate within 10 percent of maximum operating capacity during performance tests.

4. The applicant will install and maintain continuous monitoring and recording opacity meter, sulfur dioxide and nitrogen oxide analyzers, oxygen and/or CO_2 analyzer in accordance with the provisions of 40 CFR 60.47a.

5. The following requirements will be met to minimize fugitive emissions of particulate from the coal storage and handling facilities, the limestone storage and handling facilities, haul roads and general plant operations:

   a. All conveyors and conveyor transfer points will be enclosed to preclude PM emissions excepting the coal handling stacker reclaimer, the tail end conveyor feeding the tripper and the barge unloading belt which are exempted for feasibility considerations;

   b. Coal storage piles will be shaped, compacted and oriented to minimize wind erosion;

   c. Water sprays for storage piles, handling equipment etc., including the handling equipment exempted from the conveyor enclosure requirement, will be applied during dry periods and as necessary to all facilities to maintain opacity (determined with reference Method 9) below 20 percent;

   d. The limestone handling receiving hopper, conveyor transfer points and day silos will be maintained at negative pressures with the exhaust vented to a control system(s); and

   e. The flyash handling system (including transfer and silo storage) will be maintained at negative pressures and vented to a control system.

6. The applicant will perform post-construction continuous ambient monitoring of sulfur dioxide emissions in accordance with EPA Region IV policies and procedures and the guidance offered in "Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD)", EPA-450/2-78-019, May 1978 and the quality

assurance procedures of 40 CFR 58 Appendix B. Such monitoring will be continued for a period of at least 1 year and until determined by the Administrator (or his representative) that the effects of the modification on ambient air quality have been quantified.

7. The applicant will comply with all requirements and provisions of the New Source Performance Standard for electric utility steam generating units (40 CFR 60 Part Da). In addition, the applicant must comply with the provisions and the requirements of the attached General Conditions.

8. While Tampa Electric Company has complied with the regulations entitling them to this PSD permit (40 CFR 52.21), this does not constitute an environmental endorsement of this permit nor does it in any way prejudge or predetermine the ongoing EIS review.

9. If it is determined through the NPDES permitting process or related EIS review, that cooling towers would be required for the construction and operation of the facility at this location, this permit would be revoked and a complete new application would be required addressing all new emissions and subsequent requirements for this new plant configuration.

10. The applicant must submit to EPA Region IV's Consolidated Permits Branch within five (5) working days after it becomes available, copies of all technical data pertaining to the selected control devices, including formal bids from vendors, guaranteed efficiencies or emission rates. Although the type of control equipment described in the application has been determined by EPA to be adequate, EPA may, upon review of the data, disapprove the application if EPA determines the selected devices to be inadequate to meet the emission limits specified in this conditional approval.

11. The applicant shall maintain records of all coal washing and preparation activities for any coal which is to be fired in Big Bend Unit No. 4. These reports shall be submitted to EPA on a quarterly basis.

1. The permittee shall notify the permitting authority in writing of the beginning of construction of the permitted source within 30 days of such action and the estimated date of start-up of operation.

2. The permittee shall notify the permitting authority in writing of the actual start-up of the permitted source within 30 days of such action and the estimated date of demonstration of compliance as required in the specific conditions.

3. Each emission point for which an emission test method is established in this permit shall be tested in order to determine compliance with the emission limitations contained herein within sixty (60) days of achieving the maximum production rate, but in no event later than 180 days after initial start-up of the permitted source. The permittee shall notify the permitting authority of the scheduled date of compliance testing at least thirty (30) days in advance of such test. Compliance test results shall be submitted to the permitting authority within forty-five (45) days after the complete testing. The permittee shall provide (1) sampling ports adequate for test methods applicable to such facility, (2) safe sampling platforms, (3) safe access to sampling platforms, and (4) utilities for sampling and testing equipment.

4. The permittee shall retain records of all information resulting from monitoring activities and information indicating operating parameters as specified in the specific conditions of this permit for a minimum of two (2) years from the date of recording.

5. If, for any reason, the permittee does not comply with or will not be able to comply with the emission limitations specified in this permit, the permittee shall provide the permitting authority with the following information in writing within five (5) days of such conditions:

   (a) Qualitative and quantitative description of noncomplying emission(s),

   (b) cause of noncompliance,

   (c) anticipated time the noncompliance is expected to continue or, if corrected, the duration of the period of noncompliance,

   (d) steps taken by the permittee to reduce and eliminate the noncomplying emission,

   and

   (e) steps taken by the permittee to prevent recurrence of the noncomplying emission.

   Failure to provide the above information when appropriate shall constitute a violation of the terms and conditions of this permit. Submittal of this report does not constitute a waiver of the emission limitations contained within this permit.

6. Any change in the information submitted in the application regarding facility emissions or changes in the quantity or quality of materials processed that will result in new or increased emissions must be reported to the permitting authority. If appropriate, modifications to the permit may then be made by the permitting authority to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause violation of the emission limitations specified herein.

7. In the event of any change in control or ownership of the source described in the permit, the permittee shall notify the succeeding owner of the existence of this permit by letter and forward a copy of such letter to the permitting authority. Such notification must be given prior to transfer of ownership.

8. The permittee shall allow representatives of the State environmental control agency and/or representatives (including contractors) of the Environmental Protection Agency, upon the presentation of credentials:

   (a) to enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of the permit;

   (b) to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit, or the Act;

   (c) to inspect at reasonable times any monitoring equipment or monitoring method required in this permit;

   (d) to sample at reasonable times any emission of pollutants;

   and

   (e) to perform at reasonable times an operation and maintenance inspection of the permitted source.

9. All correspondence required to be submitted by this permit to the permitting agency shall be mailed to the:

   Chief, Compliance Branch
   Enforcement Division, EPA Region IV
   345 Courtland Street, NE
   Atlanta, Georgia 30365

10. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

The emission of any pollutant more frequently or at a level in excess of that authorized by this permit shall constitute a violation of the terms and conditions of this permit.

TABLE 1

ALLOWABLE EMISSION LIMITS

Facility	POLLUTANTS								
	SO_2		NO_x		PM		CO		
	lb/MMBtu	lb/hour	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	lb/MMBtu	lb/hr	Opacity
1. Unit 4 Boiler (4330 MMBtu/hr) Continuous Limit					0.03	130	0.014	61	20%[a]
30 Day Rolling Average	0.82	3576	0.6	2598					
2. Limestone and Handling System Baghouse						0.65[b]			5%
3. Limestone Day Silo						0.05[b]			5%
4. Flyash Silos and Handling System						0.2[b]			5%

[a] Not to be exceeded for more than one six minute period per hour and never to exceed 27 percent opacity.

[b] Exempt from compliance testing provided opacity limit is maintained.

Response to Comment on the Revised Preliminary Determination

Tampa Electric Company

PSD-FL-040

Comments were received from one source during the public comment period for Tampa Electric Company's (TECO) proposed electric generating unit (Big Bend Unit 4). The public comment period, which closed on September 2, 1981, was for the Revised Preliminary Determination issued in the Draft Environmental Impact Statement. A summary of the comments received and EPA Region IV responses are as follows:

Comment 1:

The commenter noted that a sentence in the BACT discussion for NO_x and CO referred to a requirement for a flue gas O_2 or CO_2 monitor. They felt it should have been deleted since the monitor requirement had been deleted.

Response 1:

That reference to the flue gas O_2 or CO_2 monitor was included in error. It has been omitted in the Final Determination.

Comment 2:

The commenter questioned the need to "always provide 25% or greater reduction in potential SO_2 emissions" through coal washing and preparation as they understand Condition 11 to require.

Response 2:

Condition 11 requires that "The applicant shall maintain records of all coal washing and preparation activities. . . "; however, in order to prevent any misinterpretation the reference to a minimum potential SO_2 emission removal will be stricken. Condition 11 will remain in the Final Determination but will be reworded for clarity and precision.

Comment 3:

The commenter noted that the potential annual SO_2 emissions in Table I was incorrect.

Response 3:

The correct number of 15,552 tons/yr will be inserted in the Final Determination.

Comments on EPA's Preliminary Determination on
the Big Bend Unit 4 PSD Application

p. E-5

In the discussion of BACT for NO_x and CO, the sentence "An attachment to this preliminary determination summary specifies combustion control requirements to balance the trade-offs between NO_x and CO emissions through the use of a flue gas oxygen or CO_2 monitor." should be deleted since the attachment and requirements have been deleted from the preliminary determination as noted in the response to Comment No. 3 on page E-23.

p. E-14 (Condition No. 11)

The applicant will demonstrate compliance with the NSPS requirements for percent reduction of potential sulfur dioxide emissions by monitoring coal characteristics and flue gas sulfur dioxide content, and through other procedures established in 40 CFR Subpart Da, as discussed on p. E-4. The BACT analysis assumed 25% reduction in potential sulfur dioxide emissions (not sulfur) through coal washing and preparation. This assumption was based on coal washing data indicating 25% reduction is possible. However, should the coal washing and preparation not always provide 25% or greater reduction in potential SO_2 emissions, flexibility has been designed into the control equipment to achieve an overall reduction in potential SO_2 emissions of 90%. For these reasons, Condition No. 11 should be deleted.

p. E-17, Table 1

The potential emissions of SO_2 should be 15,552 tons/hr to reflect the 0.82 lbs. SO_2/MMBTU emission rate.

(Submitted by Mr. Heywood A. Turner at the EIS Public Hearing on August 19, 1981; to be entered into the official record.)

RESPONSE TO COMMENT

TAMPA ELECTRIC COMPANY

(PSD-FL-040)

One letter of comment was received during the public comment period for Tampa Electric Company's (TECO) proposed electric generating unit (Big Bend Unit 4). The Public Notice was published December 31, 1980. Due to a substantial error in the BACT evaluation for the SO_2 emission limit, EPA has decided to issue this revised Preliminary Determination for public comment prior to a Final Determination. A summary of the substantive comments received and EPA Region IV responses are as follow:

Comment 1:

The commenter pointed out that the basis for the SO_2 allowable emission limit included in the Preliminary Determination was in error and that the resulting limit (0.63 lb/MMBtu) was too restrictive.

Response 1:

Following reevaluation of the application and review of the additional information submitted with the comments, EPA concludes that the data in the application was misinterpreted in developing the SO_2 allowable emissions limit in the original Preliminary Determination. In response to the comment, EPA has reevaluated the SO_2 BACT analysis and determined an SO_2 allowable limit (0.82 lb/MMBtu), based on the higher end of a proposed allowable range contained in an addendum to the application.

Comment 2:

The commenter was concerned that water spraying of the coal pile and drop points, as proposed in the application, was required during all dry and high wind periods, second that water spraying of the limestone was unnecessarily required, and third that enclosed limestone conveyors need not be exhausted to a control system.

Response 2:

The applicant is required, as specified in Condition 5c. to utilize water sprays during dry periods to maintain opacity of all fugitive sources below 20 percent. Compliance with this condition of approval does not necessarily require water spraying during all dry periods or periods of high wind. Neither does it mandate water spraying of limestone. If the limestone storage pile is enclosed, as specified in the comments, it likely will not require spraying. With respect to the comment on transfer conveyor exhaust, the language of the Preliminary Determination was somewhat misleading. The intent was to require exhaust and control of conveyor transfer points, (as proposed in the application). The matter has been clarified in this Preliminary Determination.

Comment 3:

The commenter feels that use of a flue gas oxygen meter to balance CO and NO_x emissions from a utility boiler is not practical or feasible due to variations in the allowable O_2 range with boiler load and with the properties of the coal being fired.

Response 3:

EPA acknowledges the commenter's concerns here and has therefore revised this permit providing TECO the option of either monitoring for O_2 or CO_2. EPA will consider either choice as being an effective means of balancing NO_x and CO emission tradeoffs in order to satisfy this particular permit requirement.

Comment 4:

The commenter feels that the SO_2 post-construction monitoring requirement is unjustified.

Response 4:

In as much as the proposed new source will be increasing SO_2 emissions into the Big Bend region by as much as 12,000 tons per year and existing ambient air monitoring data at 4 of the 5 stations in the vicinity show concentrations in excess of 50 percent of the SO_2 NAAQS, EPA maintains the post-construction SO_2 monitoring requirement to establish the impact of the new source on existing ambient air quality.

Comment 5:

The commenter objected to the requirement for monitoring of the pH in the FGD system as unreasonable.

Response 5:

Upon reevaluation of the proposed FGD control instrumentation, EPA agrees that redundant scrubber inlet and exit SO_2 analyzers provides sufficient assurance that compliance of the SO_2 emissions limit should be maintained.

Comment 6:

The commenter questioned the requirement to submit a new PSD permit if the design of the system is modified to include brackish water cooling towers.

Response 6:

As stated by Region IV new source review staff in a meeting with TECO regarding the environmental impact statement, the addition of the cooling towers (PM emitting sources) to the proposed construction would necessitate resubmittal of the PSD application. The air quality analysis, particularly with respect to fugitive PM emissions, would be in question. In addition, the modification would be regarded as a significant modification to the plant design proposed for PSD preconstruction review.

Comment 7:

The commenter requested clarification on the degree of detail necessary for FGD system design parameters required for submittal and was concerned about confidentiality of certain materials.

Response 7:

The required submittal is not meant to be exhaustive or time consuming; however, sufficient detail on scrubber and ESP design (liquid/gas flow characteristics, capacity, controls, performance guarantees etc.) should be submitted to allow a determination on whether or not the unit can achieve the required control levels. The application discusses only "generic" control systems. Integral to this discussion is the characteristics of the selected coal. As to confidentially of submitted materials, any such materials contained in the submittal should be clearly marked. Confidential materials will be maintained in a separate locked file and its review will be restricted to the engineer(s) responsible for evaluating system design. Other individuals and the general public will not be afforded direct access to the materials.

This Preliminary Determination takes into consideration the comments and responses discussed previously and additional minor comments included in the same submittal. A copy of the comments received have been appended to the Preliminary Determination and will be placed on display in the same location as the original Preliminary Determination for public information

TECO
TAMPA ELECTRIC COMPANY

POST OFFICE BOX 111 TAMPA, FLORIDA 33601 TELEPHONE (813) 879-4111

January 28, 1981

Mr. Tommie A. Gibbs, Chief
Air Facilities Branch
United States Environmental
Protection Agency
Region IV
345 Courtland Street
Atlanta, Georgia 30308

RE: Tampa Electric Company
Big Bend Station - Unit 4
PSD Application #PSD-FL-040

Dear Mr. Gibbs:

We have reviewed the Big Bend Unit 4 PSD Application Preliminary Determination and are submitting the attached comments. These comments are presented in a format and sequence similar to that of the Preliminary Determination.

As discussed with EPA representatives on January 14, 1981, we are most concerned with the calculated 30 day rolling average SO_2 limitation and specific conditions 5,7 and 8. Our comments with respect to these major items as well as numerous other items are provided within.

Should you have any questions regarding this matter, please contact Mr. Jerry Williams, Manager, Environmental Planning.

Sincerely,

Alex Kaiser
Vice President-Energy Supply

attachment

TAMPA ELECTRIC COMPANY COMMENTS ON THE
PSD - FL - 040 APPLICATION PRELIMINARY DETERMINATION

II. LOCATION

o Page 1

The northern and southern property boundaries are not Big Bend Road and U.S. Highway 41. The site is located west of Highway 41 with plant properties both north and south of Big Bend Road.

III. PROJECT DESCRIPTION

o Page 1

Big Bend Unit 4 will have a net generating capacity of 417 MWe. The gross generating capacity will be 486 MWe. The maximum heat input rate is 4330 million BTU's per hour.

Coal washing facilities at the generating site were not included as part of the application and are not planned for Big Bend Station. The coal will be washed prior to delivery to Big Bend Station.

o Page 2

Due to the as-received moist nature of the limestone to be utilized at Big Bend Station and the rainfall amounts throughout the year, the limestone will be stored within a building.

IV. SOURCE IMPACT ANALYSIS

A. Best Available Control Technology Analysis (BACT)

1. Sulfur Dioxide Emissions Control

o Page 3

Five percent of the potential SO_2 Emissions are expected to remain in the ash.

o Pages 3 and 4

The calculated thirty day rolling average emission limitation of 0.63 lbs./MMBTU was based on fuel F-2B, a fuel utilized in specifying the Flue Gas Desulfurization (FGD) system. As noted on page 4-12 of Volume 2 in the application, the fuel quality analysis presented for fuel F-2B reflected a 25% removal of potential SO_2 emissions due to coal washing.

EPA concluded in the determination that 90% reduction in potential SO_2 emissions resulting from 25% removal by washing, 5% retention in the ash, and 86% removal by the FGD system constituted BACT. However, in calculating the SO_2 limitation based on the 90% removal criteria, EPA failed to recognize the washed condition of the coal. The EPA calculations are as follows:

Uncontrolled SO_2 emissions	6.30 lbs./MMBTU	
Emissions after washing	4.72 lbs./MMBTU	90% Removal
Emissions after 5% ash retention	4.50 lbs./MMBTU	
Emissions after FGD system	0.63 lbs./MMBTU	

EPA began their 90% removal calculations with an uncontrolled SO_2 emission rate of 6.3 lbs.MMBTU which is actually an emission rate after coal washing. Thus, a 25% removal from coal washing was calculated twice. The calculations should have been made as follows:

Uncontrolled SO_2 emissions	8.40 lbs./MMBTU	
Emissions after washing	6.30 lbs./MMBTU	90% Removal
Emissions after 5% ash retention	6.00 lbs./MMBTU	
Emissions after FGD system	0.84 lbs./MMBTU	

The correct emission limitation is 0.84 lbs./MMBTU. The 0.63 lbs./MMBTU calculated by EPA reflects an overall reduction in potential SO_2 emissions of 93%.

At the request of EPA, TECO submitted a proposed 30 day rolling average SO_2 emission limitation range of 0.77 to 0.82 lbs./MMBTU. This information was submitted based on data provided by the potential coal suppliers for Big Bend Unit 4. This value range is consistent with and below the above calculated emission limit of 0.84 lbs./MMBTU. EPA, however, rejected the TECO proposal as too high an emission limit and has required the incorrectly calculated emission limit of 0.63 lbs./MMBTU.

2. PARTICULATE MATTER (PM)

o Page 5

It is noted that during dry periods and high winds, water spraying of the coal pile and all drop points is required. It was proposed in the application that water spraying be utilized, for fugitive emissions control during high winds and dry periods. However, these techniques are not necessary control measures during all dry and high wind periods. When weather conditions that may require water spraying for fugitive emissions control are anticipated, arrangements are made for the services of a water tank truck.

The limestone to be utilized by the Unit 4 FGD System will be very moist. To avoid additional moisture from precipitation, the limestone storage pile will be enclosed within a building. Due to the moist, as-received, nature of the limestone, water spraying will not be necessary. The limestone conveyors will be covered or enclosed but venting to a control device is not necessary and has never been proposed. As noted in the application, the rail car/truck unloading facilities and the limestone day silos will be provided with exhaust systems venting to bag filters.

3. NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO)

o Page 5

An attachment to the Preliminary Determination specifies combustion control requirements to balance the tradeoffs between NO_x and CO emissions through the use of a flue gas oxygen monitor. This technique is not considered practical or feasible for a utility boiler. Big Bend Unit 4 and

other utility boilers incorporate flue gas oxygen analyzers for proper control of combustion. For a specific design coal, boiler excess oxygen will range from a high value at low operational load to a low value at maximum design capacity. Even these values are fine tuned by the boiler operator for proper steam temperature and are affected by combustion air temperature and other boiler conditions. As the coal (and its carbon content) change, the excess oxygen requirements change over the various load conditions. Therefore, if some maximum excess oxygen value is used for one coal to control NO_x, another coal may still comply with NO_x limits even though the excess oxygen value is higher than the set limit. These values also change at low loads for different coals and boiler conditions and apply in the same manner to CO compliance. During startups, shutdowns and load changes, it would be normal for the excess oxygen to vary outside of the set range while still being in compliance. Note that there will be a continuous monitor for showing compliance with NO_x emission limits. The excess oxygen analyzer is not load dependent; it is used for boiler combustion control and can not be reasonably used for CO and NO_x emission limit control based on some specific coal or operational condition.

A. Air Quality Analysis

1. Increment Analysis

o Page 7

In the last paragraph, third line "... area source has occurred..." should be "... area sources have occurred..."

2. NAAQS Impact

o Page 10

It is noted in the preliminary determination that the applicant proposes and EPA agrees that an adequate demonstration has been made that NAAQS level will not be violated. However, the EPA will require continuous SO_2 monitoring by the applicant to verify the results of the analysis. Guidelines for when post construction monitoring should be required are provided on Page 4, Section 2.1.2 of Ambient Monitoring Guidelines For Prevention of Significant Deterioration (PSD), EPA - 450/4-80-012, November 1980 and are as follows:

2.1.3 Criteria Pollutants -Postconstruction Phase

EPA has discretion in requiring postconstruction monitoring data under section 165 (a)(7) of the Clean Air Act and in general will not require postconstruction monitoring data. However, to require air quality monitoring data implies that the permit granting authority will have valid reasons for the data and, in fact, will use the data after it is collected. Generally, this will be applied to large sources or sources whose impact will threaten the standards or PSD increments. Examples of when a permit granting authority may require postconstruction monitoring data may include:

a. NAAQS are threatened - The postconstruction air quality is projected to be so close to the NAAQS that monitoring is needed to certify attainment or to trigger appropriate SIP related actions if nonattainment results.

b. Source impact is uncertain or unknown - Factors such as complex terrain, fugitive emissions, and other uncertainties in source or emission characteristics result in significant uncertainties about the projected impact of the source or modification. Postconstruction data is justified as a permit condition on the basis that model refinement is necessary to assess the impact of future sources of a similar type and configuration:

It is felt that the Big Bend situation does not fit these guidelines for required postconstruction modeling. The predicted ambient air quality impacts do not threaten NAAQS or PSD increments. The preconstruction ambient air monitoring data provided in the application indicate that the SO_2 ambient air quality in the site vicinity does not approach AAQS except for one reading at a particular station. On May 7, 1977, maximum 24 hour and 3 hour values representing 90% of the respective standard were recorded. However, since that time SO_2 emissions from Big Bend have been reduced by 3.5 tons per hour on a 3-hour average and by 7 tons per hour on a 24-hour average. In addition, the SO_2 ambient air quality data indicate that no other reading exceeded 80% of the standard with the arithmetic mean concentrations not exceeding 30% of the applicable standard. Therefore, based on the EPA guidelines, the ambient air monitoring data, and the Big Bend emission reductions, the requirement for postconstruction monitoring is not justified.

C. Class I Area Impact

o Page 10

In the last paragraph, fourth line, distance is misspelled.

D. Growth Impacts

o Page 11

Based on surveys and previous construction at Big Bend, approximately 90 percent of the construction workers will be hired from within the Tampa area work force.

V. CONCLUSION

o Page 12

#1 As previously noted, Big Bend 4 will have a gross generating capacity of 486 MW_e with a net generating capacity of 417 MW_e. The maximum heat input rate is 4330 MMBTU/HR.

#3 In the last sentence, it is believed opacity should be capacity.

#5 As previously noted, compliance with the condition "Use of Flue Gas Oxygen Meter as BACT for combustion controls" is not considered feasible or pratical.

#6c As previously noted, water spraying will not be provided for limestone handling and storage.

#6d As previously noted, it is unnecessary for the limestone conveyors to be maintained at negative pressures with the exhaust vented to a control system.

#7 While the effluent pH of some FGD systems may provide an indication of SO_2 removal efficiency, such is not the case for the Big Bend Unit 4 system.

The FGD System that Tampa Electric Company has purchased is a limestone based two loop process which produces a gypsum by-product. Control of reagent addition is by an SO_2 mass flow signal. The inlet and outlet SO_2 values are compared, controlling the SO_2 removal efficiency to the setpoint (i.e. 86%) removal. In the two loop process, the first loop operates at a low pH for production of gypsum and some SO_2 removal, while the second loop operates at high pH for dissolution of limestone and the major amount of SO_2 removal. It is possible for the system to meet the required SO_2 removal efficiency while the pH in any one loop is less than it was at some other time for the same overall SO_2 removal. This is because of the two independent loops. While pH is monitored, it is not a direct control value and should not be used as such. Therefore, it is not reasonable to maintain or require a minimum pH value in this system.

#8 As noted, earlier, the need for post construction monitoring is not warranted.

#11 It is not clear why a complete new application would be necessary if cooling towers were required for the facility. The use of cooling towers would have no effect on the information in the application as submitted to date. It would be more reasonable to require that the additional necessary information and analyses due to cooling tower operation be submitted if towers are to be utilized. Then the permitting authority could make the proper changes in the permit conditions. This condition is redundant in light of general condition number 6.

#12 It is not clear as to what detail of technical data is required by the Agency. In addition, formal bids from vendors are considered confidential and are not available for reproduction and distribution.

GENERAL CONDITIONS

#1 & #2

The definitions of start of construction and start of operation are not clear. It is assumed that start of construction is the physical placement of facilities. Start of operation is assumed to mean the beginning of steady on-line commercial operation.

#8a This condition should include the wording ..."at reasonable times....", similar to items 8(b) through 8(e).

ATTACHMENT -"Use of flue gas oxygen meter as BACT for combustion controls"

As previously noted, this procedure is not practical or feasible and as written may constitute non-compliance when, in fact, all emission limitations are met.

Table 1 For the pollutant CO the potential emissions should be 267 Tons/Year.

Table 5 As previously noted the 30 day rolling average SO_2 emission limitation was calculated incorrectly.
In Item 2, flyash should not be included. The flyash handling system and flyash silos are vented to the same bag house. Flyash handling is included in the Item 4 emission rate of 0.2 lb./HR.

system for measuring SO_2 emissions will be installed, calibrated, maintained, and operated at a point downstream of the FGD system.

4.3 Oxides of Nitrogen

The emission of NO_x from the combustion system will be minimized by the design of the burners and boiler to be provided by CE. The tangentially-fired boiler has been demonstrated to be capable of limiting NO_x formation to 0.6 lb/MMBtu, the NSPS, when firing bituminous coal. The EPA cites several CE boilers in operation that are able to meet the NSPS, although these boilers are neither designed nor guaranteed to have an NO_x emission at these levels.

The formation of thermally produced NO_x is inhibited in the CE boiler by the off-stoichiometric combustion, that is, operating the burners at a fuel-rich mixture. Off-stoichiometric combustion can be accomplished by two techniques: biased-firing and two-staged combustion. The former technique consists of operating selected burners at fuel-rich mixtures and others at lean mixtures. Initial combustion then occurs in a reducing atmosphere, followed by complete combustion after substantial heat loss. The resultant lower flame temperatures inhibit the formation of thermal NO_x. The latter technique, two-staged combustion, is accomplished by diverting a portion of the combustion air to over-fire air ports located above the burners. The same fuel-rich combustion occurs with the attendant heat loss, followed by complete mixing and combustion above the primary combustion zone. Although CE has incorported over-fire air ports in the boiler design to maintain NO_x concentrations at the NSPS, operation of these ports has been found to be unnecessary below 90% MCR. Two-stage combustion will thus be used should monitoring indicate that the NO_x emissions may exceed standards. The NO_x emission limitation is equivalent to an emission rate of 2,598 lb/hr.

The EPA sponsored a test program, performed by CE, at the Alabama Power Company's Barry Station #2. This program assessed the effects of modifications in boiler operation and design on the emission of

NO_x. Included in the modifications were variations in excess air, biased-firing, over-fire air, burner tilt, and water-wall slagging. The results of this program that are applicable to Unit 4 boiler operation are summarized in Table 4-7. Note that all tests demonstrated boiler compliance with the NSPS for NO_x, with the exception of that test with no modifications and water-wall slagging.

Compliance with the NSPS for NO_x will be demonstrated in accordance with Section 60.48a, Subpart Da, and by procedures prescribed in Method 19, Appendix A, 40 CFR 60. A continuous monitoring system for measuring NO_x emissions will be installed, calibrated, maintained, and operated at a point downstream of the economizer outlet.

4.4 Carbon Monoxide

The only significant source of CO is the Unit 4 steam generator. CE does not include monitoring of combustibles in the design of their boilers because CO emissions are expected to be negligible. The recording of combustibles, however, may be included in the specification of the combustion air control system. Using the emission factor from the EPA document Compilation of Air Pollution Emission Factors, AP-42, the CO emission rate will be approximately 124 lb/hr based on Coal F-1A and boiler performance data. This factor represents a consensus mean emission from both boilers of older and more recent design. The EPA test on the Alabama Power Company's Barry Station #2 demonstrates that CO emissions typically range from 0.016 to 0.022 lb/MMBtu, which is equivalent to 70 to 95 lb/hr (see Table 4-7). These data then generally support the AP-42 emission factor, which is used to estimate the CO emission rate.

4.5 Summary

The emission of pollutants from the proposed Unit 4 steam generator is summarized in Table 4-8. The applicable NSPS for electric utility facilities are also presented for direct comparison.

TABLE 4-7

EPA TEST PROGRAM FOR NO_x REDUCTION

Test No.	Test Condition*	Excess Air	Emission (lb/MMBtu) NO_x**	CO
1	No modification	22.7	0.58	0.022
2	No modification; WW slagging	26.0	0.68	0.024
3	BF	24.2	0.33	0.019
4	OFA	25.4	0.55	0.016
5	OFA; WW slagging	25.9	0.50	0.016
6	OFA; -5° burner tilt	25.9	0.39	0.016
7	OFA; $+19^{\circ}$ burner tilt	25.1	0.43	0.023
8	Optimum conditions	27.4	0.39	0.018

*WW = water-wall; BF = biased-firing; OFA = over-fire air.

**As NO_2.

Source: EPA 1975.

TABLE 4-8

POLLUTANT EMISSIONS SUMMARY

BIG BEND STATION UNIT 4

Pollutant	Pollutant Emission lb/hr	lb/MMBtu	% Reduction	Applicable NSPS/SIP Requirement
PM	129.9	0.03	99.7	0.03 lb/MMBtu
NO_x	2,598.	0.60	65.0	0.60 lb/MMBtu
SO_2*	2,592.-5,184.	0.60-1.2	90.0	90% reduction
	124	0.029		
CO	~~62.~~	~~0.014~~	NA	NA

*SO_2 emission represents range of sulfur content of raw coals of 3.0 and 6.0 lb/MMBtu.

Historic
BASECASE

PLANT NAME Gannon

UTILITY	Tampa Electric Company	NAME PLATE CAP. Mw	1,270.38
COUNTY	Hillsborough	ANN. GENERATION Mwh	
TOWN	Tampa	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL	Oil	Oil	Oil	Oil	Coal	Coal
UNIT CAPACITY Mw	125	125	179.52	187.5	239.36	414
UNIT FACTOR						
HEAT RATE MM Btu/h						
FUEL CONS. */h	201 bbl	201 bbl	258 bbl	307 bbl	93.4 t	151.4 t
BOILER MFGR.	B&W	B&W	B&W	B&W	Rily	Rily
SO2 CONTROL	None	None	None	None	None	None
TYPE						
EFFICIENCY						
PARTIC. CONTROL						
TYPE	ESP	ESP	ESP	ESP	ESP	ESP
EFFICIENCY	86.8	91.0	85.4	80.2	97.2	99.84
FLYASH REINJECT	No	No	No	No	Yes	Yes
(lb/hr) MASS EMISSION RT	354	354	220.2	174.7	291	183

STACK DATA

HEIGHT	ft	306	306	306	306	306	306
DIAMETER	ft	10	10	10.6	9.6	15	18.4
EXIT VEL.	ft/s	79	79	74.1	53.8	64.1	76.9
EXIT TMP.	°F	309	309	300	329	288	292

ANNUAL EMISSIONS

PARTICULATES(t/y)	890
SOx (t/y)	38,500
NOx (t/y)	27,200

FUEL DATA

	OIL	COAL
% SULFUR	0.95	1.3
% ASH		10.1
HEAT CONTENT	150,083 Btu/gal	12,174 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Tampa Bay		
MINIMUM 7-Q-10	NA		
TYPE SYSTEM	OTS		
INTAKE cfs	1235		
DISCHARGE cfs	1235		
CONSUMPTION cfs	0		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION (Btu x 10^9)/h			

ASH/ASH POND DATA

FLY ASH t/y	170,700	POND AREA	
BOTTOM ASH t/y	116,100	ORIG. VOLUME ft^3	
TOTAL ASH t/y	286,800	ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA ft^2		STORAGE CAPAC. t	
HEIGHT ft		SUPPLY days	

PERMIT DATA

SIP PERMIT
- PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.10
- ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 1.1 (Oil) 2.4 (Coal)

NPDES
- PERMIT NUMBER
- EFFECTIVE DATE
- REISSUE DATE
- EXPIRATION DATE
- RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME Scholz

UTILITY	Gulf Power Company	NAME PLATE CAP. Mw	98
COUNTY	Jackson	ANN. GENERATION Mwh	
TOWN	Chattahoochee	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL						
UNIT CAPACITY Mw	49	49				
UNIT FACTOR						
HEAT RATE MM Btu/h	488	488				
FUEL CONS. #/h	19.6 t	19.6 t				
BOILER MFGR.	B&W	B&W				
SO2 CONTROL						
TYPE						
EFFICIENCY						
PARTIC. CONTROL						
TYPE	ESP	ESP				
EFFICIENCY	99.5%	99.5%				
FLYASH REINJECT						
(lb/hr) MASS EMISSION RT	14	14				
Particulates (lb/MMBtu)	0.014	0.043				

STACK DATA

HEIGHT ft	150					
DIAMETER ft	13.5					
EXIT VEL. ft/s	40.4					
EXIT TMP. °F	326					

ANNUAL EMISSIONS

PARTICULATES(t/y)	80
SOx (t/y)	980
NOx (t/y)	1,840

FUEL DATA

	OIL	COAL
% SULFUR		2.4
% ASH		11.2
HEAT CONTENT	Btu/gal	12,442 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Apalachicola River		
MINIMUM 7-Q-10	5,500		
TYPE SYSTEM			
INTAKE cfs	155.86		
DISCHARGE cfs	155.86		
CONSUMPTION cfs	0		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION (Btu x 10^9)/h			

ASH/ASH POND DATA

FLY ASH t/y	16,900	POND AREA	
BOTTOM ASH t/y	6,900	ORIG. VOLUME ft^3	
TOTAL ASH t/y	22,900	ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA	ft^2	STORAGE CAPAC. t	
HEIGHT	ft	SUPPLY days	

PERMIT DATA

SIP PERMIT
- PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.10
- ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 6.17

NPDES
- PERMIT NUMBER FL 000 2283
- EFFECTIVE DATE
- REISSUE DATE
- EXPIRATION DATE
- RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME McIntosh

UTILITY	City of Lakeland	NAME PLATE CAP. Mw	547.7
COUNTY	Polk	ANN. GENERATION Mwh	
TOWN	Lakeland	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	3

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL	0:1/Gas	0:1	C/O/B			
UNIT CAPACITY Mw	100	115	333			
UNIT FACTOR						
HEAT RATE MM Btu/h	957	1237	3127			
FUEL CONS. #/h	154bbl	199bbl	13037			
BOILER MFGR.	Riley	B&W	B&W			
SO2 CONTROL	None	None				
TYPE			Limestone Slurry			
EFFICIENCY			80%			
PARTIC.CONTROL	None	None				
TYPE						
EFFICIENCY			99.63			
FLYASH REINJECT			No			
MASS EMISSION RT						

STACK DATA

HEIGHT	ft	150	156.5				
DIAMETER	ft	9	11				
EXIT VEL.	ft/s	76.5	57.6				
EXIT TMP.	°F	280	265				

ANNUAL EMISSIONS

PARTICULATES(t/y)	860
SOx (t/y)	19,600
NOx (t/y)	10,000

FUEL DATA

	OIL	COAL
% SULFUR	2.36/0.74	1.8 - 3.0
% ASH		
HEAT CONTENT	148,000 Btu/gal	11,500 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Lake Parker		
MINIMUM 7-Q-10	178		
TYPE SYSTEM			
INTAKE cfs	167.6		
DISCHARGE cfs	165.7		
CONSUMPTION cfs	1.9		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION (Btu x 10^9)/h			

ASH/ASH POND DATA

FLY ASH	t/y		POND AREA		
BOTTOM ASH	t/y		ORIG. VOLUME	ft^3	
TOTAL ASH	t/y	109,800	ORIG. CAPAC.	t ash	
SLUDGE	t/y	271,500	REMAINING VOL.	ft^3	
POND CONST. DATE			REMAINING CAPAC.	t ash	
POND TYPE			FILL DATE		

COAL STORAGE

BASAL AREA	ft^2	STORAGE CAPAC.	t
HEIGHT	ft	SUPPLY	days

PERMIT DATA

SIP PERMIT
- PARTICULATE EMISSION STANDARD (lbs/MMBtu)
- ALLOWABLE SO_2 EMISSION (lbs/MM Btu)

NPDES
- PERMIT NUMBER
- EFFECTIVE DATE
- REISSUE DATE
- EXPIRATION DATE
- RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME Deerhaven

UTILITY	Gainesville Regional Utilities	NAME PLATE CAP. Mw	316
COUNTY	Alachua	ANN. GENERATION Mwh	
TOWN	Gainesville	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	2

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL	Oil	Coal				
UNIT CAPACITY Mw	75	235				
UNIT FACTOR						
HEAT RATE MM Btu/h						
FUEL CONS. */h	157bbl	96t				
BOILER MFGR.	B&W	Rily				
SO2 CONTROL						
TYPE						
EFFICIENCY						
PARTIC. CONTROL						
TYPE		ESP				
EFFICIENCY		99.5				
FLYASH REINJECT	No					
MASS EMISSION RT						

STACK DATA

HEIGHT	ft	300	350				
DIAMETER	ft	11	17.75				
EXIT VEL.	ft/s	43.95	50				
EXIT TMP.	°F	261	275				

ANNUAL EMISSIONS

PARTICULATES(t/y)	613
SOx (t/y)	6790
NOx (t/y)	2430

FUEL DATA

	OIL	COAL
% SULFUR	2.2	0.72
% ASH		8
HEAT CONTENT	151,593 Btu/gal	12,000 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Floridan Aquifer		
MINIMUM 7-Q-10			
TYPE SYSTEM			
INTAKE cfs	5.9		
DISCHARGE cfs			
CONSUMPTION cfs			
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION ($Btu \times 10^9$)/h	1.84		

ASH/ASH POND DATA

FLY ASH t/y		POND AREA	
BOTTOM ASH t/y		ORIG. VOLUME ft^3	
TOTAL ASH t/y	42,700	ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA ~~ft^2~~	11.3 acres	STORAGE CAPAC. t	
HEIGHT ft	20	SUPPLY days	90

PERMIT DATA

SIP PERMIT
- PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.1
- ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 2.75

NPDES
- PERMIT NUMBER
- EFFECTIVE DATE
- REISSUE DATE
- EXPIRATION DATE
- RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME Big Bend

UTILITY	TECO	NAME PLATE CAP. Mw	1336.5
COUNTY	HILLSBOROUGH	ANN. GENERATION Mwh	
TOWN	RUSKIN	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	4

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL	Coal	Coal	Coal	Coal		
UNIT CAPACITY Mw	445.5	445.5	445.5	417		
UNIT FACTOR						
HEAT RATE MM Btu/h	4,184	4,180	4,367	4,740		
FUEL CONS. #/h	182.3	182.1	190.3	206.5		
BOILER MFGR.	Rily	Rily	Rily	CE		
SO2 CONTROL	None	None	None	Yes		
TYPE				Double Loop		
EFFICIENCY				90%		
PARTIC. CONTROL	ESP	ESP	ESP	ESP		
TYPE						
EFFICIENCY	99.6%	99.8%	99.7%	99%		
FLYASH REINJECT	Yes	Yes	Yes	No		
(lb/hr) MASS EMISSION RT	504	219	361.5	5196		
Particulates (lb/MMBtu)						

STACK DATA

HEIGHT	ft	490	490				
DIAMETER	ft	24	24				
EXIT VEL.	ft/s	94	68				
EXIT TMP.	°F	301	292				

ANNUAL EMISSIONS

PARTICULATES(t/y)	1,000
SOx (t/y)	112,100
NOx (t/y)	~~84,400~~ 35,700

FUEL DATA

	OIL	COAL
% SULFUR		2.2
% ASH		10.4
HEAT CONTENT	Btu/gal	11,475 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Hillsborough Bay		
MINIMUM 7-Q-10	NA		
TYPE SYSTEM			
INTAKE cfs	1306		
DISCHARGE cfs	1306		
CONSUMPTION cfs	0		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION (Btu x 10^9)/h			

ASH/ASH POND DATA

FLY ASH t/y	352,600	POND AREA	
BOTTOM ASH t/y	118,200	ORIG. VOLUME ft^3	
TOTAL ASH t/y		ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA	ft^2	STORAGE CAPAC. t	
HEIGHT	ft	SUPPLY days	

PERMIT DATA

SIP PERMIT
- PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.1
- ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 6.5

NPDES
- PERMIT NUMBER
- EFFECTIVE DATE
- REISSUE DATE
- EXPIRATION DATE
- RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME Crist

UTILITY	Gulf Power Company	NAME PLATE CAP. Mw	1229
COUNTY	Escambia	ANN. GENERATION Mwh	
TOWN	Pensacola	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	7

UNIT DATA

	1	2	3	4	5	6	7
STATUS							
FIRING CAPAB.							
FUEL	Gas/Oil	Gas/Oil	Gas/Oil	Coal/Gas	Coal/Gas	Coal/Gas	Coal
UNIT CAPACITY Mw	28.125	28.125	37.5	93.75	93.75	370	578
UNIT FACTOR							
HEAT RATE MM Btu/h				755	755	2,938	4,632
FUEL CONS. #/h	320 MCF	320 MCF	440 MCF	32.1 T	32.15 T	125 T	197.1 T
BOILER MFGR.	Rily	Rily	Rily	CE	CE	FW	FW
SO2 CONTROL	None	None	None	None	None	None	None
TYPE							
EFFICIENCY							
PARTIC. CONTROL	None	None	None	Yes	Yes	Yes	Yes
TYPE				ESP	ESP	ESP	ESP
EFFICIENCY				99.1	99.1	98.0	98.2
FLYASH REINJECT				No	No	No	No
(lb/hr) MASS EMISSION RT				88.3	88.3	430	544
Particulates (lb/MMBtu)				0.027	0.037	0.072	0.087

STACK DATA

HEIGHT	ft	450	450				
DIAMETER	ft	18	23.2				
EXIT VEL.	ft/s	52.6	97.4				
EXIT TMP.	°F	289	268				

ANNUAL EMISSIONS

PARTICULATES(t/y)	2,150
SOx (t/y)	78,400
NOx (t/y)	1,432,400

FUEL DATA

	OIL	COAL
% SULFUR	1.5	2.5
% ASH		10.9
HEAT CONTENT	146,429 Btu/gal	11,777 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	Escambia River		
MINIMUM 7-Q-10	760		
TYPE SYSTEM			
INTAKE cfs	347.56		
DISCHARGE cfs	340.75		
CONSUMPTION cfs	6.81		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION ($Btu \times 10^9$)/h			

ASH/ASH POND DATA

FLY ASH t/y	117,400	POND AREA	
BOTTOM ASH t/y	51,300	ORIG. VOLUME ft^3	
TOTAL ASH t/y	168,700	ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA ft^2		STORAGE CAPAC. t	
HEIGHT ft		SUPPLY days	

PERMIT DATA

SIP PERMIT
- PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.10
- ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 5.9

NPDES
- PERMIT NUMBER FL 000 2275
- EFFECTIVE DATE
- REISSUE DATE
- EXPIRATION DATE
- RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

PLANT NAME Smith

UTILITY	Gulf Power Company	NAME PLATE CAP. Mw	~~804~~ 380
COUNTY	Bay	ANN. GENERATION Mwh	
TOWN	Lynn Haven	HEAT RATE MM Btu/h	
LONG/LAT GRW		CONSTRUCTION DATE	
LONG/LAT UTM		ON-LINE DATE	
AQCR REG.		RETIREMENT DATE	
RIVER BASIN		No. UNITS	2

UNIT DATA

	1	2	3	4	5	6
STATUS						
FIRING CAPAB.						
FUEL						
UNIT CAPACITY Mw	149.6	190.4				
UNIT FACTOR						
HEAT RATE MM Btu/h	1,320	1,670				
FUEL CONS. #/h	56.4†	71.3				
BOILER MFGR.	CE	CE				
SO2 CONTROL	None	None				
TYPE						
EFFICIENCY						
PARTIC. CONTROL						
TYPE	ESP	ESP				
EFFICIENCY	99.1	99.1				
FLYASH REINJECT						
(lb/hr) MASS EMISSION RT	155.7	207.4				
Particulates (lb/MMBtu)	0.012	0.048				

STACK DATA

HEIGHT	ft	200					
DIAMETER	ft	18					
EXIT VEL.	ft/s	64.5					
EXIT TMP.	°F	263					

ANNUAL EMISSIONS

PARTICULATES(t/y)	900
SOx (t/y)	1,400
NOx (t/y)	~~9~~ 9,000

FUEL DATA

	OIL	COAL
% SULFUR	0.4	0.7
% ASH		12.7
HEAT CONTENT	140,500 Btu/gal	11,709 Btu/lb

WATER SUPPLY

	COOLING	BOILER	ASH TRANSPORT
SOURCE	North Bay		
MINIMUM 7-Q-10	N/A		
TYPE SYSTEM			
INTAKE cfs	409.4		
DISCHARGE cfs	409.4		
CONSUMPTION cfs	0		
DISCH. POINT			
DISCH. PH			
DISCH. SS ppm			
DELTA T			
HEAT REJECTION (Btu x 10^9)/h			

ASH/ASH POND DATA

FLY ASH t/y	87,900	POND AREA	
BOTTOM ASH t/y	38,100	ORIG. VOLUME ft^3	
TOTAL ASH t/y	126,000	ORIG. CAPAC. t ash	
SLUDGE t/y		REMAINING VOL. ft^3	
POND CONST. DATE		REMAINING CAPAC. t ash	
POND TYPE		FILL DATE	

COAL STORAGE

BASAL AREA	ft^2	STORAGE CAPAC. t	
HEIGHT	ft	SUPPLY days	

PERMIT DATA

SIP PERMIT
- PARTICULATE EMISSION STANDARD (lbs/MMBtu) 0.10
- ALLOWABLE SO_2 EMISSION (lbs/MM Btu) 6.17

NPDES
- PERMIT NUMBER FL 000 2267
- EFFECTIVE DATE
- REISSUE DATE
- EXPIRATION DATE
- RECEIVING WATER

OUTFALL PERMIT LIMITATIONS

SERIAL No.	TYPE	FLOW MGD	Cl mg/l	- HEAT REJ. MM Btu/h	PH	TSS lbs/day ave.	TSS lbs/day max.	TOT Fe mg/l	TOT Cu mg/l

Memorandum

Florida Department of
Environmental Protection

TO: Howard L. Rhodes

THRU: Clair Fancy
Al Linero cof for CHF

FROM: Joe Kahn JK

DATE: February 25, 1999

SUBJECT: Tampa Electric Company, Big Bend Station FGD System for Units 1 and 2

Attached for approval and signature is the final construction permit for the installation of an FGD system for Big Bend units 1 and 2. The system includes new booster fans and a new 490 foot stack. The permit allows TEC to bypass the FGD system at its option unless the units are using petcoke. The FGD system will allow TEC to operate the FGD system to reduce emissions of sulfur dioxide as part of a strategy to meet the requirements of the Title IV Acid Rain program of the Clean Air Act. The permit allows the use of up to 20.0% (by weight) petroleum coke (petcoke) blended with coal at units 1 and 2. The flue gas must be directed to the FGD system whenever any petcoke is fired in the unit(s) in any proportion up to the requested 20.0% petcoke/80.0% coal mixture.

The permit includes new emissions units associated with limestone handling related to operation of the proposed FGD system. These are subject to NSPS Subpart OOO. The permit also includes a lime silo and baghouse associated with a waste water treatment plant to treat a liquid bleed stream from the new and existing FGD systems. Additional gypsum handling equipment will be installed to dewater gypsum from the proposed FGD system.

Emissions of sulfur dioxide will decrease by approximately 84% or more from uncontrolled levels firing the coal/petcoke mixture, or an approximate 83% or more reduction from uncontrolled levels firing coal alone, when the FGD system is used. Emissions of sulfur dioxide from unit 3 are also limited by this permit under certain operating scenarios. Stack emissions of other pollutants are not expected to increase from units 1 and 2 as a result of this project. Particulate matter emissions from the new limestone handling operations will be about 5.2 tons per year, and from the lime silo far less than 1 ton per year.

Changes from the draft permit are detailed in the final determination, but are not significant and do not change the emissions or limits of the draft permit.

I recommend your approval and signature.

Attachments

/jk

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit by:

Gregory M. Nelson, P.E.
Manger--Environmental Planning
Tampa Electric Company
PO Box 111
Tampa, Florida 33601-0111

DEP File No. 0570039-003-AC
and 0570039-004-AC
Big Bend Station FGD System for Units 1 and 2
Hillsborough County

Enclosed is final permit number 0570039-003-AC and 0570039-004-AC. This permit authorizes construction of the flue gas desulfurization system for units 1 and 2 at Tampa Electric Company's Big Bend Station located at 6944 US Highway 41 North, Apollo Beach, Florida 33572-9200, Hillsborough County. This permit is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order has the right to seek judicial review of it under section 120.68 of the Florida Statutes, by filing a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within thirty days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

A A Linero, P.E. 2/26

for C. H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 2-26-99 to the person(s) listed:

Gregory M. Nelson, P.E., TEC *
Thomas W. Davis, P.E., ECT
Bill Thomas, P.E., DEP, SWD
Richard Kirby, P.E., Hillsborough County EPC
Mr. Gregg Worley, EPA

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kuri Jobes 2-26-99
(Clerk) (Date)

FINAL DETERMINATION

Tampa Electric Company
Big Bend Station FGD System for Units 1 and 2
DEP File No. 0570039-003-AC and 0570039-004-AC

The Department distributed a public notice package on January 26, 1999 to allow the applicant to construct an FGD system and the related appurtenances to serve existing units 1 and 2 at the Tampa Electric Company Big Bend Station located at 6944 US Highway 41 North, Apollo Beach, Florida, Hillsborough County. The Public Notice of Intent to Issue was published in The Tampa Tribune on January 27, 1999.

COMMENTS

No comments were received by the Department from the public.

Comments were requested from EPA regarding the applicant's request to comply with a visible emission limit of 5% opacity in lieu of performing the particulate matter initial compliance test required by 40 CFR 60 Subpart OOO. Gregg Worley from EPA Region 4 responded by telephone on February 19, 1999 that EPA does not have comments on the Preliminary Determination. Gregg Worley and David McNeal from EPA Region 4 responded by telephone on February 22, 1999 and letter dated February 10, 1999 regarding the applicant's request. (The Department does not have the authority to vary a federal requirement, so EPA's opinion will decide this matter.) EPA stated that the applicant has not provided sufficient information to justify waiving the initial particulate matter emission test. In light of this comment the Department removed language in the permit that would allow for a VE test in lieu of the initial PM test for the NSPS, and added clarifying language to several permit conditions regarding the need to perform an initial PM test. The owner or operator will be allowed to demonstrate subsequent compliance with the PM standard by means of VE tests (with a VE limit of 5% opacity), unless the Department or local program (EPC) believe the PM emission limit is not being met.

Comments were received via fax on February 12, 1999 from the Hillsborough County Environmental Protection Commission (EPC). These comments were related to clarifying that copies of all submittals should also be submitted to the EPC and specifying that the EPC has a rule (Rule 1-3.61) that requires the limestone handling baghouses to meet the PM emission limit of Rule 62-296.711, F.A.C. Comment 7 from the EPC suggested that the draft permit had a typographical error in section III, specific condition 20, but the draft permit was correct and was not changed.

The applicant commented by telephone on February 22, 1999 that a lime silo with baghouse, included as part of a package waste water treatment plant to treat the liquid chloride bleed stream, was not specifically identified in the application or draft permit. This source is part of the appurtenances of the FGD system and will be included in the final permit. The plant will also serve the existing FGD system. The applicant provided information on this source by fax on February 24, 1999.

The silo baghouse has a manufacturer's stated emission rate of 0.007 gr/scfm at a design flow rate of 1200 scfm. The source is not subject to PM RACT by local ordinance (see above), because it is exempt from PM RACT by Rule 62-296.700(2)(c), F.A.C., because its allowable PM emissions are less than 1 TPY. (PTE may be estimated as follows: Using the emission limit of 0.03 gr/dscf of Rule 62-296.711, F.A.C., at 1200 scfm, assuming operation two hours per day--this is the maximum estimated by the applicant and represents the maximum time required to unload trucks to fill the silo--potential emissions of PM are approximately 0.10 tons per year, with all PM assumed to be PM_{10}. At the manufacturer's estimated emission rate, potential emissions of PM are 0.02 TPY.) The allowable particulate emission limit for this baghouse will be set at 0.03 gr/dscf but a visible emission limit of 5% opacity will be imposed in lieu of a particulate emission test pursuant to Rule 62-297.620(4), F.A.C.

FINAL DETERMINATION

Tampa Electric Company
Big Bend Station FGD System for Units 1 and 2
DEP File No. 0570039-003-AC and 0570039-004-AC

The Department identified changes required to clarify the permit condition related to providing test notification. The Department also identified the need to change the conditions related to the CEM system to clarify the requirements for the CEM system and state that the requirements of 40 CFR Part 75 are sufficient to meet the requirements of Rule 62-296.405(1)(f), F.A.C.

CHANGES

These comments resulted in the following changes to the final permit.

Section I, Project Details: The description was added of the lime silo and baghouse for the waste water treatment plant for the chloride bleed stream to serve the new and existing FGD systems. The description of the gypsum handling facilities was changed to from referring to "source-specific emission standard" to refer to "unit-specific regulatory requirement" to match the term defined by rule.

Section II, specific conditions 1, 21, 24, 26 and 27: A specific reference to submitting necessary information or notification to the Hillsborough County Environmental Protection Commission (EPC) was added to these conditions.

Section II, specific condition 21: The note for this condition was changed to clarify that the 15 day notice of testing applies to tests conducted after the initial test required to demonstrate compliance with the NSPS. This change was made because the Department cannot waive the 30 day notice requirement of 40 CFR 60.8.

Section III, specific condition 12: A specific reference to submitting necessary reports to the Hillsborough County Environmental Protection Commission (EPC) was added to this condition.

Section III, specific condition 6: A minor change was made to this condition to match the nomenclature of specific condition 7 of this section.

Section III, specific condition 7: This condition was revised to specify the requirements of 40 CFR Part 75 with which the CEM system shall comply. A note was added for this condition to clarify that meeting the requirements of this condition assures compliance with the requirements of Rule 62-296.405(1)(f), F.A.C. which specifies the CEM system requirements for fossil fuel fired steam generators > 250 mmBtu/hr.

Section III, descriptive note for emissions units 020 and 021: This note was revised to cite as applicable requirements EPC Rule 1-3.61 and Department Rule 62-296.711, F.A.C.

Section III, specific condition 16: This condition was revised to include the PM RACT particulate matter emission limit of 0.03 gr/dscf and cite as applicable requirements EPC Rule 1-3.61 and Department Rule 62-296.711, F.A.C. The title for this condition was revised to be more descriptive.

Section III, specific condition 18: This condition was revised to clarify that the VE limit will be in lieu of a particulate matter test for the NSPS PM limit and the PM RACT particulate matter limit, after the initial NSPS particulate matter test is passed.

Section III, specific condition 20: The second note for this condition was revised for clarity by deleting the reference to section III, specific condition 21.

Section III, specific condition 21: The first note for this condition was revised to clarify that compliance with the NSPS PM limit must be demonstrated by performing and passing an initial particulate matter test, unless such requirement is waived by the EPA. The note was further revised to state that no subsequent regular annual particulate matter testing is required.

FINAL DETERMINATION

Tampa Electric Company
Big Bend Station FGD System for Units 1 and 2
DEP File No. 0570039-003-AC and 0570039-004-AC

Section III, specific conditions 23 through 28: These conditions were added to impose requirements on the lime silo and baghouse to exempt this emissions unit from the requirements of PM RACT. These conditions impose a particulate emission limit of 0.03 gr/dscf and a VE limit of 5% opacity and provide for VE testing in lieu of PM testing, and require proper operation and maintenance of the baghouse.

CONCLUSION

The above changes do not significantly alter the emissions of this project, nor change the limits of the draft permit. The final action of the Department is to issue the permit with the changes described above.

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

PERMITTEE

Tampa Electric Company
Big Bend Station
PO Box 111
Tampa, Florida 33601-0111

Authorized Representative:

Gregory M. Nelson, P.E.
Manager--Environmental Planning

Permit No.	0570039-003-AC and 0570039-004-AC
Project	FGD System--Units 1 and 2
SIC Code:	4911
Expires:	August 25, 2000

PROJECT AND LOCATION

This permit authorizes Tampa Electric Company to construct a flue gas desulfurization (FGD) system to serve existing units 1 and 2, and allows the use of petcoke in a mixture with coal up to 20.0% petcoke/80.0% coal (by weight) in existing units 1 and 2 under the conditions of this permit.

This facility is located at Big Bend Station, 6944 US Highway 41 North, Apollo Beach, Hillsborough County. UTM coordinates are: Zone 17; 361.90 km E and 3075.00 km N.

STATEMENT OF BASIS

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. The above named permittee is authorized to perform the construction in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

APPENDICES

The attached appendices are a part of this permit:

Appendix A	NSPS General Provisions
Appendix GC	General Permit Conditions

Howard L. Rhodes, Director
Division of Air Resources Management

AIR CONSTRUCTION PERMIT 0570039-003-AC & 0570039-004-AC

SECTION I. FACILITY INFORMATION

FACILITY DESCRIPTION

This facility consists of an electric power generating plant with four fossil fired steam generating units, units 1, 2, 3 and 4.

PROJECT DETAILS

This permitting action is to construct an FGD system and the related appurtenances including booster fans and a new 490 foot stack to serve existing units 1 and 2 , and to allow the use of petcoke in a mixture with coal up to 20% petcoke/80% coal (by weight) in existing units 1 and 2. The permit requires that whenever either unit is fired with petcoke in any amount up to the allowable ratio, its flue gases be directed to the FGD system. This permit allows the applicant to bypass the system otherwise at its option. (Existing emission controls include an electrostatic precipitator (ESP) for each unit, with flue gas from each ESP ducted into a common stack. The FGD system will receive flue gas from each ESP, with scrubbed flue gas discharged into a new common stack.) Included in this permitting action is the construction of new emission units associated with limestone handling. Emissions units addressed by this permit are:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
001	Fossil fuel fired steam boiler generating unit rated at 4037 mmBtu/hr (mo. avg. basis), with an electrical generating capacity of 445 MW
002	Fossil fuel fired steam boiler generating unit rated at 3996 mmBtu/hr (mo. avg. basis), with an electrical generating capacity of 445 MW
003	Fossil fuel fired steam boiler generating unit rated at 4115 mmBtu/hr (mo. avg. basis), with an electrical generating capacity of 445 MW
020	Drops from limestone handling conveyors LE, LF and LG and silo C belt feeder, with baghouse
021	Silo C with one baghouse
022	Lime silo with one baghouse for the waste water treatment plant for the chloride bleed stream

This permit authorizes construction of new components of the limestone handling system to provide limestone for the proposed FGD system. New components are silo C and its related rotary unloader, belt feeder and wet ball mill, and reversible belt conveyors LF and LG. Conveyors LF and LG will replace an existing bifurcated chute which feeds from conveyor LE to silos A and B. Particulate emissions from drops from limestone handling conveyors LE, LF and LG and the silo C belt feeder are controlled by a baghouse: American Air Filter Fabripulse - Model B, size 12-72-1155. Particulate emissions from displaced air in silo C will be controlled by a baghouse: American Air Filter Fabripak, size 6-16-132. The new wet ball mill is a wet process with no expected particulate emissions.

This permit authorizes construction of a lime silo with one baghouse (Griffin Environmental 36-LS Filter Vent) to serve a new waste water treatment plant for the chloride bleed stream. This plant will serve the new and existing FGD systems. Particulate emissions from displaced air from periodically filling the lime silo will be controlled with the related baghouse.

This permit also authorizes construction of the new equipment associated with gypsum handling (dewatering). The new gypsum handling facilities are not subject to a unit-specific regulatory requirement

(they are subject to the facility-wide specific conditions of this permit). The project includes new hydroclones for thickening the gypsum slurry from the FGD system, the replacement of two existing vacuum drum filters with two new ones, each with a capacity to dewater the gypsum product of units 1 through 4, and a new return slurry tank. This equipment is not expected to be a source of particulate emissions because these processes handle wet gypsum crystals. The existing gypsum handling equipment will also handle the additional dewatered gypsum from this FGD system with no changes.

This project will require imposition of emission limitations for SO_2 for unit 3 under certain operating scenarios.

REGULATORY CLASSIFICATION

This facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), or volatile organic compounds (VOC) exceeds 100 tons per year (TPY).

This facility is within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 100 TPY for at least one criteria pollutant, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD).

This project is exempt from the requirements of Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) as discussed in the Technical Evaluation and Preliminary Determination dated January 26, 1999.

This facility is a major source of hazardous air pollutants (HAPs) (based on the initial Title V permit application received June 14, 1996) and is also subject to the provisions of Title IV, Acid Rain, Clean Air Act as amended in 1990.

Emissions units 001 and 002 are subject to the requirements of the state rules as indicated in this permit. The new limestone handling emissions units (020 and 021) are subject to 40 CFR 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants (40 CFR 60.670 - 60.676) and 40 CFR 60 Subpart A (effective July 1, 1998); and are subject to the requirements of the state rules as indicated in this permit.

PERMIT SCHEDULE

- July 6, 1998 Received application for construction/operation permit
- Nov. 11, 1998 Received final response to request for additional information
- Nov. 11, 1998 Permit application deemed complete
- Jan. 15, 1999 Received information from applicant regarding limestone handling controls.
- Jan. 25, 1999 Distributed Notice of Intent to Issue permit
- Jan. 27, 1999 Notice of Intent published in The Tampa Tribune

RELEVANT DOCUMENTS

The documents listed below are the basis of the permit. They are specifically related to this permitting action. These documents are on file with the Department.

- Application received at the Bureau of Air Regulation on July 6, 1998
- Department's Technical Evaluation and Preliminary Determination dated January 26, 1999
- Department's Intent to Issue and public notice information dated January 25, 1999
- Department's letters dated August 5, 1998 requesting additional information
- Applicant's letters received August 11, 1998 and August 21, 1998 (via fax)
- Applicant's aerial photograph of modeling receptor locations received August 19, 1998
- Applicant's revised application received November 11, 1998
- E-mail from James Hunter of TEC with revised information about control equipment for new limestone handling equipment received January 15, 1999
- Information about the lime silo baghouse provided by TEC via fax on February 24, 1999.

AIR CONSTRUCTION/OPERATION PERMIT 0570039-003-AC & 0570039-004-AC

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

The following specific conditions apply to all emissions units at this facility addressed by this permit.

ADMINISTRATIVE

1. Regulating Agencies: All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection at Mail Station 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, phone number 850/488-0114. All documents related to reports, tests, minor modifications and notifications shall be submitted to the Department's Southwest District office at 3804 Coconut Palm Drive, Tampa, Florida 33619-8218, and phone number 813/744-6100. Copies of all submittals shall be submitted to Air Management Division, Hillsborough County Environmental Protection Commission, 1410 North 21 Street, Tampa, Florida 33605, and phone number 813/272-5530.
2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]
3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S. and Florida Administrative Code Chapters 62-4, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297 and the Code of Federal Regulations Title 40, Part 60, adopted by reference in the Florida Administrative Code (F.A.C.) regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
5. New or Additional Conditions: Pursuant to Rule 62-4.080, F.A.C., for good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Expiration: This air construction permit shall expire on August 25, 2000. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rules 62-210.300(1), 62-4.070(4), 62-4.080, and 62-4.210, F.A.C]
7. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit must be obtained prior to the beginning of construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
8. Title V Operation Permit Required: This permit authorizes construction and/or installation of the permitted emissions unit and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The owner or operator shall apply for and receive a Title V operation permit prior to expiration of this permit. To

apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Bureau of Air Regulation, and a copy sent to the Department's Southwest District office and the Hillsborough County Environmental Protection Commission. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

EMISSION LIMITING STANDARDS

9. General Visible Emissions Standard: Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer, or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density if which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20% opacity). The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C. Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C. [Rule 62-296.320(4)(b)1, F.A.C.]

10. Unconfined Emissions of Particulate Matter: [Rule 62-296.320(4)(c), F.A.C.]

    (a) No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions.

    (b) Any permit issued to a facility with emissions of unconfined particulate matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter.

    (c) Reasonable precautions include the following:

    - Paving and maintenance of roads, parking areas and yards.
    - Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
    - Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities.
    - Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.
    - Landscaping or planting of vegetation.
    - Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.
    - Confining abrasive blasting where possible.
    - Enclosure or covering of conveyor systems.

    (d) In determining what constitutes reasonable precautions for a particular source, the Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice.

11. General Pollutant Emission Limiting Standards: [Rule 62-296.320(1)(a)&(2), F.A.C.]

    (a) No person shall not store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department.

    (b) No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

    [Note: An objectionable odor is defined in Rule 62-210.200(198), F.A.C., as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance.]

OPERATIONAL REQUIREMENTS

12. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by hazard of fire, wind or by other cause, the permittee shall immediately notify the Department's district office and, if applicable, appropriate local program. The notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence, and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with Department rules. [Rule 62-4.130, F.A.C.]

13. Circumvention: No person shall circumvent any air pollution control device or allow the emission of air pollutants without the applicable air pollution control device operating properly. [Rule 62-210.650, F.A.C.]

14. Excess Emissions: The following excess emissions provisions can not be used to vary any NSPS requirements (from any subpart of 40 CFR 60).

    (a) Excess emissions resulting from start-up, shutdown or malfunction of any emissions units shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]

    (b) Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up, shutdown, or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

15. Required Number of Test Runs: For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured; provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed

within one consecutive five-day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five-day period allowed for the test, the Secretary or his or her designee may accept the results of two complete runs as proof of compliance, provided that the arithmetic mean of the two complete runs is at least 20% below the allowable emission limiting standard. [Rule 62-297.310(1), F.A.C.]

16. Operating Rate During Testing: Unless otherwise stated in the applicable emission limiting standard rule, testing of emissions shall be conducted with the emissions unit operation at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the minimum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test load until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. [Rule 62-297.310(2), F.A.C.]

17. Calculation of Emission Rate: The indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the three separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]

18. Test Procedures shall meet all applicable requirements of Rule 62-297.310(4), F.A.C. [Rule 62-297.310(4), F.A.C.]

19. Determination of Process Variables: [Rule 62-297.310(5), F.A.C.]

    (a) Required Equipment. The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.

    (b) Accuracy of Equipment. Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

20. Required Stack Sampling Facilities: Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. All stack sampling facilities must meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E. Sampling facilities shall also conform to the requirements of Rule 62-297.310(6), F.A.C. [Rule 62-297.310(6), F.A.C.]

21. Test Notification: The owner or operator shall notify the Department's district office and the Air Management Division, Hillsborough County Environmental Protection Commission, at least 15 days prior to the date on which each formal compliance test is to begin. Notification shall include the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator. [Rule 62-297.310(7)(a)9., F.A.C.]

[Note: The federal requirements of 40 CFR 60.8 require 30 days notice of the initial test and any tests required under section 114 of the Clean Air Act, but the Department rules require 15 days notice for the annual compliance tests. Unless otherwise advised by the district office or, if applicable, appropriate local program, provide 15 days notice prior to conducting annual tests, after the initial test has been completed.]

22. Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the facility to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions units and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]

REPORTING AND RECORD KEEPING REQUIREMENTS

23. Duration of Record Keeping: Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least five years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule. [Rules 62-4.160(14)(a)&(b) and 62-213.440(1)(b)2.b., F.A.C.]

24. Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test. The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the applicable information listed in Rule 62-297.310(8)(c), F.A.C. Copies of all submittals shall be submitted to the Air Management Division, Hillsborough County Environmental Protection Commission. [Rule 62-297.310(8), F.A.C.]

25. Excess Emissions Report: If excess emissions occur, the owner or operator shall notify the Department within one working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. Pursuant to the New Source Performance Standards, excess emissions shall also be reported in accordance with 40 CFR 60.7, Subpart A. [Rule 62-4.130, F.A.C.]

26. Excess Emissions Report - Malfunctions: In case of excess emissions resulting from malfunctions, each owner or operator shall notify the Department and the Air Management Division, Hillsborough County Environmental Protection Commission in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report if requested by the Department. [Rule 62-210.700(6), F.A.C.]

27. Annual Operating Report for Air Pollutant Emitting Facility: The Annual Operating Report for Air Pollutant Emitting Facility shall be completed each year and shall be submitted to the Department's Southwest District office and the Air Management Division, Hillsborough County Environmental Protection Commission by March 1 of the following year. [Rule 62-210.370(3), F.A.C.]

AIR CONSTRUCTION PERMIT 0570039-003-AC & 0570039-004-AC
SECTION III. EMISSIONS UNITS SPECIFIC CONDITIONS

The following specific conditions apply to the following emissions units after construction:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
001	Fossil fuel fired steam boiler generating unit 1
002	Fossil fuel fired steam boiler generating unit 2
003	Fossil fuel fired steam boiler generating unit 3

[Note: These emissions units are subject to the requirements of the state rules as indicated in this permit. Emissions unit 003 is specifically subject only to the requirements of Section II and specific conditions 5, 6 and 7 of Section III of this permit.]

OPERATIONAL REQUIREMENTS

1. Hours of Operation: These emissions units may operate continuously, i.e., 8,760 hours/year. [Rule 62-210.200, F.A.C., Definitions-potential to emit (PTE)]

2. Fuel: This permit authorizes the use of petroleum coke (petcoke) in a mixture with coal up to 20.0% petcoke (by weight). [Rules 62-4.070(3) and 62-210.200, F.A.C., Definitions-potential to emit (PTE), and applicant request]

3. FGD Operation Required for Petcoke: Whenever each emissions unit is fired with petcoke in any amount up to the allowable percentage, its flue gases shall be directed to the FGD system. [Rule 62-4.070(3), F.A.C., and applicant request]

   [Note: The owner or operator may operate each emissions unit without directing its emissions to the FGD system whenever petcoke is not being fired in the emissions unit.]

   [Note: The excess emissions provisions of section II, condition 14 of this permit are also applicable to the FGD system operation.]

4. Limit on Petcoke Bunkering: The owner or operator at any given time shall not bunker more than the amount of petcoke that may be fired in each emissions unit in one day. [Rule 62-4.070(3), F.A.C., and applicant request]

   [Note: This condition is intended to limit possible excess emissions in the event of an unexpected breakdown of the FGD system that requires its shutdown while either emissions unit is firing petcoke.]

EMISSION LIMITATIONS AND PERFORMANCE STANDARDS

5. Emission Limitations, SO_2: Emissions of sulfur dioxide from these emissions units are limited as shown in the following tables.

   [Tables begin on the following page]

	Operating Mode, Emission Limits				
Operating Scenario	Unit 1	Unit 2	Unit 3	Emission Limit Units	Averaging Period[a]
1	Scrubbed, 3310	Scrubbed, 3277	Unscrubbed, 14814	lb/hour	24 hours
2	Scrubbed, 3310	Unscrubbed, 9590	Unscrubbed, 9876	lb/hour	24 hours
3	Scrubbed, 3310	Scrubbed, 3277	Scrubbed, 3374	lb/hour	24 hours
4	Scrubbed, 3310	Unscrubbed, 11588	Scrubbed, 3374	lb/hour	24 hours
5	Unscrubbed, 11707	Scrubbed, 3277	Scrubbed, 3374	lb/hour	24 hours
6	Unscrubbed, 9689	Scrubbed, 3277	Unscrubbed, 9876	lb/hour	24 hours

Emission Limitations for Unit 1

Emission Limit	Units	Averaging Period
6.5[b]	lb/mmBtu	2 hours

Emission Limitations for Unit 2

Emission Limit	Units	Averaging Period
6.5[b]	lb/mmBtu	2 hours

Emission Limitations for Units 1, 2 and 3

Emission Limit	Units	Averaging Period
25[b c]	tons/hour	24 hours
31.5[b c]	tons/hour	3 hours

Notes for tables:

Emission limits are as proposed by the applicant in its application or modeling data except where noted. The "base case" operating scenario (units 1, 2 and 3 all operating in the unscrubbed mode) is not specifically addressed by this permit.
"Scrubbed" refers to operation while directing flue gas to the FGD system. "Unscrubbed" refers to operation while not directing flue gas to the FGD system.
a The 24-hour averaging period for these limits shall be calculated on a calendar day basis.
b Emission limit from Rule 62-296.405(1)(c)2.b., F.A.C.
c Total emissions from units 1, 2 & 3

[Rules 62-296.405(1)(c)2.b. and 62-4.070(3), F.A.C.]

[Note: These emissions limits are formulated to protect the 24-hour AAQS for sulfur dioxide.]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

6. Continuous Emission Monitoring Systems: The owner or operator shall install, calibrate, maintain, and operate a continuous emission monitoring (CEM) system in the FGD system stack to measure and record the sulfur dioxide emissions from these emissions units, in a manner sufficient to demonstrate compliance with the emission limits of this permit. Compliance with the emission limits of this permit shall be based on 2-hour or 3-hour averages or 24-hour calendar day averages calculated by the CEM system expressed in units of pounds per million Btu heat input, pounds per hour or tons per hour, as applicable. [Rules 62-4.070(3) and 62-296.405(1)(f)1.b., F.A.C., and applicant request]

   [Note: The averaging period for the 24 hour 25 tons/hour emission limit of Rule 62-296.405(1)(c)2.b., F.A.C., is not specified by rule, but is assumed in this permit to also be on a calendar day basis.]

7. CEM System Requirements: The CEM system shall be certified pursuant to 40 CFR Part 75 and shall be operated and maintained in accordance with the applicable requirements of 40 CFR Part 75, Subparts B and C. Missing data shall be substituted in a manner pursuant to 40 CFR Part 75, Subpart D. Record keeping and reporting shall be conducted pursuant to 40 CFR Part 75, Subparts F and G. Excess emissions pursuant to 40 CFR 60.334 shall be determined using the Part 75 CEM system. [Rules 62-4.070(3) and 62-296.405(1)(f), F.A.C.]

   [Note: Compliance with these requirements will assure compliance with the requirements of Rule 62-296.405(1)(f), F.A.C.]

8. Petcoke Sulfur Content: The owner or operator shall measure the sulfur content of representative samples of all petcoke received using appropriate ASTM methods to demonstrate compliance with the sulfur content limit of this permit. [Rule 62-4.070(3), F.A.C.]

   [Note: The sulfur content of petcoke is not limited by this permit. This condition and condition 11 of this section require records of petcoke sulfur content to ensure that the applicant has sufficient information available to alter the ratio of petcoke to coal, if necessary to ensure compliance with the emission limit for sulfur dioxide from the FGD system, when it fires petcoke with a higher than average sulfur content.]

9. Monitor Petcoke Usage: The owner or operator shall operate and maintain equipment to record and calculate the weight percentage of petcoke and coal bunkered and fired in each emissions unit, to verify compliance with the bunkering limit and the percentage limitation on petcoke usage of this permit. [Rule 62-4.070(3), F.A.C.]

REPORTING AND RECORD KEEPING REQUIREMENTS

10. Records of Operation: The owner or operator shall make and maintain a daily record of operation of each emissions unit showing the date, fuel(s) used, whether flue gas was directed to the FGD system, and the duration of all startups, shutdowns and malfunctions. Records of fuel bunkering and petcoke usage (weight percent of petcoke fired) shall also be made on at least a daily basis. Data that verifies compliance with the percentage limitation on petcoke usage shall be submitted with the annual operating report. [Rule 62-4.070(3), F.A.C.]

11. Records of Petcoke Sulfur Content: The owner or operator shall maintain records of petcoke sampling and analysis results performed as required by specific condition 8 of this section. [Rule 62-4.070(3), F.A.C.]

    [See the note for condition 8 of this section.]

12. Quarterly Reporting Requirements: The owner or operator shall submit to the Department a written report of emissions in excess of emission limiting standards of this permit for each calendar quarter. The nature and cause of the excessive emissions shall be explained. This report does not relieve the owner or operator of the legal liability for violations All recorded data shall be maintained on file for a period of five years. Copies of all submittals shall be submitted to the Air Management Division, Hillsborough County Environmental Protection Commission. [Rules 62-4.070(3) and 62-296.405(1)(g), F.A.C.]

    [Note: Five year record keeping is required for Title V sources.]

AIR CONSTRUCTION PERMIT 0570039-003-AC & 0570039-004-AC

SECTION III. EMISSIONS UNITS SPECIFIC CONDITIONS

The following specific conditions apply to the following emissions units after construction:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
020	Drops from limestone handling conveyors LE, LF and LG and silo C belt feeder with baghouse
021	Silo C with one baghouse

[Note: These emissions units are subject to 40 CFR 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants (40 CFR 60.670 - 60.676) and 40 CFR 60 Subpart A (effective July 1, 1998); Rule 1-3.61, Rules of the Environmental Protection Commission (EPC) of Hillsborough County; Rule 62-296.700, F.A.C.; and are subject to the requirements of the state rules as indicated in this permit. The visible emission limit of specific condition 16 is more stringent than the limitations of 40 CFR 60.672(a)(2) and 60.672(f), and compliance with this limit will assure compliance with those requirements.]

OPERATIONAL REQUIREMENTS

13. Hours of Operation: These emissions units may operate continuously, i.e., 8,760 hours/year. [Rule 62-210.200, F.A.C., Definitions-potential to emit (PTE)]

14. Enclosure of Equipment: All conveyors and conveyor transfer points shall be enclosed and exhaust from this equipment shall be directed to a baghouse to minimize particulate matter emissions. [62-4.070(3),F.A.C.]

15. Operating Procedures: Enclosures and baghouses for these emissions units shall be properly operated and maintained at all times in a condition to minimize particulate emissions. The owner and operator shall ensure that all facility staff responsible for these emissions units are trained in their operation and maintenance in accordance with the guidelines and procedures as established by the equipment manufacturers. [Rule 62-4.070(3), F.A.C.]

EMISSION LIMITATIONS AND PERFORMANCE STANDARDS

16. Particulate and Visible Emissions: No owner or operator shall cause or allow visible emissions from the baghouses controlling these emissions units in excess of 0.03 gr/dscf and 5% opacity. [Rules 62-4.070(3) and Rule 62-296.711(2)(b), F.A.C., Rule 1-3.61, Rules of the EPC, and request of applicant (VE limit)]

    [Note: The visible emission limit of this condition is more stringent than the limitations of 40 CFR 60.672(a)(2) and 60.672(f), and compliance with this limit will assure compliance with those requirements.]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

17. Visible Emissions Tests: Compliance with the visible emission limits of this permit shall be demonstrated by an annual compliance test using EPA Method 9. The duration of initial tests shall be three hours and the duration of subsequent annual tests shall be thirty minutes. [Rules 62-4.070(3) and 62-297.310(4)(a)2., F.A.C., and 40 CFR 60.11(b)]

[Note: The three hour duration of initial tests complies with the requirements of the NSPS and the thirty minute duration of subsequent tests complies with state rules.]

18. Visible Emissions Tests in Lieu of Stack Tests, Emissions Unit 020: After passing the initial test required by specific condition 21 of this section, the owner or operator is permitted to comply with the visible emission limit of specific condition 16 and the testing requirement of specific condition 17 of this section in lieu of regularly demonstrating compliance with the limitations of 40 CFR 60.672(a)(1) and (2) and the particulate matter limitation of specific condition 16 of this section. If the Department has reason to believe that the particulate weight emission limit of 40 CFR 60.672(a)(1) or the particulate matter limitation of specific condition 16 of this section is not being met, it shall require compliance be demonstrated by the test method specified by 40 CFR 60.675. [Rules 62-4.070(3) and 62-297.620(4), F.A.C.]

REPORTING AND RECORD KEEPING REQUIREMENTS

19. Records of Maintenance: The owner or operator shall make and maintain records of maintenance on the enclosures and baghouses sufficient to demonstrate compliance with the operating procedures requirements of specific condition 15 of this section. [Rule 62-4.070(3), F.A.C.]

NSPS SUBPART OOO REQUIREMENTS

[Note: The numbering of the original rules in the following conditions has been preserved for ease of reference to the rules. The definitions of terms of this part shall have the meanings as defined in 40 CFR 60.671 Definitions. The term "Administrator" when used in 40 CFR 60 shall mean the Secretary or the Secretary's designee.]

20. Pursuant to 40 CFR 60.672 Standard for Particulate Matter:

[Note: The requirements of 40 CFR 60.672(a)(1) and (2) apply to emissions unit 020, and the requirements of 40 CFR 60.672(f) apply to emissions unit 021.]

(a) No owner or operator shall cause to be discharged into the atmosphere from any transfer point on belt conveyors or from any other affected facility any stack emissions which:

(1) Contain particulate matter in excess of 0.05 g/dscm; and

(2) Exhibit greater than 7 percent opacity.

[Note: The emission limit of specific condition 16 of this section is more stringent than the limitation of 40 CFR 60.672(a)(2).]

(f) No owner or operator shall cause to be discharged into the atmosphere from any baghouse that controls emissions from only an individual, enclosed storage bin, stack emissions which exhibit greater than 7 percent opacity.

[Note: The emission limit of specific condition 16 of this section is more stringent than the limitation of 40 CFR 60.672(f). See the note for that condition.]

21. Pursuant to 40 CFR 60.675 Test Methods and Procedures:

(a) In conducting the performance tests required in 40 CFR 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of 40 CFR 60 or other methods and procedures as specified in this section, except as provided in 40 CFR 60.8(b).

(b) The owner or operator shall determine compliance with the particulate matter standards in 40 CFR 60.672(a) as follows:

(1) Method 5 or Method 17 shall be used to determine the particulate matter concentration. The sample volume shall be at least 1.70 dscm (60 dscf). For Method 5, if the gas stream being sampled is at ambient temperature, the sampling probe and filter may be operated without heaters. If the gas stream is above ambient temperature, the sampling probe and filter may be operated at a temperature high enough, but no higher than 121 °C (250 °F), to prevent water condensation on the filter.

(2) Method 9 and the procedures in 40 CFR 60.11 shall be used to determine opacity.

[Note: The owner or operator is required to demonstrate compliance with the particulate matter emission limitation of 40 CFR 60.672(a)(1) by performing and passing an initial particulate matter test in accordance with the requirements of this section, unless such requirement is waived by the US Environmental Protection Agency. No subsequent regular annual particulate matter testing is required. The owner or operator is permitted to comply with the visible emission limit of specific condition 16 of this section in lieu of regularly demonstrating compliance with the limitations of 40 CFR 60.672(a)(1) and (2). See also specific condition 18 of this section.]

(c) (2) In determining compliance with the opacity of stack emissions from any baghouse that controls emissions only from an individual enclosed storage bin under 40 CFR 60.672(f) of this subpart, using Method 9, the duration of the Method 9 observations shall be 1 hour (ten 6-minute averages).

[Note: The initial Method 9 test duration for emissions unit 021 is one hour pursuant to 40 CFR 60.675(c)(2), while the initial Method 9 test duration for emissions unit 020 is 3 hours pursuant to 40 CFR 60.11(b). Subsequent annual Method 9 tests shall be conducted for 30 minutes for emissions units 020 and 021.]

(g) If, after 30 days notice for an initially scheduled performance test, there is a delay (due to operational problems, etc.) in conducting any rescheduled performance test required in this section, the owner or operator of an affected facility shall submit a notice to the Administrator at least 7 days prior to any rescheduled performance test.

22. Pursuant to 40 CFR 60.676 Reporting and Recordkeeping:

(f) The owner or operator of any affected facility shall submit written reports of the results of all performance tests conducted to demonstrate compliance with the standards set forth in 40 CFR 60.672 of this subpart.

(h) The subpart A requirement under 40 CFR 60.7(a)(2) for notification of the anticipated date of initial startup of an affected facility shall be waived for owners or operators of affected facilities regulated under this subpart.

(i) A notification of the actual date of initial startup of each affected facility shall be submitted to the Administrator.

(1) For a combination of affected facilities in a production line that begin actual initial startup on the same day, a single notification of startup may be submitted by the owner or operator to the Administrator. The notification shall be postmarked within 15 days after such date and shall include a description of each affected facility, equipment manufacturer, and serial number of the equipment, if available.

AIR CONSTRUCTION PERMIT 0570039-003-AC & 0570039-004-AC
SECTION III. EMISSIONS UNITS SPECIFIC CONDITIONS

The following specific conditions apply to the following emissions unit after construction:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
022	Lime silo with one baghouse for the waste water treatment plant for the chloride bleed stream

[Note: This emissions unit is subject to the requirements of the state rules as indicated in this permit. This emissions unit is subject to Rule 1-3.61, Rules of the Environmental Protection Commission (EPC) of Hillsborough County, but it exempt from the requirements of Rule 62-296.711, F.A.C., pursuant to Rule 62-296.700(2)(c), F.A.C., because it has an allowable emission rate of less than one ton per year.]

OPERATIONAL REQUIREMENTS

23. Hours of Operation: This emissions units may operate continuously, i.e., 8,760 hours/year. [Rule 62-210.200, F.A.C., Definitions-potential to emit (PTE)]

24. Operating Procedures: The baghouse for this emissions unit shall be properly operated and maintained at all times in a condition to minimize particulate emissions. The owner and operator shall ensure that all facility staff responsible for these emissions units are trained in their operation and maintenance in accordance with the guidelines and procedures as established by the equipment manufacturers. [Rule 62-4.070(3), F.A.C.]

EMISSION LIMITATIONS AND PERFORMANCE STANDARDS

25. Particulate and Visible Emissions: No owner or operator shall cause or allow visible emissions from the baghouse controlling this emissions unit in excess of 0.03 gr/dscf and 5% opacity. [Rules 62-4.070(3) and 62-296.700(2)(c), F.A.C.]

    [Note: The particulate matter limitation will ensure that allowable emissions are less than one ton per year for this emissions unit.]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

26. Visible Emissions Tests: Compliance with the visible emission limit of this permit shall be demonstrated by an annual compliance test using EPA Method 9. The duration of annual tests shall be thirty minutes. [Rules 62-4.070(3) and 62-297.310(4)(a)2., F.A.C.]

27. Visible Emissions Tests in Lieu of Stack Tests: The owner or operator is permitted to comply with the visible emission limit of specific condition 25 and the testing requirement of specific condition 26 of this section in lieu of regularly demonstrating compliance with the particulate matter limitation of specific condition 25 of this section. If the Department has reason to believe that the particulate matter limitation of specific condition 25 of this section is not being met, it shall require compliance be demonstrated by conducting a particulate matter test in accordance with EPA Method 5 specified at 40 CFR 60 Appendix A. [Rules 62-4.070(3) and 62-297.620(4), F.A.C.]

REPORTING AND RECORD KEEPING REQUIREMENTS

28. Records of Maintenance: The owner or operator shall make and maintain records of maintenance on the baghouse sufficient to demonstrate compliance with the operating procedures requirements of specific condition 24 of this section. [Rule 62-4.070(3), F.A.C.]

AIR CONSTRUCTION PERMIT 0570039-003-AC & 0570039-004-AC

APPENDIX A. NSPS GENERAL PROVISIONS

[Note: The numbering of the original rules in the following conditions has been preserved for ease of reference to the rules. The term "Administrator" when used in 40 CFR 60 shall mean the Secretary or the Secretary's designee.]

1. Pursuant to 40 CFR 60.1 Applicability:

   (a) Except as provided in 40 CFR 60 subparts B and C, the provisions of this part apply to the owner or operator of any stationary source which contains an affected facility, the construction or modification of which is commenced after the date of publication in this part of any standard (or, if earlier, the date of publication of any proposed standard) applicable to that facility.

   (b) Any new or revised standard of performance promulgated pursuant to section 111(b) of the Act shall apply to the owner or operator of any stationary source which contains an affected facility, the construction or modification of which is commenced after the date of publication in this part of such new or revised standard (or, if earlier, the date of publication of any proposed standard) applicable to that facility.

   (c) In addition to complying with the provisions of this part, the owner or operator of an affected facility may be required to obtain an operating permit issued to stationary sources by an authorized State air pollution control agency or by the Administrator of the U.S. Environmental Protection Agency (EPA) pursuant to Title V of the Clean Air Act (CAA) as amended November 15, 1990 (42 U.S.C. 7661).

   [40 CFR 60.1]

2. Pursuant to 40 CFR 60.7 Notification And Record Keeping:

   (a) Any owner or operator subject to the provisions of 40 CFR 60 shall furnish the Administrator written notification as follows:

   (1) A notification of the date construction (or reconstruction as defined under 40 CFR 60.15) of an affected facility is commenced postmarked no later than 30 days after such date. This requirement shall not apply in the case of mass-produced facilities which are purchased in completed form.

   (2) A notification of the anticipated date of initial startup of an affected facility postmarked not more than 60 days nor less than 30 days prior to such date.

   (3) A notification of the actual date of initial startup of an affected facility postmarked within 15 days after such date.

   (4) A notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart or in 40 CFR 60.14(e). This notice shall be postmarked 60 days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The Administrator may request additional relevant information subsequent to this notice.

   (6) A notification of the anticipated date for conducting the opacity observations required by 40 CFR 60.11(e)(1) of this part. The notification shall also include, if appropriate, a request for the

Administrator to provide a visible emissions reader during a performance test. The notification shall be postmarked not less than 30 days prior to such date.

(b) The owner or operator subject to the provisions of 40 CFR 60 shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.

(f) The owner or operator subject to the provisions of 40 CFR 60 shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by 40 CFR 60 recorded in a permanent form suitable for inspection. The file shall be retained for at least three years following the date of such measurements, maintenance, reports, and records.

(g) If notification substantially similar to that in 40 CFR 60.7(a) is required by any other State or local agency, sending the Administrator a copy of that notification will satisfy the requirements of 40 CFR 60.7(a).

(h) Individual subparts of this part may include specific provisions which clarify or make inapplicable the provisions set forth in this section.

[40 CFR 60.7]

3. Pursuant to 40 CFR 60.8 Performance Tests:

(a) Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility and at such other times as may be required by the Administrator under section 114 of the Act, the owner or operator of such facility shall conduct performance test(s) and furnish the Administrator a written report of the results of such performance test(s).

(b) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable subpart unless the Administrator (1) specifies or approves, in specific cases, the use of a reference method with minor changes in methodology, (2) approves the use of an equivalent method, (3) approves the use of an alternative method the results of which he has determined to be adequate for indicating whether a specific source is in compliance, (4) waives the requirement for performance tests because the owner or operator of a source has demonstrated by other means to the Administrator's satisfaction that the affected facility is in compliance with the standard, or (5) approves shorter sampling times and smaller sample volumes when necessitated by process variables or other factors. Nothing in this paragraph shall be construed to abrogate the Administrator's authority to require testing under section 114 of the Act.

(c) Performance tests shall be conducted under such conditions as the Administrator shall specify to the plant operator based on representative performance of the affected facility. The owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor

shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard.

(d) The owner or operator of an affected facility shall provide the Administrator at least 30 days prior notice of any performance test, except as specified under other subparts, to afford the Administrator the opportunity to have an observer present.

(e) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows: (1) Sampling ports adequate for test methods applicable to such facility. This includes (i) constructing the air pollution control system such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures and (ii) providing a stack or duct free of cyclonic flow during performance tests, as demonstrated by applicable test methods and procedures. (2) Safe sampling platform(s). (3) Safe access to sampling platform(s). (4) Utilities for sampling and testing equipment.

(f) Unless otherwise specified in the applicable subpart, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Administrator's approval, be determined using the arithmetic mean of the results of the two other runs.
[40 CFR 60.8] [See the note for specific condition 21 of Section II of this permit regarding the proper advance notification of compliance tests.]

4. Pursuant to 40 CFR 60.11 Compliance With Standards And Maintenance Requirements:

(a) Compliance with standards in 40 CFR 60, other than opacity standards, shall be determined only by performance tests established by 40 CFR 60.8, unless otherwise specified in the applicable standard.

(b) Compliance with opacity standards in 40 CFR 60 shall be determined by conducting observations in accordance with Reference Method 9 in appendix A of 40 CFR 60, any alternative method that is approved by the Administrator, or as provided in 40 CFR 60.11(e)(5). For purposes of determining initial compliance, the minimum total time of observations shall be 3 hours (30 6-minute averages) for the performance test or other set of observations (meaning those fugitive-type emission sources subject only to an opacity standard). [See specific condition 17, Section III, above for test duration requirements.]

(c) The opacity standards set forth in 40 CFR 60 shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard.

(d) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing

emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

(e) (1) For the purpose of demonstrating initial compliance, opacity observations shall be conducted concurrently with the initial performance test required in 40 CFR 60.8 unless one of the following conditions apply. If no performance test under 40 CFR 60.8 is required, then opacity observations shall be conducted within 60 days after achieving the maximum production rate at which the affected facility will be operated but no later than 180 days after initial startup of the facility. If visibility or other conditions prevent the opacity observations from being conducted concurrently with the initial performance test required under 40 CFR 60.8, the source owner or operator shall reschedule the opacity observations as soon after the initial performance test as possible, but not later than 30 days thereafter, and shall advise the Administrator of the rescheduled date. In these cases, the 30-day prior notification to the Administrator required in 40 CFR 60.7(a)(6) shall be waived. The rescheduled opacity observations shall be conducted (to the extent possible) under the same operating conditions that existed during the initial performance test conducted under 40 CFR 60.8. The visible emissions observer shall determine whether visibility or other conditions prevent the opacity observations from being made concurrently with the initial performance test in accordance with procedures contained in Reference Method 9 of appendix B of this part. Opacity readings of portions of plumes which contain condensed, uncombined water vapor shall not be used for purposes of determining compliance with opacity standards. The owner or operator of an affected facility shall make available, upon request by the Administrator, such records as may be necessary to determine the conditions under which the visual observations were made and shall provide evidence indicating proof of current visible observer emission certification. Except as provided in 40 CFR 60.11(e)(5), the results of continuous monitoring by transmissometer which indicate that the opacity at the time visual observations were made was not in excess of the standard are probative but not conclusive evidence of the actual opacity of an emission, provided that the source shall meet the burden of proving that the instrument used meets (at the time of the alleged violation) Performance Specification 1 in appendix B of 40 CFR 60, has been properly maintained and (at the time of the alleged violation) that the resulting data have not been altered in any way.

(2) Except as provided in 40 CFR 60.11(e)(3), the owner or operator of an affected facility to which an opacity standard in this part applies shall conduct opacity observations in accordance with 40 CFR 60.11(b), shall record the opacity of emissions, and shall report to the Administrator the opacity results along with the results of the initial performance test required under 40 CFR 60.8. The inability of an owner or operator to secure a visible emissions observer shall not be considered a reason for not conducting the opacity observations concurrent with the initial performance test.

(3) The owner or operator of an affected facility to which an opacity standard in this part applies may request the Administrator to determine and to record the opacity of emissions from the affected facility during the initial performance test and at such times as may be required. The owner or operator of the affected facility shall report the opacity results. Any request to the Administrator to determine and to record the opacity of emissions from an affected facility shall be included in the notification required in 40 CFR 60.7(a)(6). If, for some reason, the Administrator cannot

determine and record the opacity of emissions from the affected facility during the performance test, then the provisions of 40 CFR 60.7(e)(1) shall apply.

(6) Upon receipt from an owner or operator of the written reports of the results of the performance tests required by 40 CFR 60.8, the opacity observation results and observer certification required by 40 CFR 60.11(e)(1), and the COMS results, if applicable, the Administrator will make a finding concerning compliance with opacity and other applicable standards. If COMS data results are used to comply with an opacity standard, only those results are required to be submitted along with the performance test results required by 40 CFR 60.8. If the Administrator finds that an affected facility is in compliance with all applicable standards for which performance tests are conducted in accordance with 40 CFR 60.8 of this part but during the time such performance tests are being conducted fails to meet any applicable opacity standard, the shall notify the owner or operator and advise him that he may petition the Administrator within 10 days of receipt of notification to make appropriate adjustment to the opacity standard for the affected facility.

(7) The Administrator will grant such a petition upon a demonstration by the owner or operator that the affected facility and associated air pollution control equipment was operated and maintained in a manner to minimize the opacity of emissions during the performance tests; that the performance tests were performed under the conditions established by the Administrator; and that the affected facility and associated air pollution control equipment were incapable of being adjusted or operated to meet the applicable opacity standard.

(8) The Administrator will establish an opacity standard for the affected facility meeting the above requirements at a level at which the source will be able, as indicated by the performance and opacity tests, to meet the opacity standard at all times during which the source is meeting the mass or concentration emission standard. The Administrator will promulgate the new opacity standard in the Federal Register.

(f) Special provisions set forth under an applicable subpart of 40 CFR 60 shall supersede any conflicting provisions of paragraphs (a) through (e) of 40 CFR 60.11.

(g) For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard in 40 CFR 60, nothing in 40 CFR 60 shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

[40 CFR 60.11]

5. Pursuant to 40 CFR 60.12 Circumvention:

No owner or operator subject to the provisions of 40 CFR 60.12 shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

[40 CFR 60.12]

6. Pursuant to 40 CFR 60.14 Modification:

(a) Except as provided under 40 CFR 60.14(e) and 40 CFR 60.14(f), any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.

(b) Emission rate shall be expressed as kg/hr (lbs./hour) of any pollutant discharged into the atmosphere for which a standard is applicable. The Administrator shall use the following to determine emission rate:

(1) Emission factors as specified in the latest issue of "Compilation of Air Pollutant Emission Factors", EPA Publication No. AP-42, or other emission factors determined by the Administrator to be superior to AP-42 emission factors, in cases where utilization of emission factors demonstrate that the emission level resulting from the physical or operational change will either clearly increase or clearly not increase.

(2) Material balances, continuous monitor data, or manual emission tests in cases where utilization of emission factors as referenced in 40 CFR 60.14(b)(1) does not demonstrate to the Administrator's satisfaction whether the emission level resulting from the physical or operational change will either clearly increase or clearly not increase, or where an owner or operator demonstrates to the Administrator's satisfaction that there are reasonable grounds to dispute the result obtained by the Administrator utilizing emission factors as referenced in 40 CFR 60.14(b)(1) . When the emission rate is based on results from manual emission tests or continuous monitoring systems, the procedures specified in 40 CFR 60 appendix C of 40 CFR 60 shall be used to determine whether an increase in emission rate has occurred. Tests shall be conducted under such conditions as the Administrator shall specify to the owner or operator based on representative performance of the facility. At least three valid test runs must be conducted before and at least three after the physical or operational change. All operating parameters which may affect emissions must be held constant to the maximum feasible degree for all test runs.

(c) The addition of an affected facility to a stationary source as an expansion to that source or as a replacement for an existing facility shall not by itself bring within the applicability of this part any other facility within that source.

(d) [Reserved]

(e) The following shall not, by themselves, be considered modifications under this part:

(1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category, subject to the provisions of 40 CFR 60.14(c) and 40 CFR 60.15.

(2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.

(3) An increase in the hours of operation.

(4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 40 CFR 60.1, the existing facility was designed to accommodate that alternative use. A facility shall be considered to be designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as amended prior to the change. Conversion to coal required for energy considerations, as specified in section 111(a)(8) of the Act, shall not be considered a modification.

(5) The addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or is replaced by a system which the Administrator determines to be less environmentally beneficial.

(6) The relocation or change in ownership of an existing facility.

(f) Special provisions set forth under an applicable subpart of this part shall supersede any conflicting provisions of this section.

(g) Within 180 days of the completion of any physical or operational change subject to the control measures specified in 40 CFR 60.14(a), compliance with all applicable standards must be achieved.

(h) No physical change, or change in the method of operation, at an existing electric utility steam generating unit shall be treated as a modification for purposes of this section provided that such change does not increase the maximum hourly emissions of any pollutant regulated under this section above the maximum hourly emissions achievable at that unit during the five years prior to the change.

[40 CFR 60.14]

7. Pursuant to 40 CFR 60.15 Reconstruction:

(a) An existing facility, upon reconstruction, becomes an affected facility, irrespective of any change in emission rate.

(b) "Reconstruction" means the replacement of components of an existing facility to such an extent that:

(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and

(2) It is technologically and economically feasible to meet the applicable standards set forth in this part.

(c) "Fixed capital cost"' means the capital needed to provide all the depreciable components.

(d) If an owner or operator of an existing facility proposes to replace components, and the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, he shall notify the Administrator of the proposed replacements. The notice must be postmarked 60 days (or as soon as practicable) before construction of the replacements is commenced and must include the following information:

(1) Name and address of the owner or operator.

(2) The location of the existing facility.

(3) A brief description of the existing facility and the components which are to be replaced.

(4) A description of the existing air pollution control equipment and the proposed air pollution control equipment.

(5) An estimate of the fixed capital cost of the replacements and of constructing a comparable entirely new facility.

(6) The estimated life of the existing facility after the replacements.

(7) A discussion of any economic or technical limitations the facility may have in complying with the applicable standards of performance after the proposed replacements.

(e) The Administrator will determine, within 30 days of the receipt of the notice required by 40 CFR 60.15(d) and any additional information he may reasonably require, whether the proposed replacement constitutes reconstruction.

(f) The Administrator's determination under 40 CFR 60.15(e) shall be based on:

(1) The fixed capital cost of the replacements in comparison to the fixed capital cost that would be required to construct a comparable entirely new facility;

(2) The estimated life of the facility after the replacements compared to the life of a comparable entirely new facility;

(3) The extent to which the components being replaced cause or contribute to the emissions from the facility; and

(4) Any economic or technical limitations on compliance with applicable standards of performance which are inherent in the proposed replacements.

(g) Individual subparts of this part may include specific provisions which refine and delimit the concept of reconstruction set forth in this section.

[40 CFR 60.15]

8. Pursuant to 40 CFR 60.17 Incorporations by Reference:

[Note: The remainder of this section has not been reproduced in this permit for brevity. See 40 CFR 60.17 for materials incorporated by reference.]

9. Pursuant to 40 CFR 60.19 General notification and reporting requirements:

(a) For the purposes of 40 CFR 60, time periods specified in days shall be measured in calendar days, even if the word "calendar" is absent, unless otherwise specified in an applicable requirement.

(b) For the purposes of 40 CFR 60, if an explicit postmark deadline is not specified in an applicable requirement for the submittal of a notification, application, report, or other written communication to the Administrator, the owner or operator shall postmark the submittal on or before the number of days specified in the applicable requirement. For example, if a notification must be submitted 15 days before a particular event is scheduled to take place, the notification shall be postmarked on or before 15 days preceding the event; likewise, if a notification must be submitted 15 days after a particular event takes place, the notification shall be delivered or postmarked on or before 15 days following the end of the event. The use of reliable non-Government mail carriers that provide

indications of verifiable delivery of information required to be submitted to the Administrator, similar to the postmark provided by the U.S. Postal Service, or alternative means of delivery agreed to by the permitting authority, is acceptable.

(c) Notwithstanding time periods or postmark deadlines specified in 40 CFR 60 for the submittal of information to the Administrator by an owner or operator, or the review of such information by the Administrator, such time periods or deadlines may be changed by mutual agreement between the owner or operator and the Administrator. Procedures governing the implementation of this provision are specified in paragraph (f) of this section.

(d) If an owner or operator of an affected facility in a State with delegated authority is required to submit periodic reports under 40 CFR 60 to the State, and if the State has an established timeline for the submission of periodic reports that is consistent with the reporting frequency(ies) specified for such facility under 40 CFR 60, the owner or operator may change the dates by which periodic reports under 40 CFR 60 shall be submitted (without changing the frequency of reporting) to be consistent with the State's schedule by mutual agreement between the owner or operator and the State. The allowance in the previous sentence applies in each State beginning 1 year after the affected facility is required to be in compliance with the applicable subpart in 40 CFR 60. Procedures governing the implementation of this provision are specified in paragraph (f) of this section.

(f)(1)(i) Until an adjustment of a time period or postmark deadline has been approved by the Administrator under paragraphs (f)(2) and (f)(3) of this section, the owner or operator of an affected facility remains strictly subject to the requirements of 40 CFR 60.

(ii) An owner or operator shall request the adjustment provided for in paragraphs (f)(2) and (f)(3) of this section each time he or she wishes to change an applicable time period or postmark deadline specified in 40 CFR 60.

(2) Notwithstanding time periods or postmark deadlines specified in 40 CFR 60 for the submittal of information to the Administrator by an owner or operator, or the review of such information by the Administrator, such time periods or deadlines may be changed by mutual agreement between the owner or operator and the Administrator. An owner or operator who wishes to request a change in a time period or postmark deadline for a particular requirement shall request the adjustment in writing as soon as practicable before the subject activity is required to take place. The owner or operator shall include in the request whatever information he or she considers useful to convince the Administrator that an adjustment is warranted.

(3) If, in the Administrator's judgment, an owner or operator's request for an adjustment to a particular time period or postmark deadline is warranted, the Administrator will approve the adjustment. The Administrator will notify the owner or operator in writing of approval or disapproval of the request for an adjustment within 15 calendar days of receiving sufficient information to evaluate the request.

(4) If the Administrator is unable to meet a specified deadline, he or she will notify the owner or operator of any significant delay and inform the owner or operator of the amended schedule.

[40 CFR 60.19]

APPENDIX GC
GENERAL PERMIT CONDITIONS [RULE 62-4.160, F.A.C.]

G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

(a) Have access to and copy and records that must be kept under the conditions of the permit;
(b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
(c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

(a) A description of and cause of non-compliance; and
(b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

APPENDIX GC
GENERAL PERMIT CONDITIONS [RULE 62-4.160, F.A.C.]

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extend it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.

G.13 This permit also constitutes:

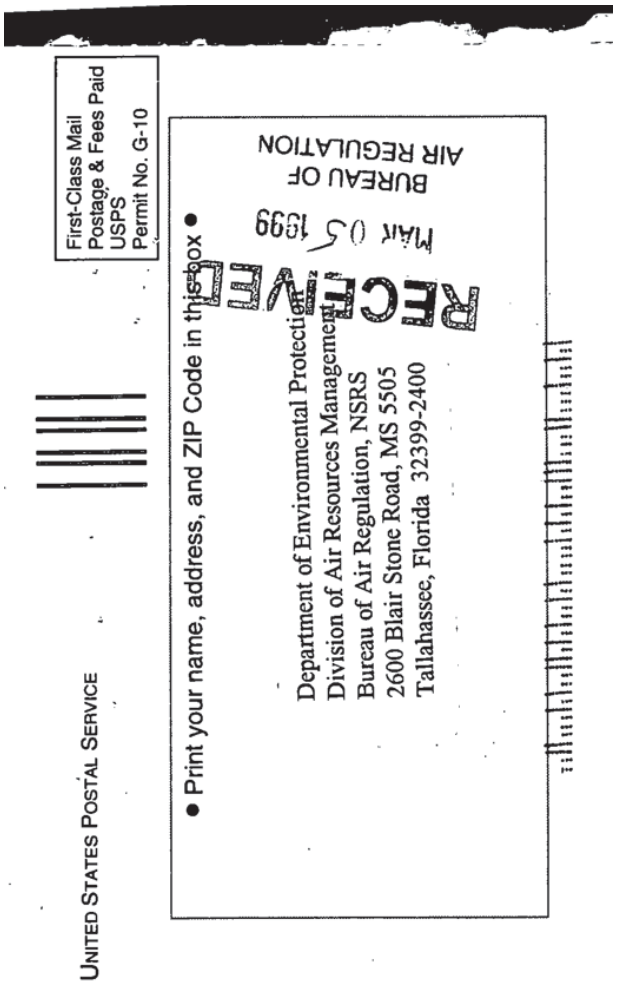
(a) Determination of Best Available Control Technology ( );
(b) Determination of Prevention of Significant Deterioration ( ); and
(c) Compliance with New Source Performance Standards (X).

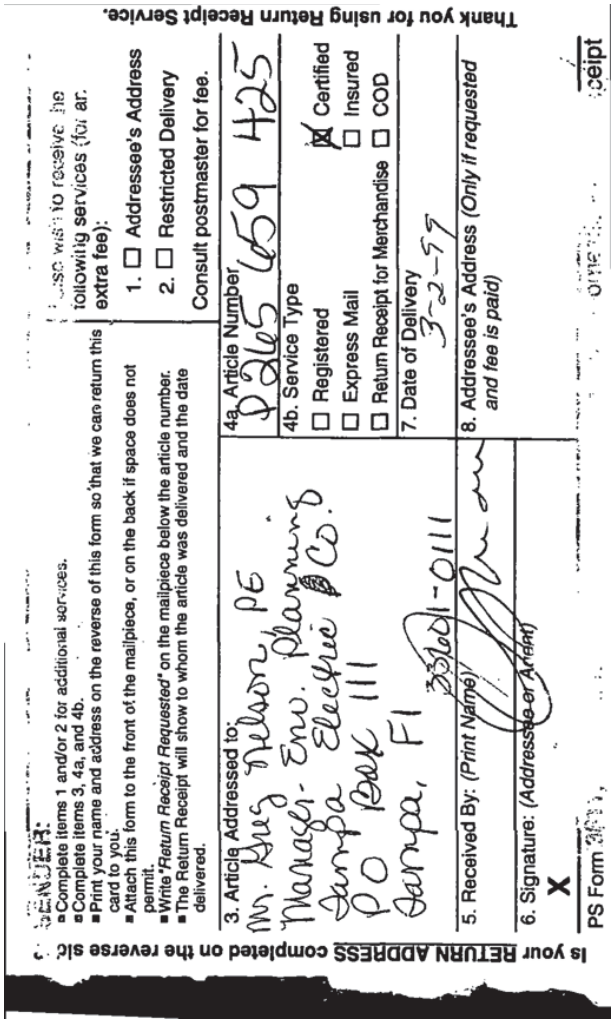
G.14 The permittee shall comply with the following:

(a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
(b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
(c) Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The person responsible for performing the sampling or measurements;
3. The dates analyses were performed;
4. The person responsible for performing the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.


First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10
UNITED STATES POSTAL SERVICE
● Print your name, address, and ZIP Code in this box ●
Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation, NSRS
2600 Blair Stone Road, MS 5505
Tallahassee, Florida 32399-2400
RECEIVED
MAY 05 1999
BUREAU OF
AIR REGULATION


Thank you for using Return Receipt Service.
SENDER:
Complete items 1 and/or 2 for additional services.
Complete items 3, 4a, and 4b.
Print your name and address on the reverse of this form so that we can return this card to you.
Attach this form to the front of the mailpiece, or on the back if space does not permit.
Write "Return Receipt Requested" on the mailpiece below the article number.
The Return Receipt will show to whom the article was delivered and the date delivered.
Please wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery
Consult postmaster for fee.
3. Article Addressed to:
Mr. Russ Nelson PE
Manager- Env. Planning
Tampa Electric Co.
PO Box 111
Tampa, FL 33601-0111
4a. Article Number
P 245 659 425
4b. Service Type
☐ Registered
☐ Express Mail
☐ Return Receipt for Merchandise
☒ Certified
☐ Insured
☐ COD
7. Date of Delivery
3-22-12
5. Received By: (Print Name)
8. Addressee's Address (Only if requested and fee is paid)
6. Signature: (Addressee or Agent)
X
Is your RETURN ADDRESS completed on the reverse side?
PS Form
eipt

P 265 659 425

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Greg Nelson	
Street & Number TECO	
Post Office, State, & ZIP Code Tampa FL	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 2-26-99	

050039-003-AC
" 004-AC
Units 1 & 2

PS Form **3800**, April 1995

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

NOTICE OF PERMIT

In the Matter of an
Application for Permit by:

Mr. Patrick Ho, P.E.
Manager of Environmental Planning
Tampa Electric Company
P.O. Box 111
Tampa, FL 33601-0111 /

FINAL Permit Amendment No. AO29-179911(B)
AIRS I.D. No. 0570039-001-AC
Big Bend Unit 3

Enclosed is the FINAL Air Operation Permit Amendment numbered AO29-179911(B) allowing the firing of a blend of coal and petroleum coke at Big Bend Unit 3 located on Big Bend Road, near Ruskin, Hillsborough County, issued pursuant to Chapter 403, Florida Statutes (F.S.).

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

Clair H. Fancy, P.E., Chief,
Bureau of Air Regulation

Contains New Specific Cond. 21, 22, 23

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT AMENDMENT(including the FINAL permit amendment) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 9-30-96 to the person(s) listed:

Mr. Patrick Ho, P.E., TECO *
Mr. William Adam, ABCA *
Mr. Bill Thomas, SWD
Mr. Jerry Campbell, EPCHC

Clerk Stamp

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kuri Tobar (Clerk) 9-30-96 (Date)

Department of
Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

September 30, 1996

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Patrick Ho, P.E.
Manager of Environmental Planning
Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601-0111

Dear Mr. Ho:

Re: Firing of Coal/Petcoke Blend in Big Bend Unit 3
Amendment of Permit AO29-179911
AIRS I.D. No. 0570039-001-AC

The Department hereby amends the subject Air Operation Permit allowing the firing of a blend of coal and petroleum coke. The existing Air Operation Permit, previously amended on May 12, 1995, is amended as follows:

DESCRIPTION

Change From:

For the operation of a 4115 MMBTU/hr coal fired steam generator designated as Unit No. 3 at the Big Bend Station. This "wet" bottom boiler was manufactured by Riley-Stoker and is an opposed-fired turbo boiler. The generator has a nameplate capacity of 445.5 MW. Operation of this unit may include diverting all of the flue gas into the existing Big Bend Unit No. 4 flue gas desulfurization (FGD) system. Diversion of the flue gas stream will allow the emissions from this unit to be vented to the Unit 4 FGD system for emission reduction.

Particulate matter emissions generated during the operation of the unit are controlled by a dry electrostatic precipitator manufactured by Research-Cottrell, Inc. Sulfur dioxide emissions will be controlled by diverting the flue gas emissions to the Unit No. 4 FGD system. Sulfur dioxide emissions that are generated and not diverted through the Unit No. 4 FGD system are uncontrolled.

Change To:

For the operation of a 4115 MMBTU/hr steam generator designated as Unit No. 3 at the Big Bend Station. This "wet" bottom boiler was manufactured by Riley-Stoker and is an opposed-fired turbo boiler. The generator has a nameplate capacity of 445.5 MW. **This unit may be fired on coal or a coal/petroleum coke blend consisting of a maximum of 20.0 percent petroleum coke by weight.** Operation of this unit may include diverting all of the flue gas into the existing Big Bend Unit No. 4 flue gas desulfurization (FGD) system. Diversion of the flue gas stream will allow the emissions from this unit to be vented to the Unit 4 FGD system for emission reduction.

Particulate matter emissions generated during the operation of the unit are controlled by a dry electrostatic precipitator manufactured by Research-Cottrell, Inc. Sulfur dioxide emissions will be controlled by diverting the flue gas emissions to the Unit No. 4 FGD system. Sulfur dioxide emissions that are generated and not diverted through the Unit No. 4 FGD system are uncontrolled.

New Specific Condition 21:

Fuels fired in Unit No. 3 shall consist of coal or a coal/petroleum coke blend containing a maximum of 20.0% petroleum coke by weight. The sulfur content of the petroleum coke shall not exceed 6.0 % by weight (dry basis). Vanadium content of the mineral ash from the petroleum coke fired shall not exceed 35.0% by weight (ignited basis). [Rule 62-4.070(3), F.A.C.]

New Specific Condition 22:

Gravimetric instrument data verifying that the 20.0% maximum petroleum coke content by weight has not been exceeded shall be maintained for two years and submitted to the Department and the Environmental Protection Commission of Hillsborough County (EPCHC) with each annual operating report. Also to be maintained and available for inspection shall be a record of operation showing the date, fuel used, mode of operation (integrated/non-integrated), and the duration of all startups, shutdowns and malfunctions. [Rule 62-4.070(3), F.A.C.]

New Specific Condition 23:

At all times while firing any blend of coal and petroleum coke, Unit No. 3 shall operate only in the integrated mode as described in Specific Condition No. 4 except during startups, shutdowns and/or malfunctions during all of which best operational practices shall be

employed including the cessation of petroleum coke bunkering. The permittee shall maintain and submit to the Department and the EPCHC on an annual basis for a period of 5 years from the date the unit begins firing petroleum coke, data demonstrating that the operational change did not result in an emissions increase. [Rule 62-4.070(3), F.A.C.]

A copy of this amendment letter shall be attached to and shall become a part of Air Operation Permit AO29-179911.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

for Howard L. Rhodes, Director
Division of Air Resources
Management

3. What will be the costs to TECO and its customers:

(a) Without operating the scrubbers at the Big Bend Station;

(b) Without constructing a new gypsum storage facility.

A. a. As discussed in response to Data Request 2(b), if Tampa Electric could not operate the scrubbers at Big Bend Station, it would be precluded from generating electric power from Big Bend Units 1 through 4 that are served by those scrubbers. Losing the output of Big Bend Units 1 through 4 would seriously compromise the reliability of Tampa Electric's system. Generation would have to be shifted to other units and power purchases from other utility systems would be needed. There are limits to the amount of power that can be imported into Tampa Electric's system, even assuming all of the needed replacement power would be available from other systems. Depending upon the demand for available power, the cost of available replacement power could soar. There would be periods of high demand when sufficient power could not be generated and/or imported. Rolling blackouts would likely occur. The economic cost to our customers could be unprecedented and the reliability impacts would clearly be unacceptable.

b. At the current rate of gypsum production versus sales/storage, the existing on site storage area could reach its gypsum storage limit at some point in time between August 2012 and early to mid-2015, depending upon gypsum market demand. Storing gypsum in an unpermitted area is not a legal option. At this point the company would be faced with curtailment or shutdown of the units at Big Bend. Shutdown of the units would create serious problems with the electric system as described in response to Data Request 3(a). Temporary disposal of gypsum to a third party landfill would be a far more costly option if space were available. This is not a reliable long term solution and could result in the same curtailment or shutdown of the Big Bend coal-fired units.

Tampa Electric evaluated various options for storage and the economics of those options were submitted in the company's petition in this proceeding. The proposed new gypsum storage facility is by far the most cost-effective option available to Tampa Electric.

4. What environmental regulation(s) will it be in violation of if TECO?

(a) Does not construct the proposed new gypsum storage facility;

(b) Does not elect any of the other options considered by the Company and shown on Exhibit B of the Petition?

A. a. Tampa Electric would not be in violation of any environmental regulations should the new gypsum storage facility not be constructed. If Tampa Electric does not construct the new gypsum storage facility, it will be unable to continue normal operations of Big Bend Station. The existing gypsum storage facility is expected to run out of capacity at some point in time between August 2012 and early to mid-2015 depending upon gypsum market demand, after which, the company would need to either begin offsite landfilling of all gypsum produced or to cease operations completely.

b. The options presented in Exhibit B of the Petition are designed to accomplish the same purpose, namely, managing the supply of gypsum produced at Big Bend Station due to the company's continued adherence to the Clean Air Act regulation. Without implementing at least one of the listed alternatives, Tampa Electric would be faced with the same results as described above in response to Part (a), to either begin landfilling all gypsum produced by the facility or to cease operation. Ceasing operation of Big Bend Station would result in the loss of nearly 1,600 MW of generation. The detrimental impact of that loss is more fully discussed in response to Staff's Second Data Request, No. 3.

5. Please discuss the probable operational and revenue requirement impact on TECO, both in total and per bill/customer, if the proposed gypsum storage facility is not completed by 2015.

A. The residential customer bill impact associated with not completing the proposed gypsum storage facility by 2015 would depend on the amount of gypsum sent to a third-party landfill. This cost could reach up to $25 million per year with a commensurate rate impact of approximately $1.25 per 1,000 kWh.

6. Please list all of the buyers to whom TECO is selling gypsum.

A. In 2011, Tampa Electric sold gypsum to the following companies: National Gypsum, [redacted]

TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
REQUEST NO. 7
BATES STAMPED PAGE: 92
FILED: MARCH 23, 2012

7. Has TECO been aggressively marketing its gypsum? If yes, please list all of the activities in which TECO is involved that support your answer. If no, please explain why not.

A. Yes, Tampa Electric is aggressively marketing its gypsum. The company is an industry leader in the beneficial reuse of coal combustion products ("CCP") and recycled approximately 86 percent of the total CCPs produced in 2010. When you include the CCPs temporarily stored in inventory, more than 99 percent of the company's 2010 CCPs will ultimately be reclaimed for beneficial use compared to an industry average of 43 percent. The company's efforts on CCP sales were also recognized as "commendable" in the Review of Coal Combustion Residual Storage and Disposal Process of the Florida Electric Industry produced by the Florida Public Service Commission Office of Auditing and Performance Analysis issued in December 2011.

8. What are the Company's gypsum marketing efforts now and in future?

A. Please see response to Staff's Second Data Request, No. 7.

9. Referring to the table included in TECO's response to Staff's Information Data Request No.1, please provide the following information:

(a) Additional column to show the percentage of gypsum sold vs. produced;

(b) All the data extending to year 1999.

A.

a. The table below is similar to Tampa Electric's response to Staff's Informal Data Request, No. 1 with an additional column reflecting the percentage of gypsum sold vs. produced and with all the data from 1999 forward.

Year	Produced (Tons)	Marketed (Tons)	Sales Revenue ($)	Difference (Tons)	Difference (%)*
1999	339,871	416,656	1,939,933	(76,785)	123%
2000	692,450	474,696	2,179,096	217,754	69%
2001	819,291	757,601	3,157,920	61,690	92%
2002	683,535	612,476	2,766,334	71,059	90%
2003	691,547	507,404	2,194,332	184,143	73%
2004	599,505	706,699	3,012,256	(107,194)	118%
2005	555,066	715,462	2,393,087	(160,396)	129%
2006	557,650	588,582	2,497,793	(30,932)	106%
2007	655,887	683,090	2,517,237	(27,203)	104%
2008	683,537	585,787	2,949,187	97,750	86%
2009	560,300	444,401	2,216,892	115,899	79%
2010	662,530	533,921	2,129,724	128,609	81%
2011	719,982	361,234	1,667,124	358,748	50%

*Percentages higher than 100 percent include sales from inventory.

b. Please see the response to Staff's Second Data Request, No. 9a.

TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
REQUEST NO. 10
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FILED: MARCH 23, 2012

10. Referring to the drawings included in TECO's response to Staff's Information Data Request No.1, please provide a detailed site plan, and engineering designs, if available. If engineering designs are not currently available, please indicate when such designs would be available.

A. Detailed site plans and engineering designs for the new storage area conveyor are voluminous and difficult to present in paper format. Please see the electronic files on the CD included with this data request for the electronic response to the requested information. Additionally, Tampa Electric will be supplying an aerial drawing of Big Bend Station with the new storage area conveyor project delineated as well as a drawing of the conveyor system.

GENERAL NOTES

1. COORDINATES AND ELEVATIONS
   A. THE COORDINATE SYSTEM SHOWN ON THE PERMIT DRAWINGS IS THE FLORIDA STATE PLANE WEST ZONE NAD 83 COORDINATE SYSTEM.
   B. ELEVATIONS SHOWN ON THE DRAWINGS ARE BASED ON NAVD 88 DATUM.

2. HORIZONTAL AND VERTICAL CONTROL POINTS
   A. CONTROL MONUMENTS TO BE USED FOR ALL CONSTRUCTION EXISTING AT THE PLANT SITE. MONUMENT INFORMATION SHALL BE OBTAINED FROM TECO.
   B. CONTRACTOR IS RESPONSIBLE FOR SETTING ANY ADDITIONAL MONUMENTS AND CONTROL POINTS THAT THEY MAY DEEM NECESSARY FOR COMPLETION OF WORK.

3. TOPOGRAPHIC MAPS
   THE TOPOGRAPHIC MAPPING OF THE SITE IS A COMPILATION OF TWO SURVEYS. TOPOGRAPHIC SURVEY MAPPING OF THE SITE WAS PREPARED BY GEORGE F. YOUNG, INC. (MAY 11, 2011). THIS SURVEY WAS SUPPLEMENTED BY A MASTER TOPOGRAPHIC SURVEY FURNISHED BY TAMPA ELECTRIC, AND BASED UPON THE PLANT VERTICAL DATUM. GEORGE F. YOUNG, INC. CONVERTED THE MASTER TOPOGRAPHIC SURVEY FROM THE PLANT VERTICAL DATUM TO THE NAVD 88 SYSTEM.

4. GEOTECHNICAL REPORT
   THE GEOTECHNICAL REPORT FOR THE SITE WAS PREPARED BY TEST LAB INC., JUNE 27, 2011.

5. EARTHWORK CONSTRUCTION
   A. EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 312201 REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
   B. LINER CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE APPROVED CQA PLAN FOR THE PROJECT.

6. EROSION AND SEDIMENT CONTROL
   A. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES AND UPDATES TO THE APPROVED PLAN THROUGHOUT THE COURSE OF CONSTRUCTION. TECO TO PERFORM INSPECTIONS OF EROSION AND SEDIMENT CONTROL.
   B. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. SOIL STABILIZATION MEASURES SHALL CONSIDER THE TIME OF YEAR, SITE CONDITIONS AND THE USE OF TEMPORARY OR PERMANENT MEASURES.
   C. SOIL EROSION AND SEDIMENT CONTROL FEATURES SHALL BE CONSTRUCTED PRIOR TO THE COMMENCEMENT OF HYDROLOGIC DISTURBANCE OF UPLAND AREAS.
   D. DISTURBED AREAS SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN 14 CALENDER DAYS OF THE END OF ACTIVE HYDROLOGIC DISTURBANCE OR REDISTURBANCE.
   E. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED.
   F. ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES MUST BE MAINTAINED AND REPAIRED AS NEEDED.
   G. SOIL STOCKPILES SHALL NOT BE LOCATED IN A FLOOD PRONE AREA OR A DESIGNATED BUFFER PROTECTING WATERS OF THE UNITED STATES OR ISOLATED WATERS OF HILLSBOROUGH COUNTY.
   H. IF DEWATERING SERVICES ARE USED, DISCHARGE LOCATIONS SHALL BE ROUTED THROUGH AN EFFECTIVE SEDIMENT CONTROL MEASURE (e.g. SEDIMENT TRAP, SEDIMENT BASIN, OR OTHER APPROPRIATE MEASURE).
   I. ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS.

7. UTILITY COORDINATION
   A. FLORIDA ONE-CALL SHALL BE NOTIFIED 24 HOURS PRIOR TO ANY SOIL DISTURBANCE ON THE SITE.

8. ALL WARNINGS, SIGNS, PAVEMENT MARKINGS, AND TRAFFIC CONTROL DURING CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

DRAWING LIST

ISSUED FOR AGENCY REVIEW

UNDERGROUND OR EMBEDDED UTILITIES MAY BE LOCATED WITHIN OR ADJACENT TO THE AREA IN WHICH EXCAVATION, DEMOLITION, FOUNDATION, OR MODIFICATION WORK IS TO BE PERFORMED.

REFERENCES RELATING TO THE UNDERGROUND OR EMBEDDED UTILITIES ARE PROVIDED TO ASSIST THE CONTRACTOR/INSTALLER IN THE FIELD LOCATING THOSE UTILITIES AND OTHER POSSIBLE UNDERGROUND OR EMBEDDED INTERFERENCES WITH THE WORK.

THE CONTRACTOR/INSTALLER SHALL EXERCISE DUE CAUTION DURING ALL EXCAVATION/FOUNDATION/DEMOLITION WORK.

HOLD INFORMATION

NO.	DESCRIPTION

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/ INSTALLER'S PERSONNEL (OR THAT OF ITS SUB-CONTRACTOR(S)) PERFORMING THE WORK.

RELEASE INFORMATION

REV.	DATE	DESCRIPTION
A	03-29-2012	ISSUED FOR REVIEW AGENCY

ISSUE PURPOSE: REVIEW
SPECIFICATION: NONE
PROJECT NO.: 12877-001

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA.

CHARLES J. NELSON
03-29-2012

MY LICENSE RENEWAL
DATE IS: 02-28-2013
PAGES OR SHEETS
COVERED BY THIS SEAL:
THIS DOCUMENT ONLY.

CERTIFICATE OF AUTHORIZATION 00006938

CAD FILE NAME: B2741-YSK-1.DGN
PREPARED BY: G. CHOW/A. SLACH
REVIEWED BY: J. PERRY
APPROVED BY: C. NELSON

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Sargent & Lundy LLC

SARGENT & LUNDY LLC
55 EAST MONROE STREET
CHICAGO, ILLINOIS 60603-5780

TECO
TAMPA ELECTRIC

PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
GENERAL NOTES AND DRAWING LIST

DRAWING NUMBER	REVISION
B2741-YSK-1	A
SHEET 1 OF 1	

SHEET 8

SHEET 5

NO MATCHLINE

NO MATCHLINE

N 1259363.00
E 530462.50
EL.8.00

HP DITCH
N 1259363.00
E 530473.50
EL.8.00

GYPSUM PILE
MANAGEMENT AREA
(443,500 SQ. FT.)

N 1259287.50
E 530103.50
HP EL.11.00

SLOPE

SLOPE

N 1259250

2
(DWG.
YSK-7)

10' HIGH
PERIMETER
DUST CONTROL
FENCE

obscured

N 1258963.20
E 530471.85
EL.6.75

N 1259000

N 1258913.20
E 530518.40
EL.11.00

obscured

obscured

10' WIDE
BERM (TYP)

E 530000

E 530250

E 530500

1
DWG. YSK-6)

50' 0 50' 100' 150'
GRAPHIC SCALE

DRAWING SCALE
1" = 50'

NORTH

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CAD FILE NAME: B2741-YSK-5-6.DGN
PREPARED BY: C. SVENSON/A.SLACH
REVIEWED BY: J. PERRY
APPROVED BY: C. NELSON

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55 EAST MONROE STREET
CHICAGO, ILLINOIS 60603-5780

TECO
TAMPA ELECTRIC

PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

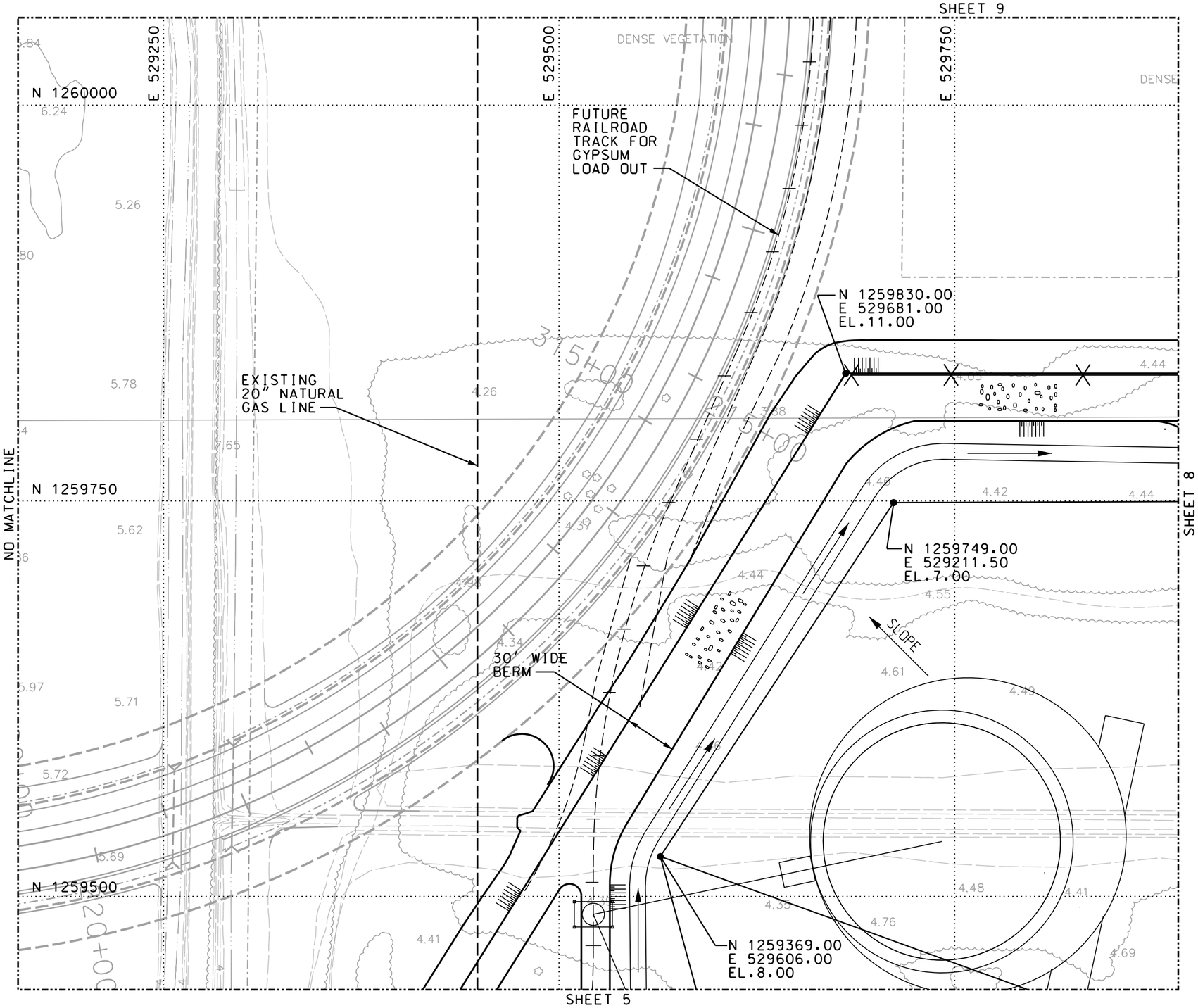
DRAWING TITLE
FINAL SITE PLAN
SHEET 6

DRAWING NUMBER	REVISION
B2741-YSK-5-6	A
SHEET 6 OF 9	

ZD6217/Op1198/N:*CivilDesign*1-Big-Bend-Gypsum*B2741-YSK-5-6.dgn
Form GDG-0401-01-10, ANSI (Imperial) MicroStation Border - Size C - 17 x 22
Revision 11A, Revision Date: 04-30-2010

3/19/2012 8:05:05 AM ...*B2741-YSK-5-6.dgn

TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
FILED: MARCH 23, 2012



50′ 0 50′ 100′ 150′

GRAPHIC SCALE

DRAWING SCALE

1″ = 50′

NORTH

ISSUED FOR AGENCY REVIEW

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A	03-29-2012	ISSUED FOR AGENCY REVIEW

ISSUE PURPOSE: REVIEW
SPECIFICATION: NONE
PROJECT NO.: 12877-001

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CHARLES J. NELSON
03-29-2012

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CAD FILE NAME: B2741-YSK-5-7.DGN
PREPARED BY: C. SVENSON/A. SLACH
REVIEWED BY: J. PERRY
APPROVED BY: C. NELSON

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TECO
TAMPA ELECTRIC

PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
FINAL SITE PLAN
SHEET 7

DRAWING NUMBER	REVISION
B2741-YSK-5-7	A
SHEET 7 OF 9	

ZD6217/Op1198/N:*CivilDesign*1-Big-Bend-Gypsum*B2741-YSK-5-7.dgn 3/16/2012 2:32:00 PM
Form GDG-0401-01-10, ANSI (Imperial) MicroStation Border - Size C - 17 x 22
Revision 11A, Revision Date: 04-30-2010

SHEET 9

E 530000 | E 530250 | E 530500

N 1260000

VEGETATION

OBSCURED CREEK

NEW ASPHALT PAVED 2-LANE ROAD SECTION YSK-4-01 ON DRAWING YSK-4

C-7 (DWG. YSK-11-3)

V-DITCH PER SECTION YSK-4-01 ON DRAWING YSK-4

N 1259880.00
E 530282.00
EL.11.00

PROPERTY LINE

30' WIDE BERM

1 (DWG. YSK-6)

N 1259830.00
E 530222.00
EL.11.00

N 1259830.00
E 530346.00
EL.11.00

N 1259830.00
E 530405.50
EL.11.00

3H:1V

R=50'

R=50'

3H:1V

R=20'

R=30'

N 1259758.50
E 530473.50
EL.11.00

R=20'

N 1259750

N 1259749.00
E 530462.50
EL.7.00

R=20'

SHEET 7

NO MATCHLINE

STORMWATER SUMP #1 DWG.YSK-12

C-8 (DWG. YSK-11-3)

10' HIGH PERIMETER DUST CONTROL FENCE

10' WIDE BERM

GYPSUM PILE MANAGEMENT AREA

SLOPE

SLOPE

N 1259500

SHEET 6

50' 0 50' 100' 150'

GRAPHIC SCALE

DRAWING SCALE

1' = 50'

NORTH

ISSUED FOR AGENCY REVIEW

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UNITS 1, 2, 3 & 4

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TAMPA ELECTRIC CO

DRAWING TITLE
FINAL SITE PLAN
SHEET 8

DRAWING NUMBER	REVISION
B2741-YSK-5-8	A
SHEET 8 OF 9	

66

ZD6217/Op1198/N:*CivilDesign*1-Big-Bend-Gypsum*B2741-YSK-5-8.dgn
Form GDG-0401-01-10, ANSI (Imperial) MicroStation Border - Size C - 17 x 22
Revision 11A, Revision Date: 04-30-2010

3/16/2012 2:40:02 PM ...*B2741-YSK-5-8.dgn

TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
FILED: MARCH 23, 2012

NO MATCHLINE

PROPERTY LINE

N 1260500

N 1260250

NO MATCHLINE

NO MATCHLINE

210+00

DENSE VEGETATION

PI
N 1260274.00
E 530362.00

PI
N 1260176.00
E 530282.00

FUTURE RAILROAD TRACK
FOR GYPSUM LOAD OUT

NEW ASPHALT
PAVED 2-LANE
ROAD SECTION
YSK-4-01 ON
DWG. YSK-4

R=100'

V-DITCH
PER
SECTION
YSK-4-01
ON DWG.
YSK-4

E 529750

E 530000

E 530250

SHEET 7

SHEET 8

50' 0 50' 100' 150'

GRAPHIC SCALE

DRAWING SCALE
1" = 50'

NORTH

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FINAL SITE PLAN
SHEET 9

DRAWING NUMBER	REVISION
B2741-YSK-5-9	A
SHEET 9 OF 9	

ZD6217/Op1198/N:*CivilDesign*1-Big-Bend-Gypsum*B2741-YSK-5-0.dgn
Form GDG-0401-01-10, ANSI (Imperial) MicroStation Border - Size C - 17 x 22
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3/16/2012 2:46:15 PM ...*B2741-YSK-5-9.dgn

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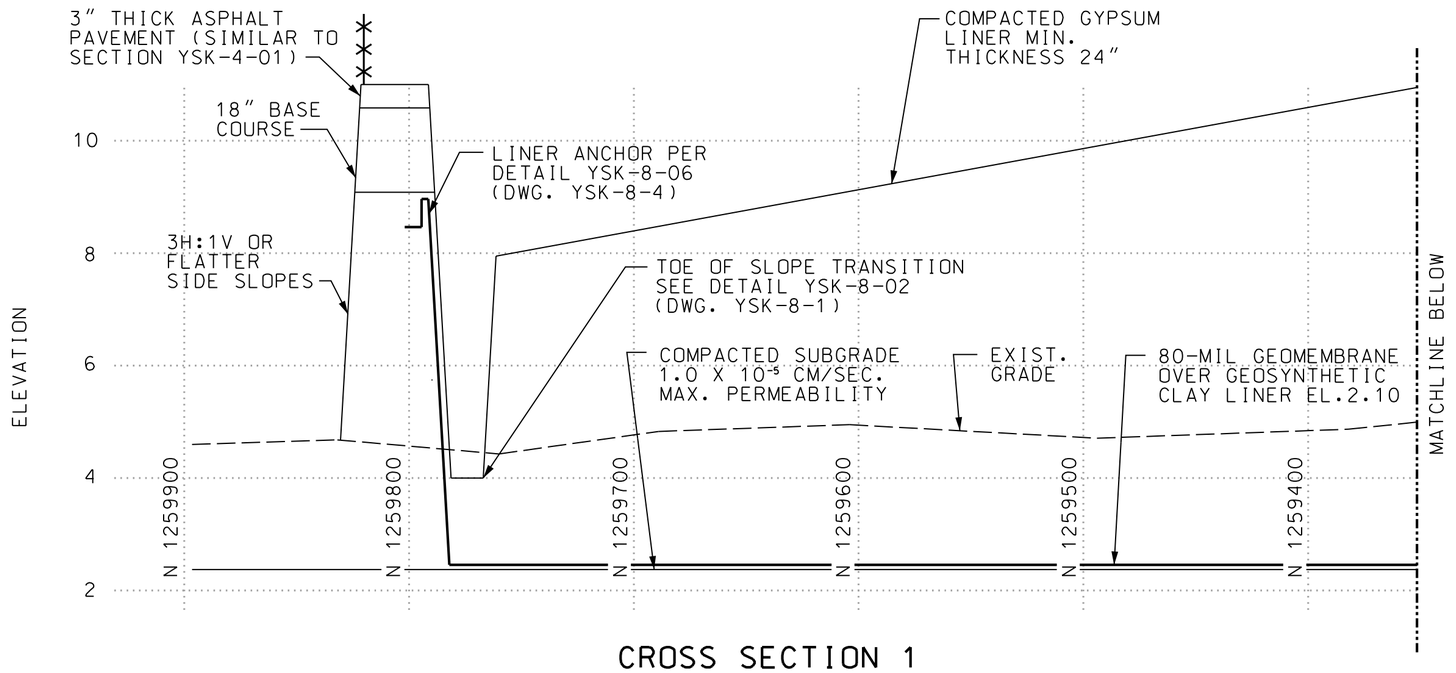
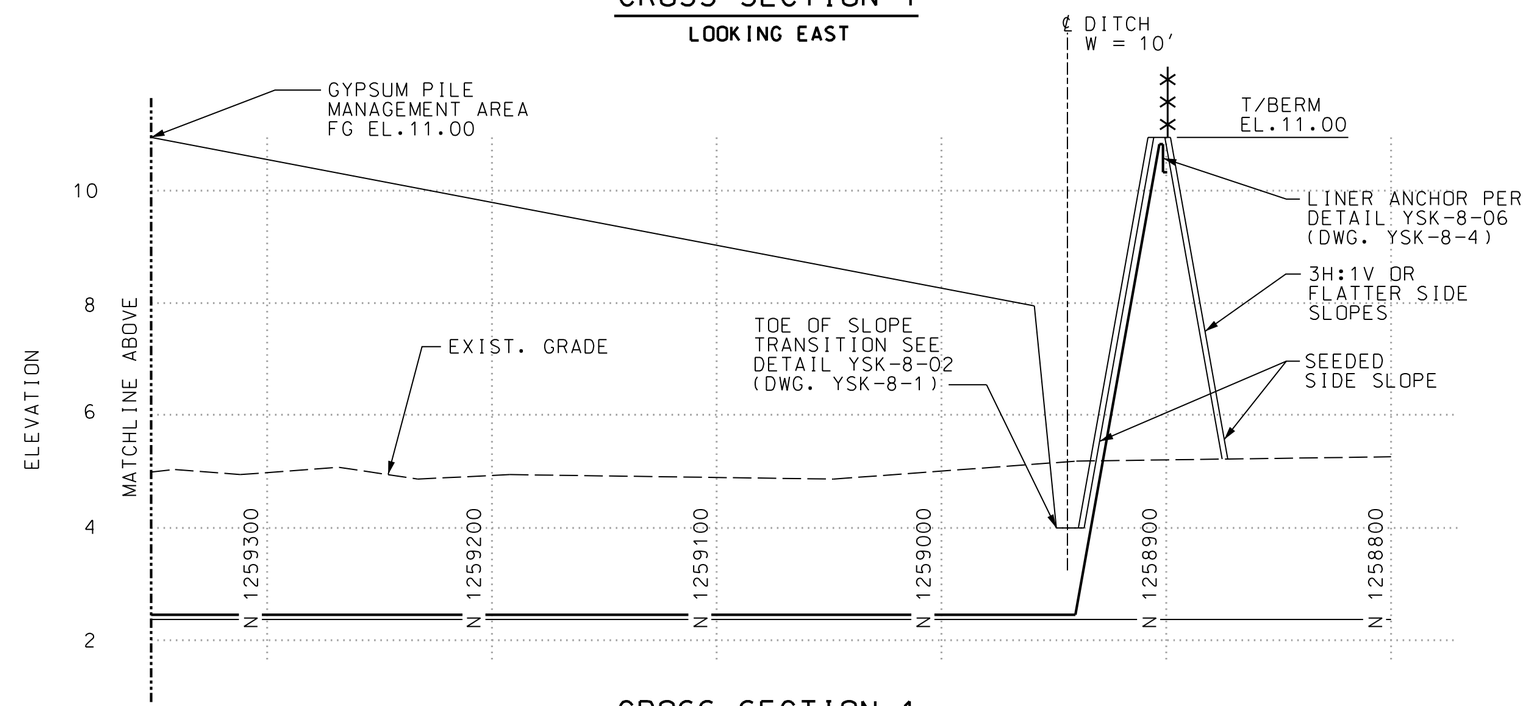
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
FILED: MARCH 23, 2012



CROSS SECTION 1
LOOKING EAST



CROSS SECTION 1
LOOKING EAST

NOTE: THIS DRAWING IS TO BE WORKED WITH DRAWING B2741-YSK-5, SHEETS 5-8.

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NORTH

2' 0 2' 4' 6'
VERTICAL SCALE

50' 0 50' 100' 150'
HORIZONTAL SCALE

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UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
CROSS SECTION 1

DRAWING NUMBER	REVISION
B2741-YSK-6	A
SHEET 1 OF 1	

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Form GDG-0401-01-10, ANSI (Imperial) MicroStation Border - Size C - 17 x 22
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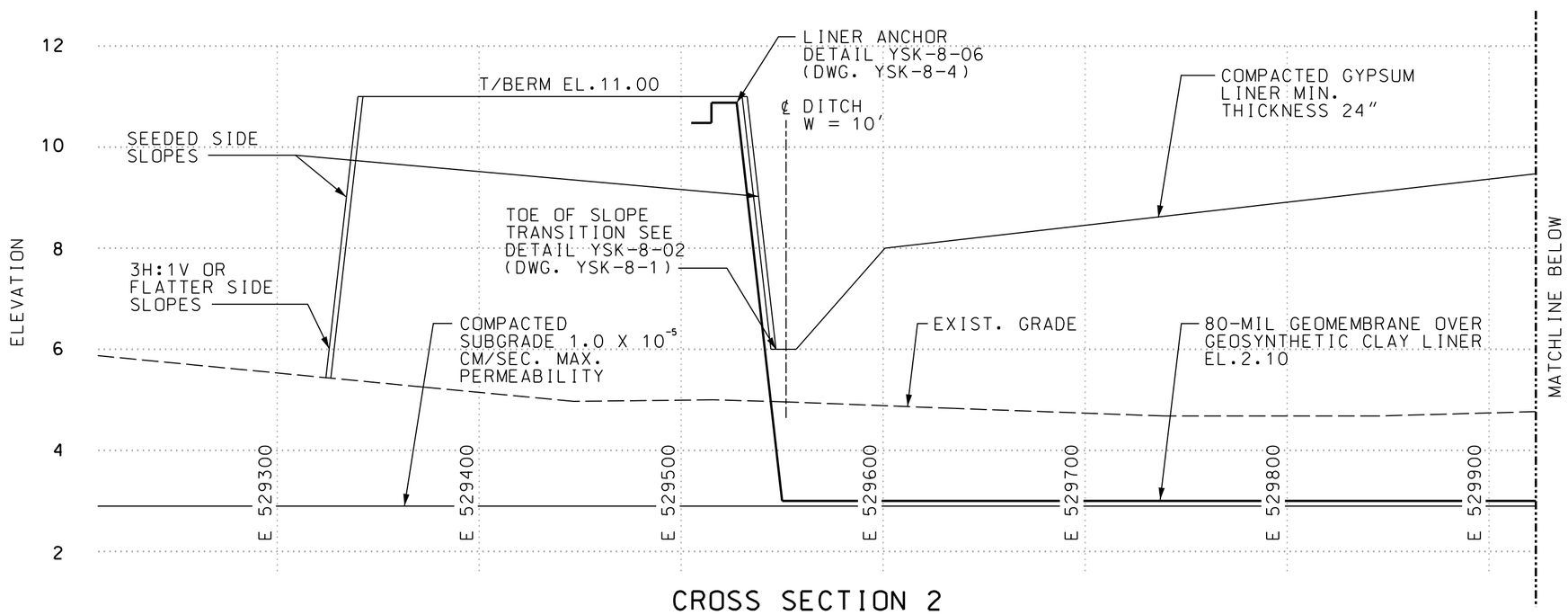
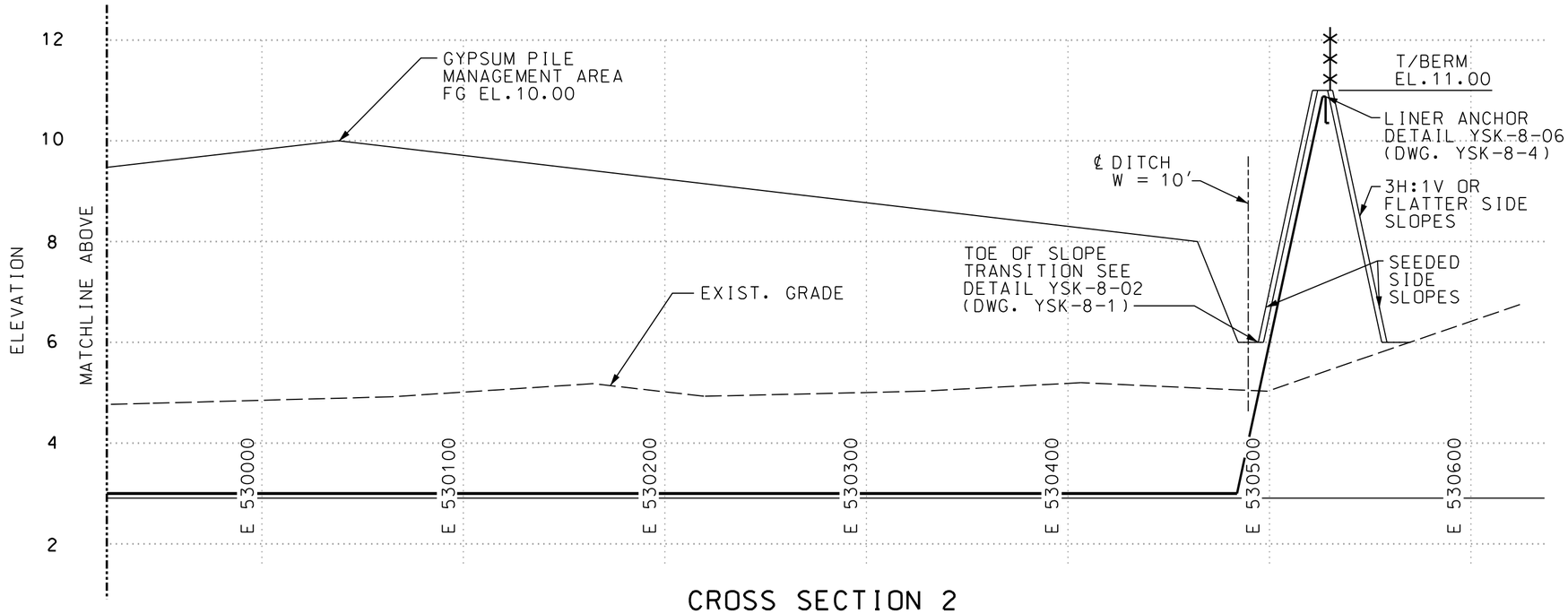


CROSS SECTION 2

LOOKING NORTH



CROSS SECTION 2

LOOKING NORTH

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NORTH

2' 0 2' 4' 6'
VERTICAL SCALE

50' 0 50' 100' 150'
HORIZONTAL SCALE

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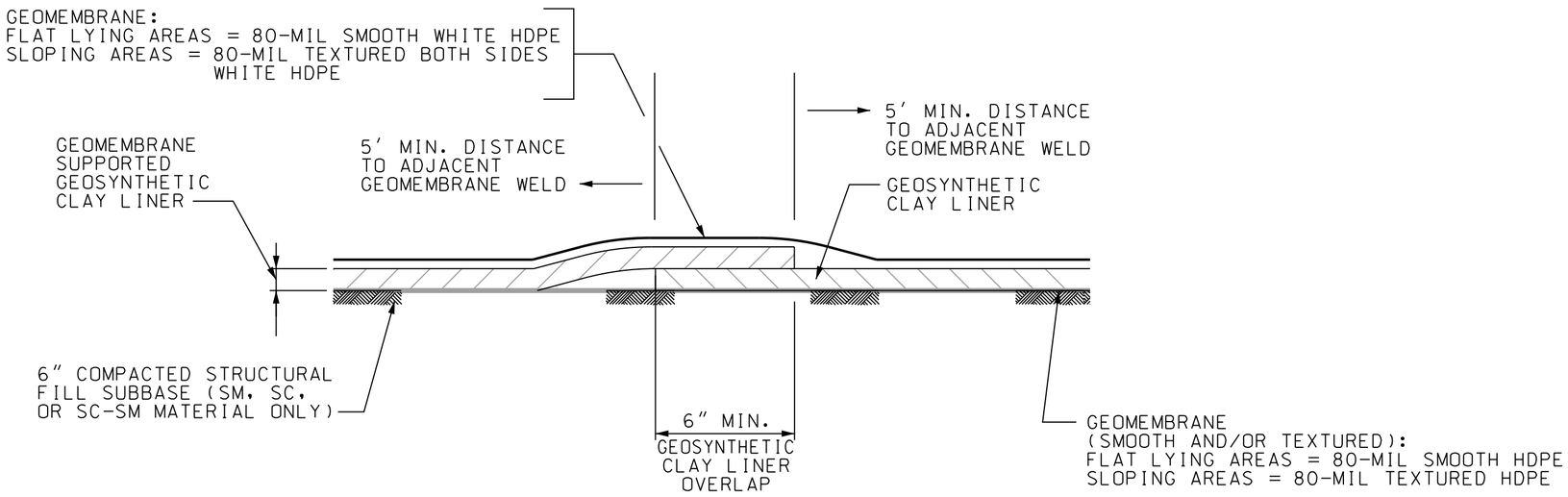
DRAWING TITLE
CROSS SECTION 2

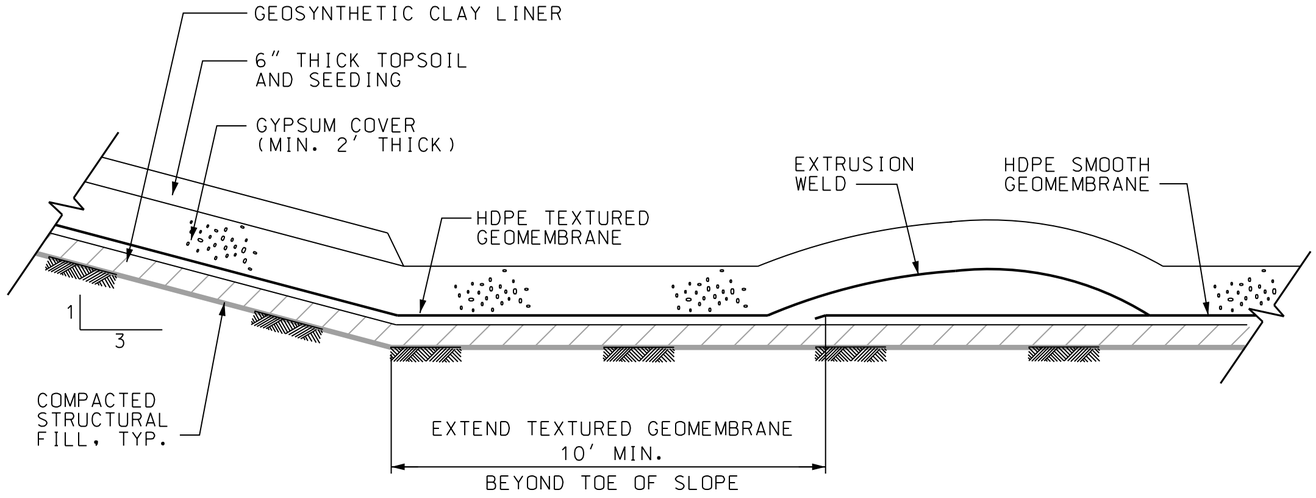
DRAWING NUMBER	REVISION
B2741-YSK-7	A
SHEET 1 OF 1	



GEOSYNTHETIC CLAY LINER OVERLAP

DETAIL B2741-YSK-8-01

N.T.S.



TOE OF SLOPE TRANSITION

DETAIL B2741-YSK-8-02

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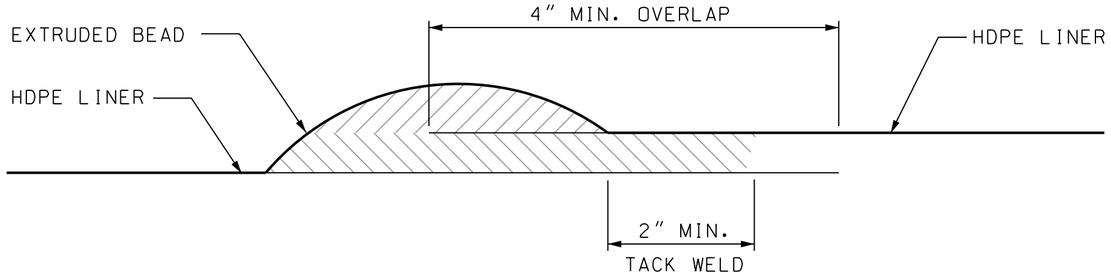
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
LINER SECTIONS AND DETAILS
SHEET 1

DRAWING NUMBER	REVISION
B2741-YSK-8-1	A
SHEET 1 OF 4	

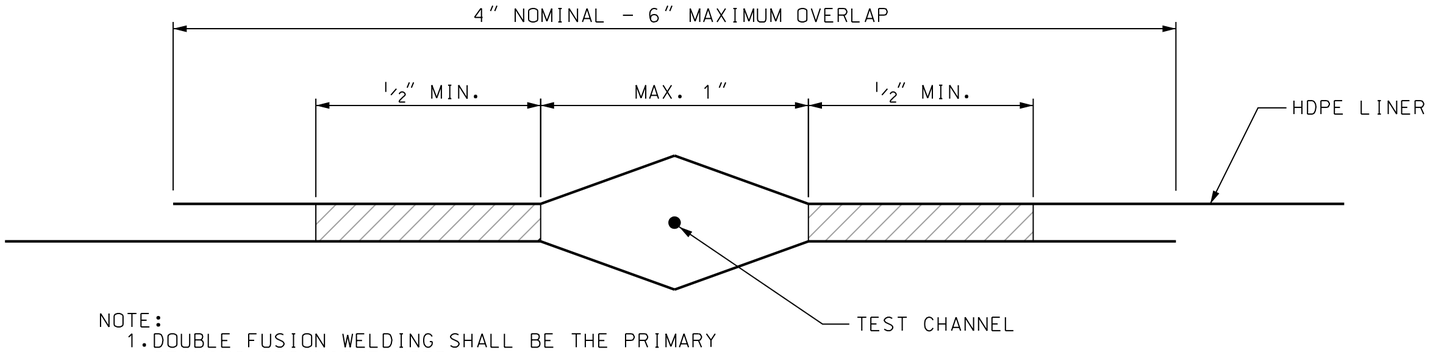


NOTE:
1. LINER SHEETS SHALL BE TACK-WELDED TOGETHER AT OVERLAP PRIOR TO EXTRUDING.
2. EXTRUSION WELDING SHALL BE USED FOR DETAIL WORK AND REPAIR WORK.
3. VACUUM BOX TEST SHALL BE THE NON-DESTRUCTIVE SEAM TEST METHOD FOR EXTRUSION WELD.

EXTRUSION WELD

DETAIL B2741-YSK-8-03

N.T.S.



NOTE:
1. DOUBLE FUSION WELDING SHALL BE THE PRIMARY SEAMING TECHNIQUE USED.
2. AIR PRESSURE TEST SHALL BE THE NON-DESTRUCTIVE SEAM TEST METHOD FOR DOUBLE FUSION WELD.

DOUBLE FUSION WELD

DETAIL B2741-YSK-8-04

N.T.S.

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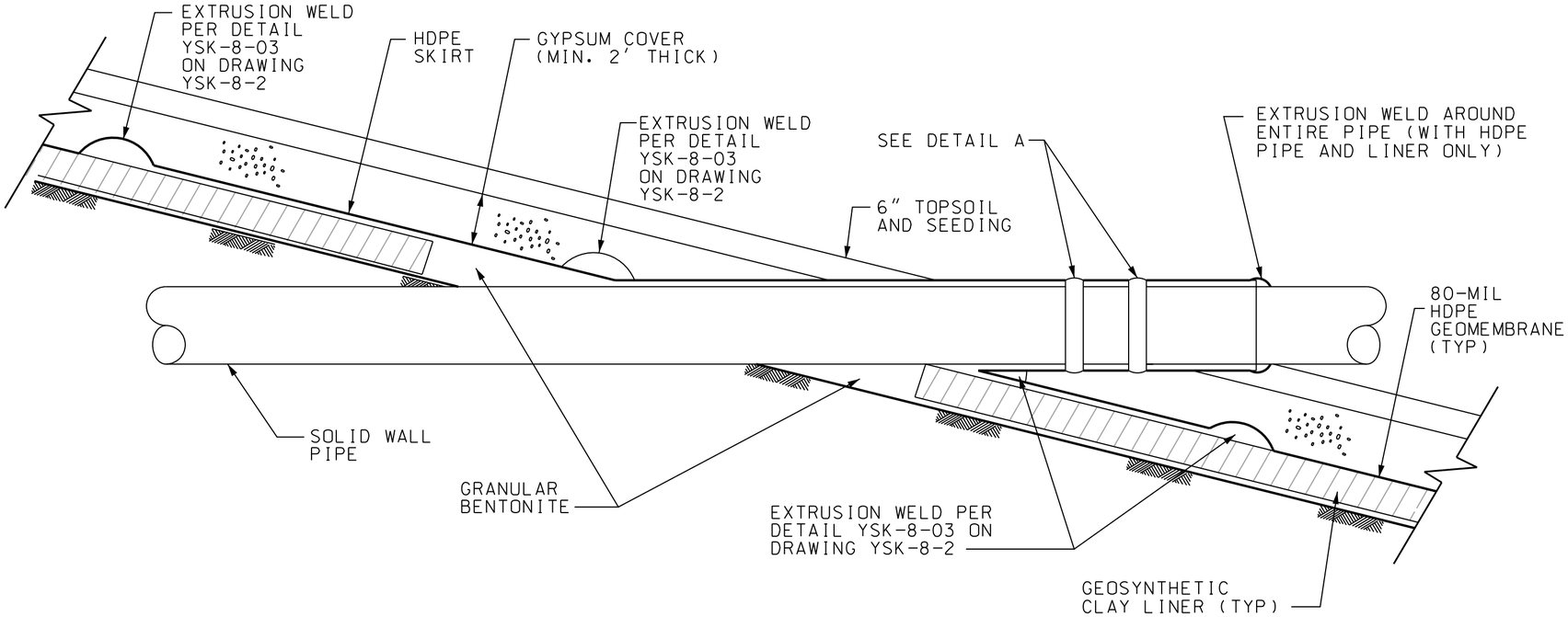
TAMPA ELECTRIC CO

DRAWING TITLE
LINER SECTIONS AND DETAILS
SHEET 2

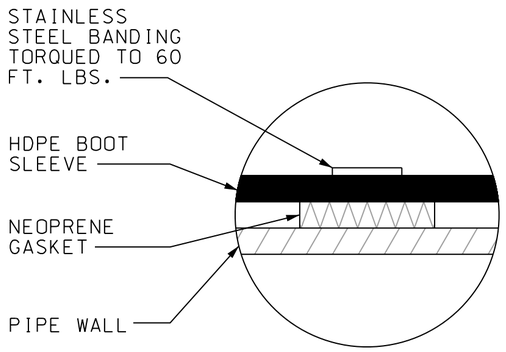
DRAWING NUMBER	REVISION
B2741-YSK-8-2	A
SHEET 2 OF 4	



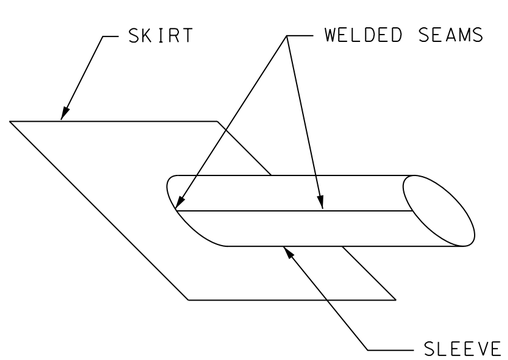
PIPE BOOT

DETAIL B2741-YSK-8-05

N.T.S.



DETAIL A



ISOMETRIC VIEW

NOTES:
1. FOR HDPE LINER ALL WELDS TO BE EXTRUSION WELDS.
2. FOR HDPE LINER USE TWO STAINLESS STEEL BAND PER PIPE PENETRATION.
3. THIS DRAWING IS TO BE WORKED WITH DRAWING YSK-8-2.

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CHARLES J. NELSON
03-29-2012

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CAD FILE NAME: B2741-YSK-8-3.DGN
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REVIEWED BY: J. PERRY
APPROVED BY: C. NELSON

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CHICAGO, ILLINOIS 60603-5780

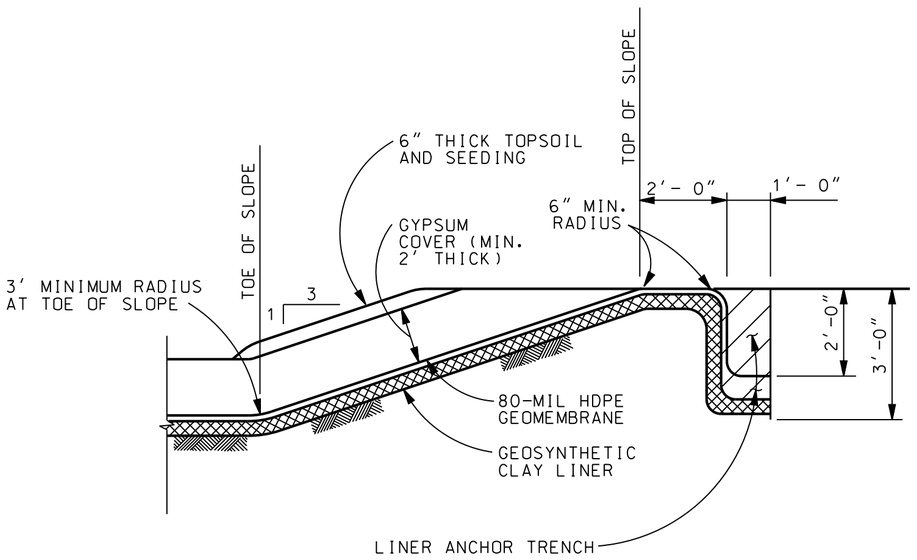
TECO
TAMPA ELECTRIC

PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
LINER SECTIONS AND DETAILS
SHEET 3

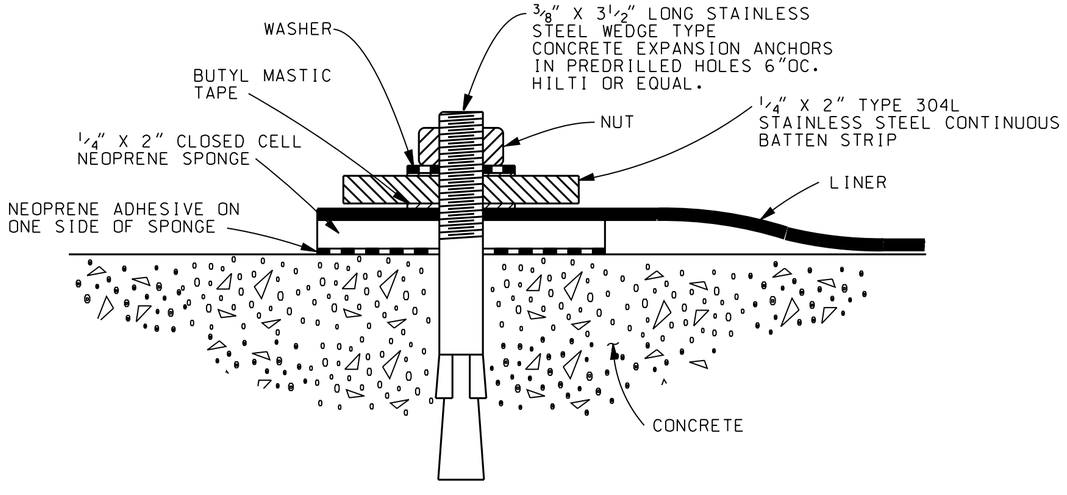
DRAWING NUMBER	REVISION
B2741-YSK-8-3	A
SHEET 3 OF 4	



TYPICAL LINER ANCHOR TRENCH

DETAIL B2741-YSK-8-06

N.T.S.



LINER ANCHOR TO STRUCTURE

DETAIL B2741-YSK-8-07

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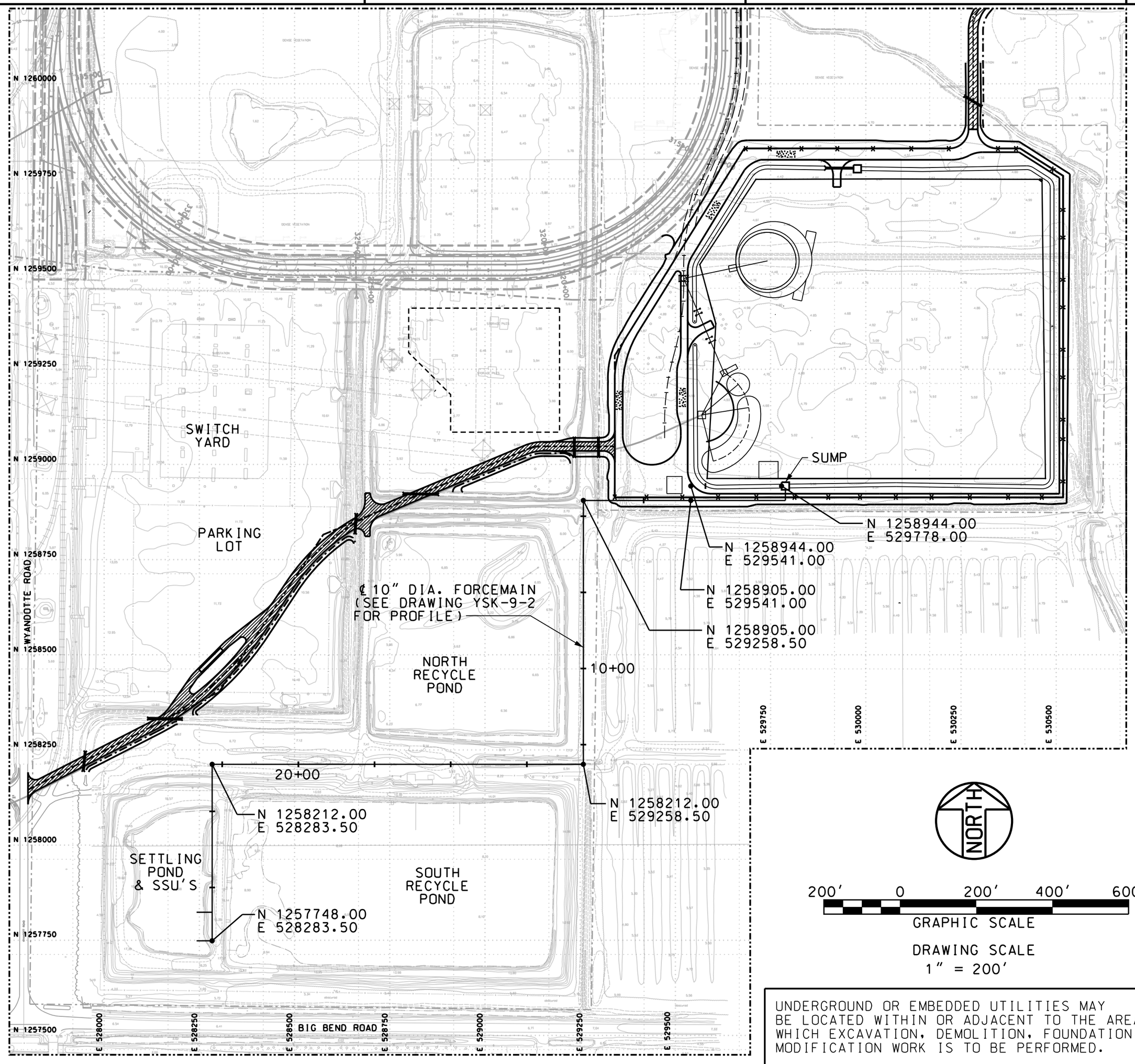
TAMPA ELECTRIC CO

DRAWING TITLE

LINER SECTIONS AND DETAILS
SHEET 4

DRAWING NUMBER	REVISION
B2741-YSK-8-4	A
SHEET 4 OF 4	



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NORTH

200' 0 200' 400' 600'
GRAPHIC SCALE

DRAWING SCALE
1" = 200'

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DRAWING TITLE
STORMWATER
FORCEMAIN PLAN
AND PROFILE

DRAWING NUMBER	REVISION
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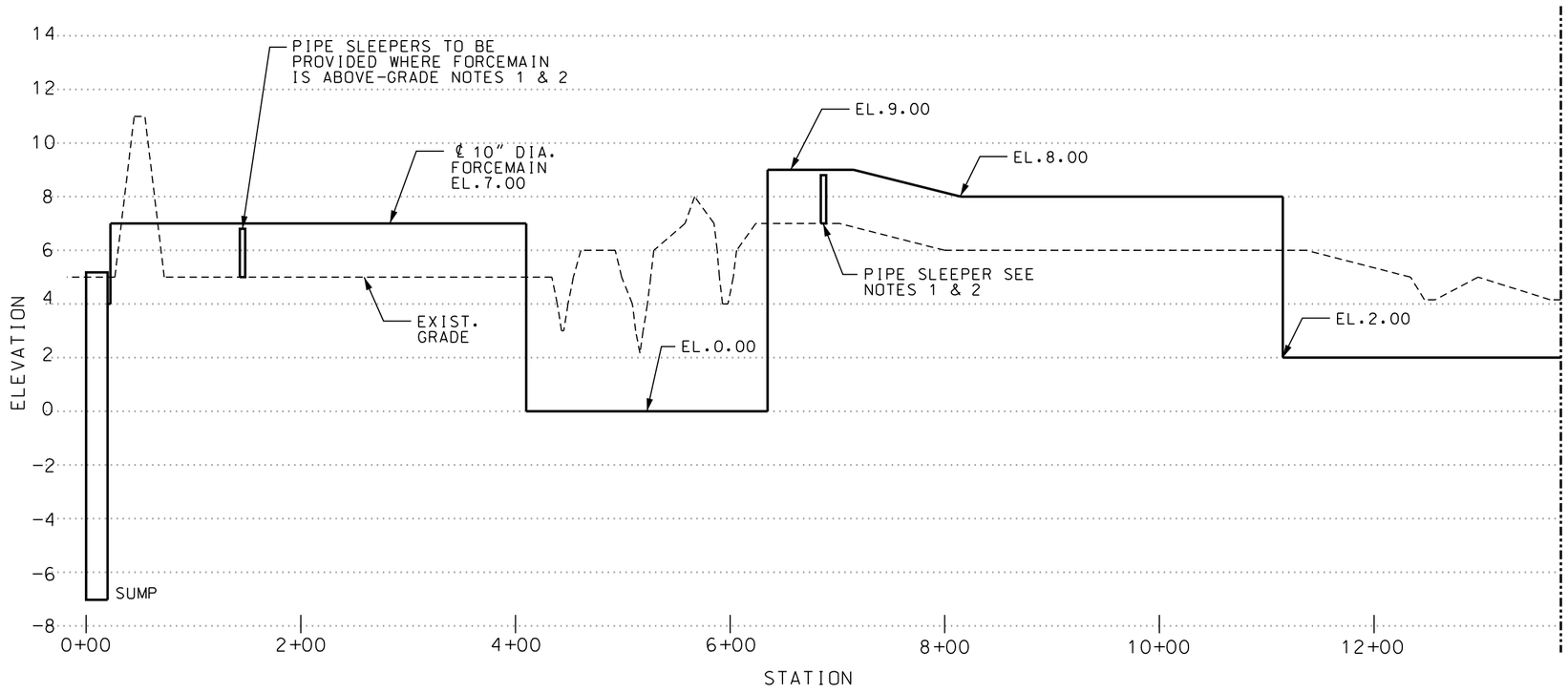
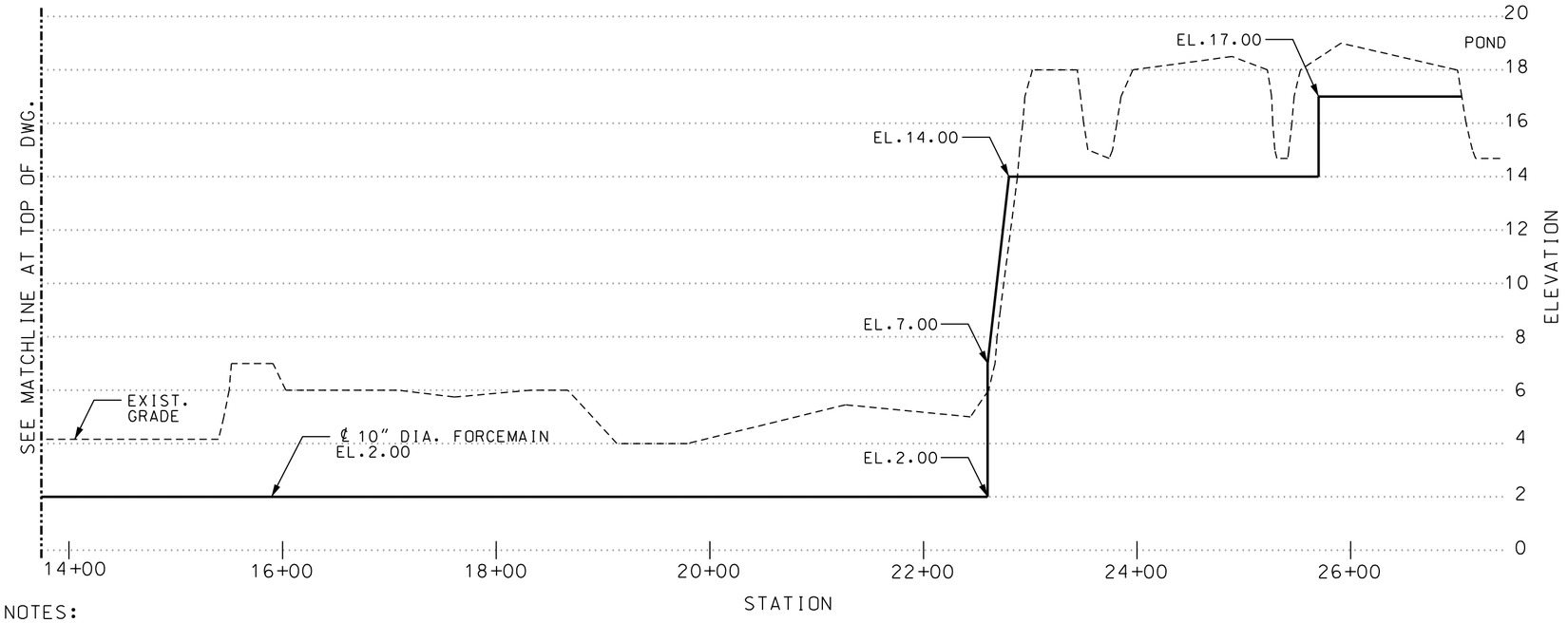
SHEET 1 OF 2	





NOTES:

1. WORK THIS DRAWING WITH DRAWING B2741-YSK-9-1.
2. PIPE SLEEPERS WILL BE PROVIDED AT APPROXIMATELY 20 FT. SPACING TO BE VERIFIED DURING FINAL DESIGN. ONLY ONE LOCATION SHOWN FOR CLARITY.

ISSUED FOR AGENCY REVIEW

NORTH

2′ 0 2′ 4′ 6′
VERTICAL SCALE

100′ 0 100′ 200′ 300′
HORIZONTAL SCALE

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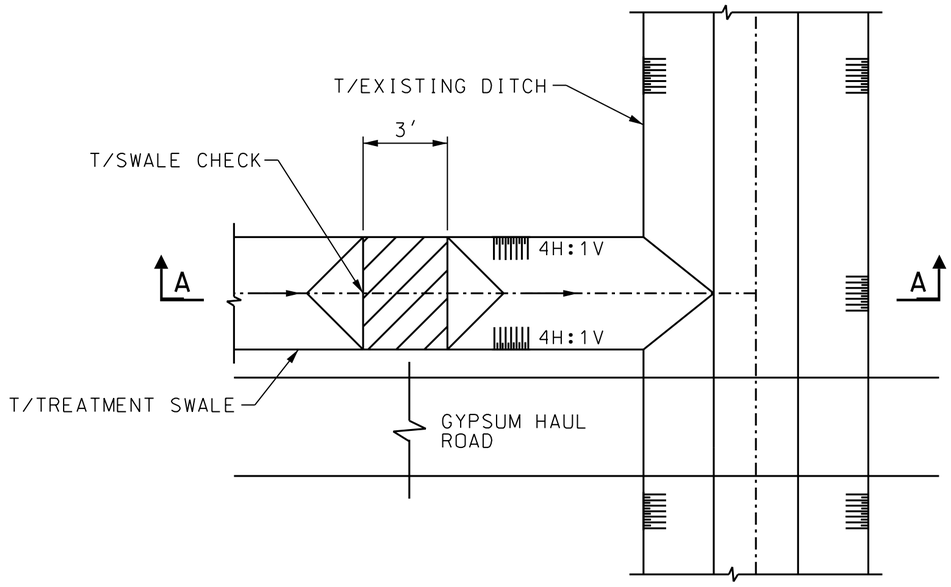
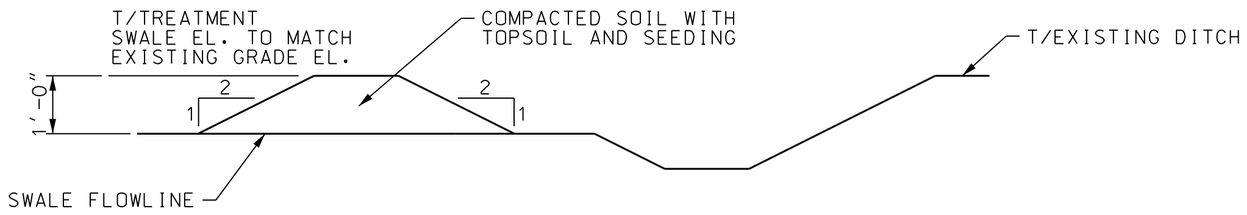
TAMPA ELECTRIC CO

DRAWING TITLE
STORMWATER FORCEMAIN
PLAN AND PROFILE

DRAWING NUMBER	REVISION
B2741-YSK-9-2	A
SHEET 2 OF 2	



PLAN



SECTION A-A

STORMWATER TREATMENT SWALE CHECK
DETAIL YSK-11-01
N.T.S.

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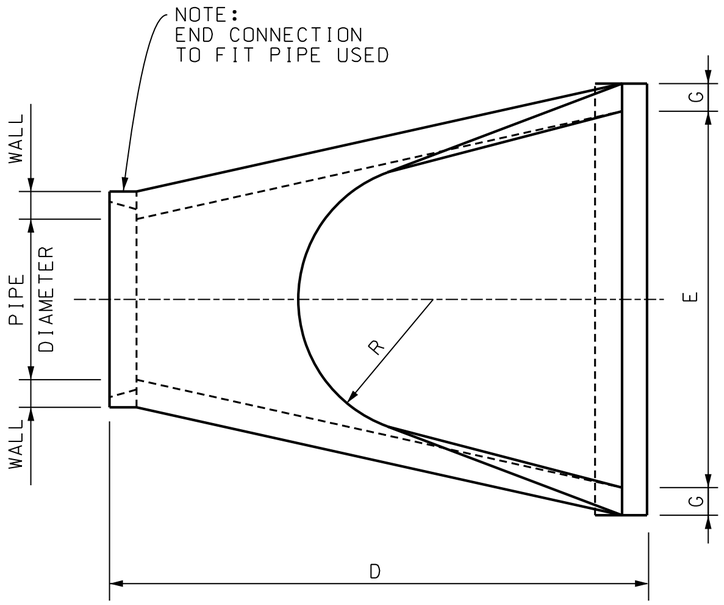
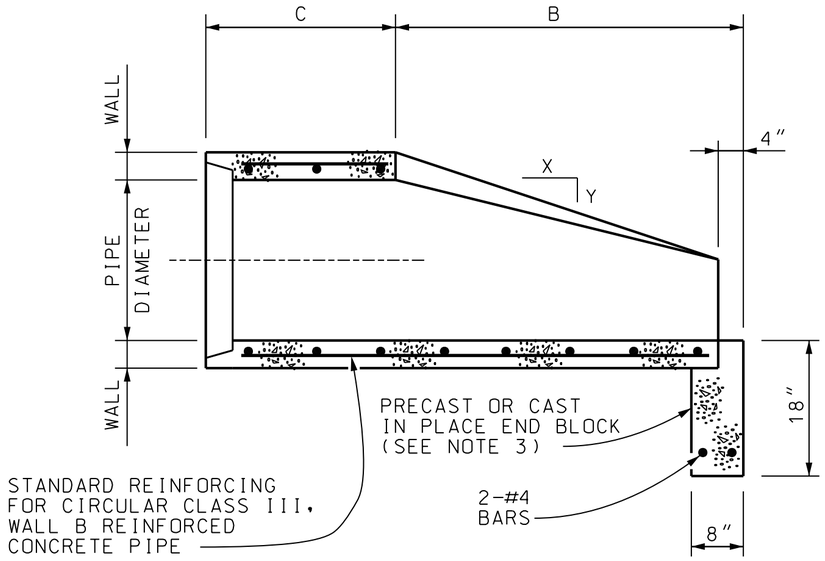
DRAWING TITLE
STORMWATER DRAINAGE DETAILS

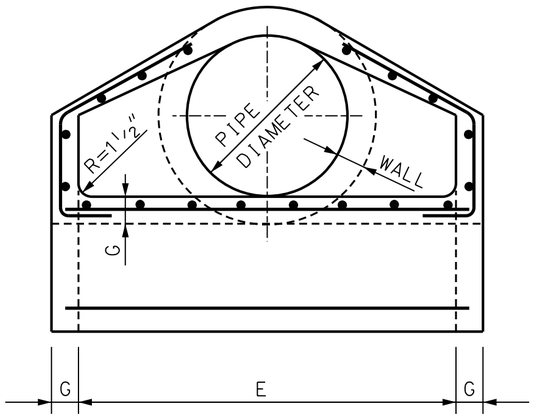
DRAWING NUMBER	REVISION
B2741-YSK-11-1	A
SHEET 1 OF 3	



PLAN



LONGITUDINAL SECTION



END VIEW

NOTES:

(1) PRECAST CONCRETE FLARED END SECTIONS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-170 CLASS III, WALL B REINFORCED CONCRETE PIPE.

(2) PRECAST CONCRETE FLARED END SECTION FOR PIPE DIAMETER REQUIRED SHALL BE AS INDICATED ON DETAIL PLAN FOR EACH INDIVIDUAL INSTALLATION.

(3) THE END BLOCK SHALL BE PLACED PRIOR TO THE INSTALLATION OF THE FLARED END SECTION.

(4) INSTALL GRATING FOR CONCRETE FLARED END SECTION FOR ALL END SECTIONS.

END SECTION FOR CONCRETE PIPE
DETAIL YSK-11-2-01

N.T.S.

PIPE DIA.	APPROX. WT. (lbs)	WALL	A	B	C	D	E	G	R	SLOPE
18″	990	2½″	9″	2′-3″	3′-10″	6′-1″	3′-0″	2½″	12″	3:1
21″	1280	2¾″	9″	2′-11″	3′-2″	6′-1″	3′-6″	2¾″	13″	3:1
24″	1520	3″	9½″	3′-7½″	2′-6″	6′-1½″	4′-0″	3″	14″	3:1
30″	2490	3½″	1′-0″	4′-6″	1′-7⅛″	6′-1⅛″	5′-0″	3½″	15″	3:1
36″	4100	4″	1′-3″	5′-3″	2′-10¾″	8′-1¾″	6′-0″	4″	20″	3:1

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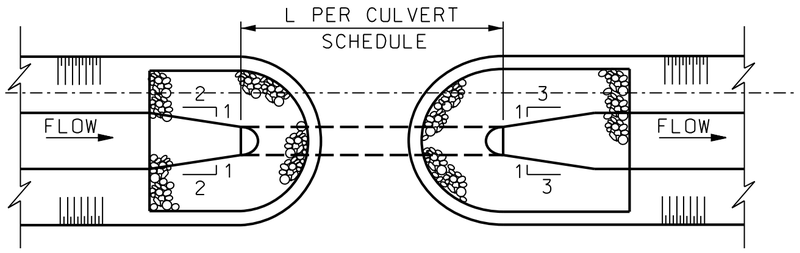
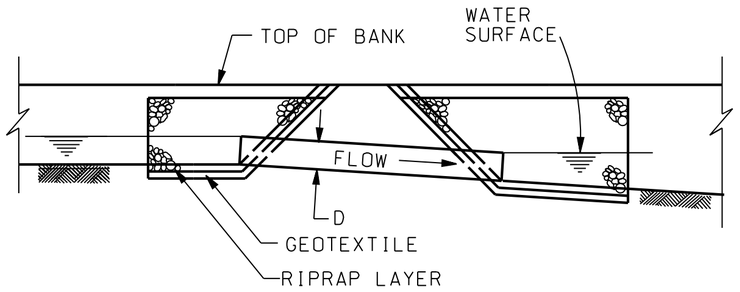


PLAN

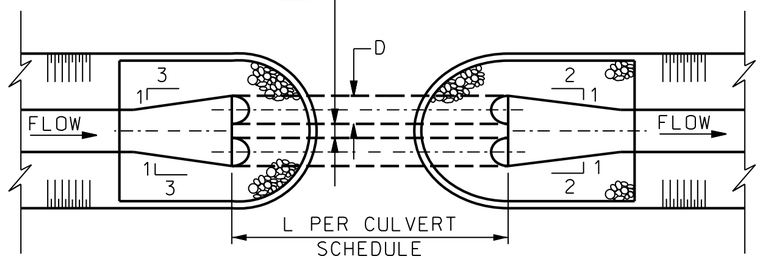


SINGLE CULVERT

DETAIL YSK-11-03

CULVERTS

MINIMUM SPACE BETWEEN PIPES INCHES	DIA. (D) INCHES
12"	6" TO 24"
½ D	30" TO 72"



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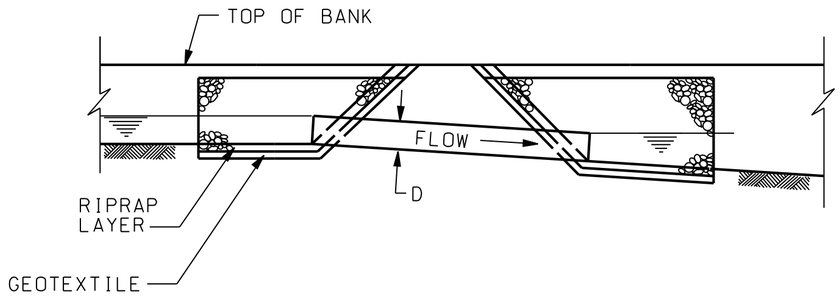

DOUBLE CULVERT

DETAIL YSK-11-04

CULVERT SCHEDULE

CULVERT NO.	MATERIAL	DWG. NO. (PLAN)	UP-STREAM INVERT	DOWN-STREAM INVERT	SIZE (IN)	LENGTH, L (FT.)	DETAIL NO.
C-1	RCP CLASS IV	YSK-5-2	1.80	1.00	24	50	YSK-11-03
C-2	RCP CLASS IV	YSK-5-2	-0.20	-0.40	24	90	YSK-11-03
C-3	RCP CLASS IV	YSK-5-4	-0.40	-0.55	24	50	YSK-11-03
C-4	RCP CLASS IV	YSK-5-4	0.40	0.00	2x24	90	YSK-11-04
C-5	RCP CLASS IV	YSK-5-5	0.80	0.50	2x24	50	YSK-11-04
C-6	RCP CLASS IV	YSK-5-5	1.90	1.60	24	50	YSK-11-03
C-7	RCP CLASS IV	YSK-5-8	0.00	-0.15	2x36	50	YSK-11-04
C-8	RCP CLASS IV	YSK-5-8	4.10	4.00	24	75	YSK-11-03

* ALL SHWT ELEVATIONS ARE BASED ON GEORGE F. YOUNG WETLAND SURVEY 04/26/2011.

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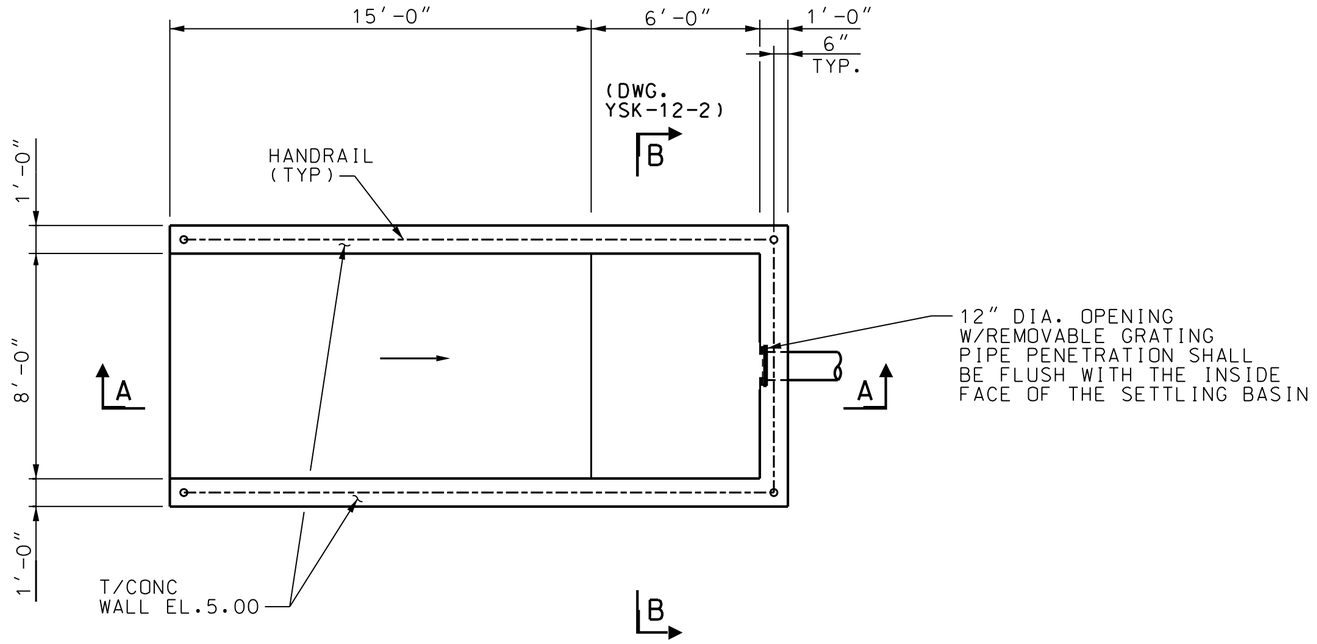
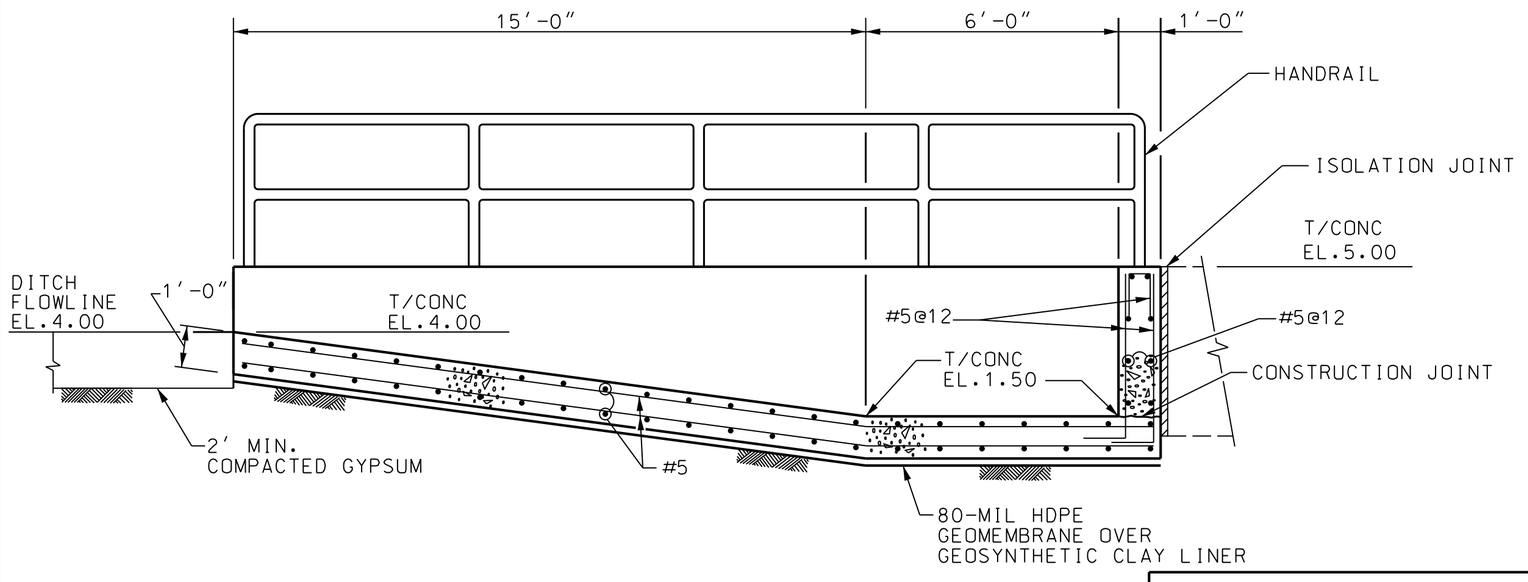


STORMWATER SUMP SETTLING BASIN

NORTH

DETAIL YSK-12-01

N.T.S.



SECTION A

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ISSUED FOR AGENCY REVIEW

HOLD INFORMATION

NO.	DESCRIPTION

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RELEASE INFORMATION

REV.	DATE	DESCRIPTION
A	03-29-2012	ISSUED FOR AGENCY REVIEW

ISSUE PURPOSE: REVIEW
SPECIFICATION: NONE
PROJECT NO.: 12877-001

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA.

CHARLES J. NELSON
03-29-2012

MY LICENSE RENEWAL
DATE IS: 02-28-2013
PAGES OR SHEETS
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CERTIFICATE OF AUTHORIZATION 00006938

CAD FILE NAME: B2741-YSK-12-1.DGN
PREPARED BY: G. CHOW/A. SLACH
REVIEWED BY: J. PERRY
APPROVED BY: C. NELSON

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SARGENT & LUNDY LLC
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CHICAGO, ILLINOIS 60603-5780

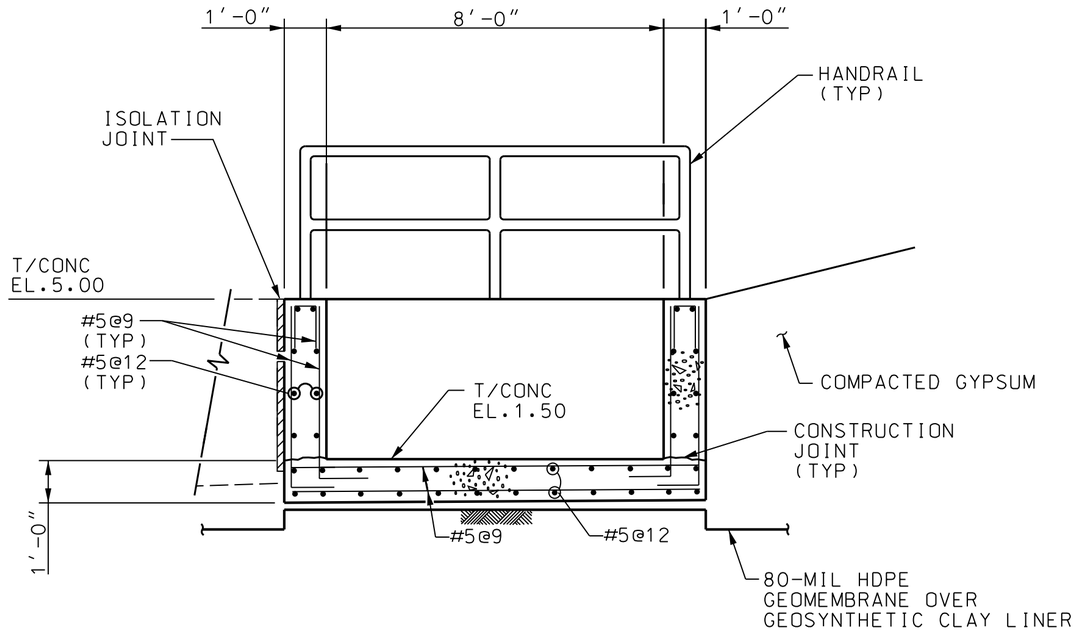
TECO
TAMPA ELECTRIC

PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
STORMWATER SUMP
DETAILS

DRAWING NUMBER	REVISION
B2741-YSK-12-1	A
SHEET 1 OF 4	



SECTION B
N.T.S.

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TAMPA ELECTRIC

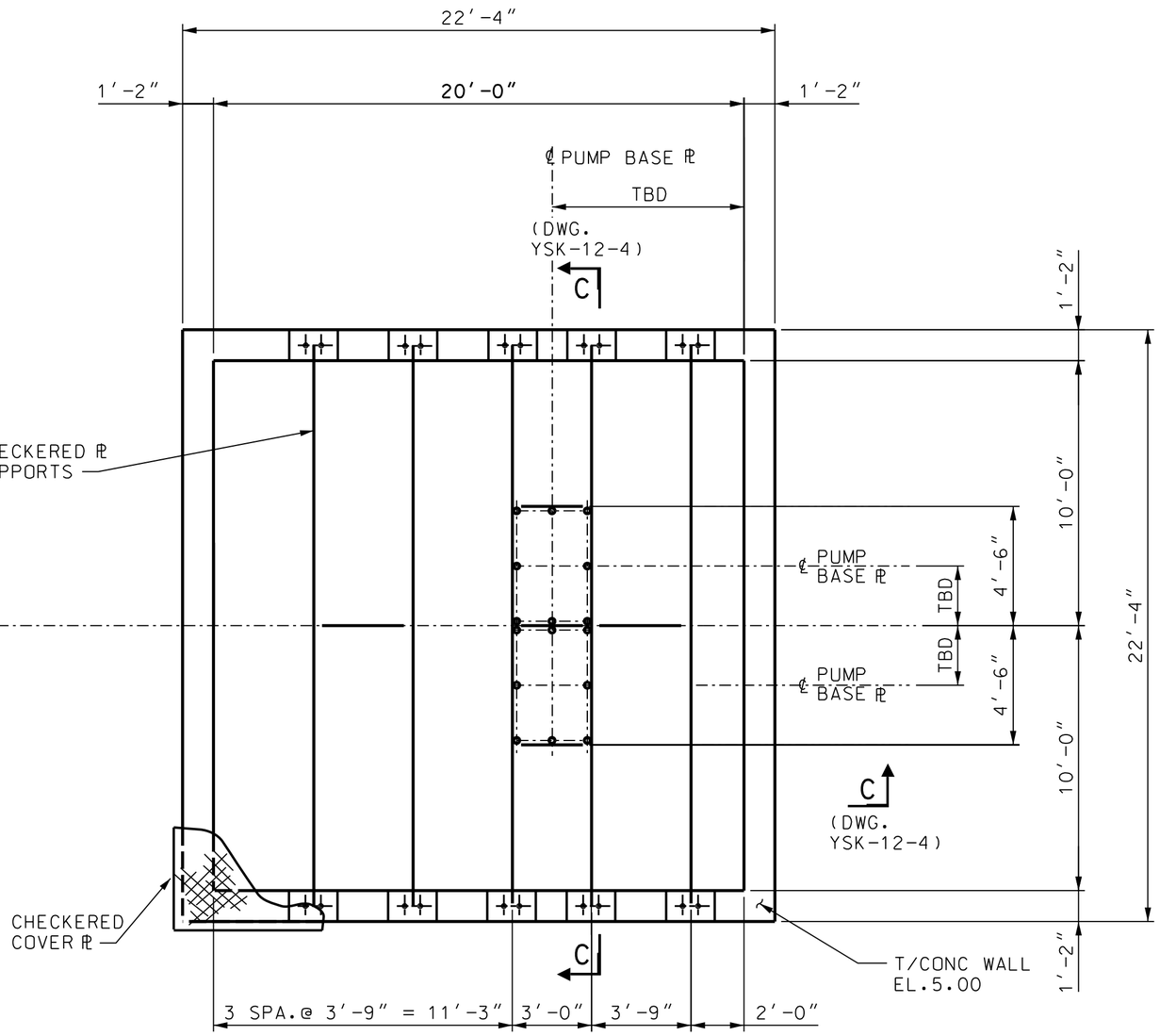
PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
STORMWATER SUMP
DETAILS

DRAWING NUMBER	REVISION
B2741-YSK-12-2	A
SHEET 2 OF 4	

ZD6217/Op1198/N:*CivilDesign*1-Big-Bend-Gypsum*B2741-YSK-12-2.dgn 3/16/2012 3:40:39 PM ...*B2741-YSK-12-2.dgn
Form GDC-0401-01-10, ANSI (Imperial) MicroStation Border - Size C - 17 x 22
Revision 11A, Revision Date: 04-30-2010



STORM WATER SUMP PLAN

N.T.S.

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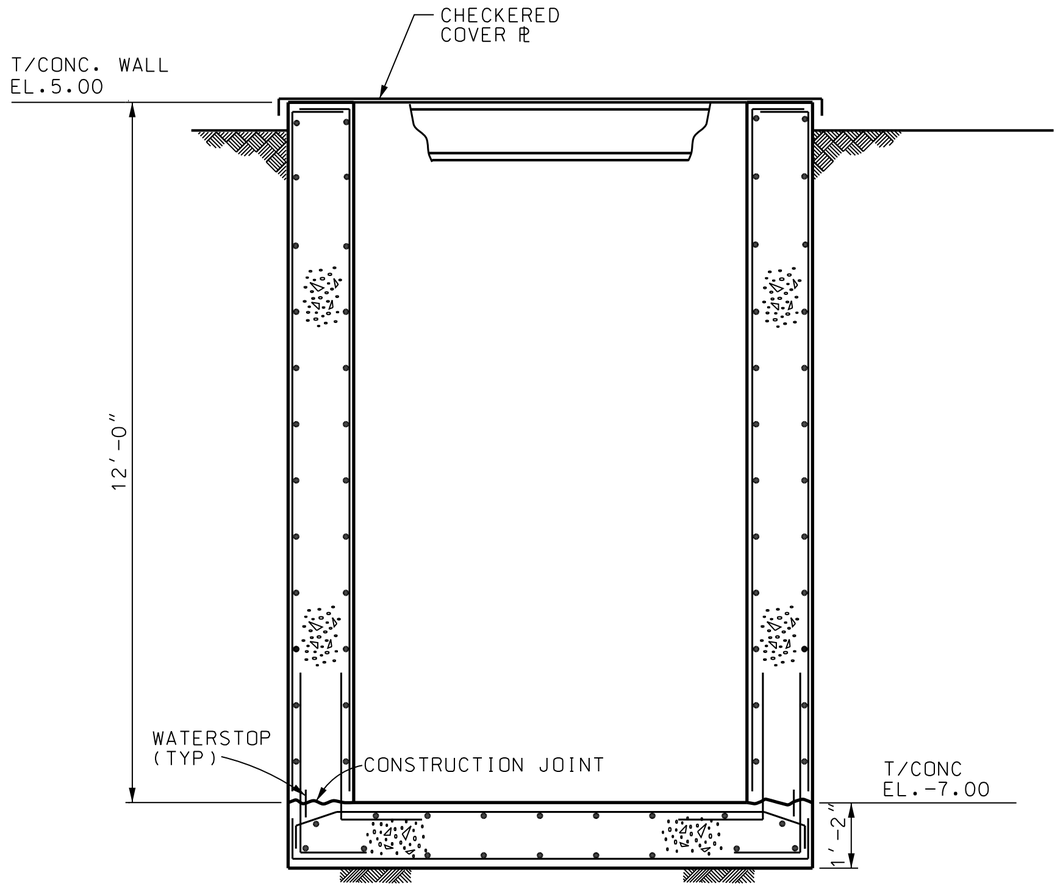
TECO
TAMPA ELECTRIC

PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
STORMWATER SUMP DETAILS

DRAWING NUMBER	REVISION
B2741-YSK-12-3	A
SHEET 3 OF 4	



SECTION C
N.T.S.

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TECO
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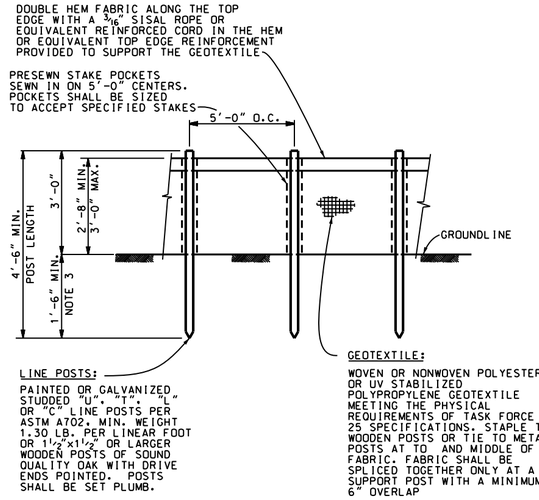
PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

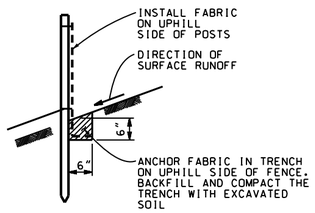
BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
STORMWATER SUMP
DETAILS

DRAWING NUMBER	REVISION
B2741-YSK-12-4	A
SHEET 4 OF 4	



FRONT ELEVATION

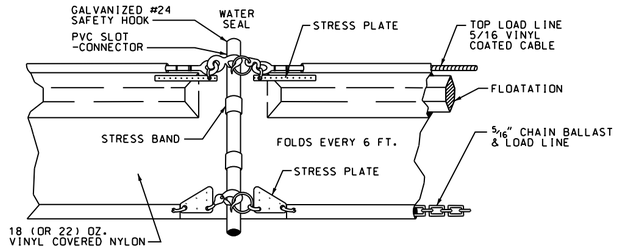


CROSS-SECTION

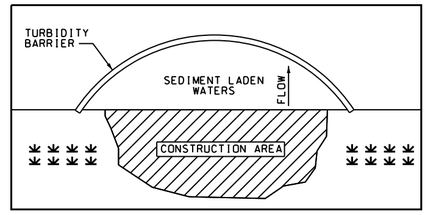
TYPICAL DETAIL
SELF-SUPPORTING SILT FENCE
DETAIL YSK-13-01
N.T.S.

NOTES:

1. CONSTRUCTION TRAFFIC SHALL BE INSPECTED PRIOR TO LEAVING THE PROJECT SITE TO MINIMIZE SEDIMENT OR OTHER DEBRIS MIGRATION TO ANY IMPROVED STREET.
2. CONTRACTOR SHALL REPORT ANY ENVIRONMENTAL INCIDENTS TO THE FACILITY ENVIRONMENTAL COORDINATOR IMMEDIATELY. CLEANUP OF SPILLED MATERIALS SUCH AS DIESEL OR OTHER CHEMICALS SHALL BE PERFORMED IN ACCORDANCE WITH THE APPROVED STORMWATER POLLUTION PREVENTION PLAN.
3. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES AND UPDATES TO THE APPROVED PLAN THROUGHOUT THE COURSE OF CONSTRUCTION. TECO TO PERFORM INSPECTIONS OF EROSION AND SEDIMENT CONTROL.
4. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. SOIL STABILIZATION MEASURES SHALL CONSIDER THE TIME OF YEAR, SITE CONDITIONS, AND THE USE OF TEMPORARY OR PERMANENT MEASURES.
5. SOIL EROSION AND SEDIMENT CONTROL FEATURE SHALL BE CONSTRUCTED PRIOR TO THE COMMENCEMENT OF HYDROLOGIC DISTURBANCE OF UPLAND AREAS.
6. DISTURBED AREAS SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN 14 CALENDER DAYS OF THE END OF ACTIVE HYDROLOGIC DISTURBANCE OR REDISTURBANCE.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED.
8. ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES MUST BE MAINTAINED AND REPAIRED AS NEEDED.
9. A STABILIZED MAT OF AGGREGATE UNDERLAIN WITH FILTER CLOTH SHALL BE LOCATED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING AND LEAVING A CONSTRUCTION SITE TO OR FROM A PUBLIC RIGHT-OF-WAY, STREET, ALLEY, OR PARKING AREA. ANY SEDIMENT REACHING AN IMPROVED PUBLIC RIGHT-OF-WAY, STREET, OR PARKING AREA SHALL BE REMOVED BY SCRAPING OR STERET CLEANING AS ACCUMLATIONS WARRANT AND BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.
10. SOIL STOCKPILES SHALL NOT BE LOCATED IN A FLOOD PRONE AREA OR A DESIGNATED BUFFER PROTECTING WATERS OF THE UNITED STATES OR ISOLATED WATERS OF HILLSBOROUGH COUNTY.
11. IF DEWATERING SERVICES ARE USED, DISCHARGE LOCATIONS SHALL BE ROUTED THROUGH AN EFFECTIVE SEDIMENT CONTROL MEASURE (E.G. SEDIMENT TRAP, SEDIMENT BASIN, OR OTHER APPROPRIATE MEASURE), AND TO A LOCATION TO BE DIRECTED BY TEC CONSTRUCTION/ENVIRONMENTAL SURPERVISOR.
12. ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS.

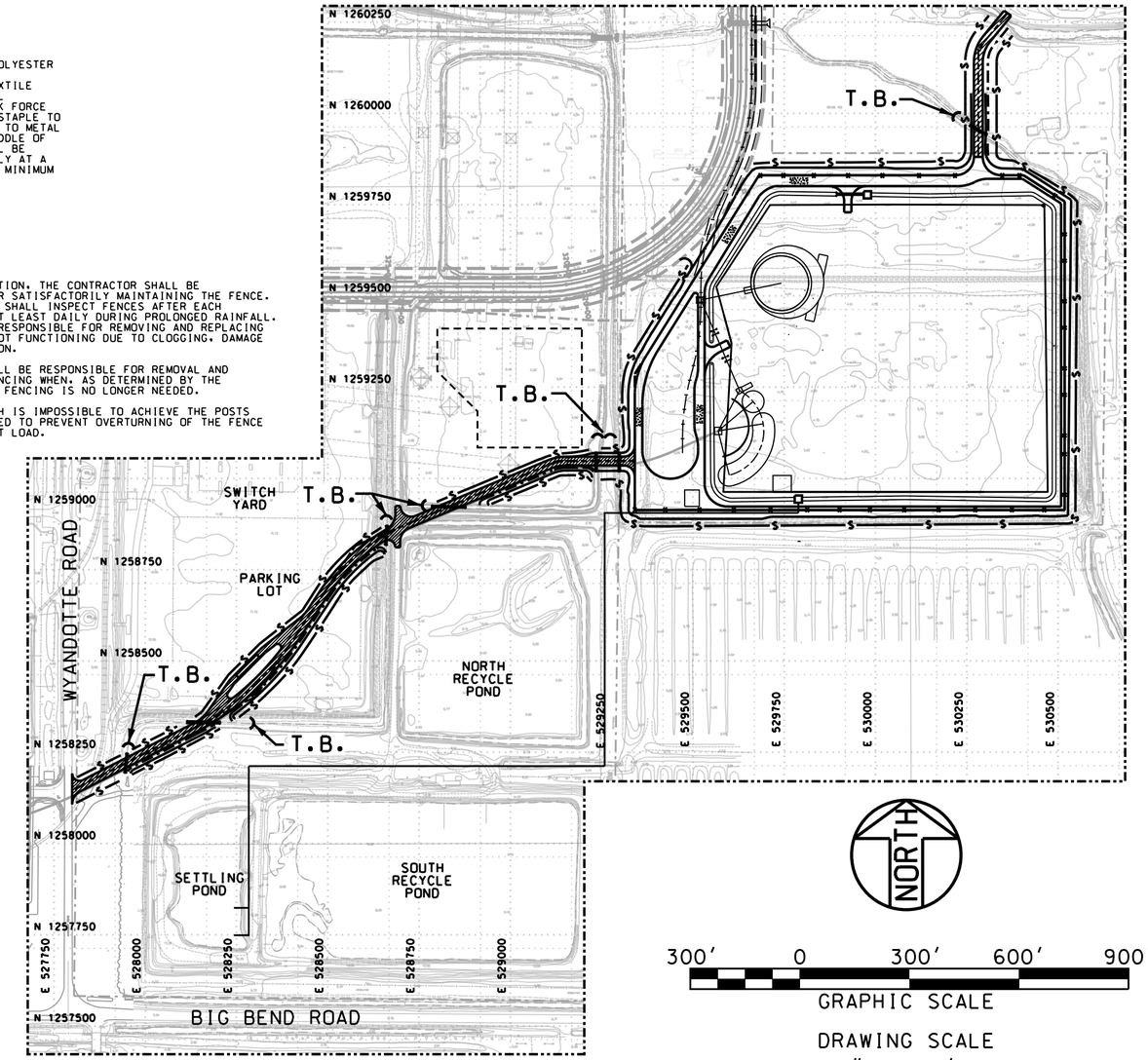


DETAIL



PLAN

TURBIDITY BARRIER
DETAIL YSK-13-02
N.T.S.



300' 0 300' 600' 900'

GRAPHIC SCALE

DRAWING SCALE
1" = 300'

LEGEND

-S——S- SILT FENCE PER DETAIL YSK-13-01 (THIS DWG.)

T.B. - TURBIDITY BARRIER (TYPE [1]) PER DETAIL YSK-13-02 (THIS DWG.)

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SPECIFICATION: NONE
PROJECT NO.: 12877-001

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CAD FILE NAME: B2741-YSK-13.DGN
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REVIEWED BY: J. PERRY
APPROVED BY: C. NELSON

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TECO
TAMPA ELECTRIC

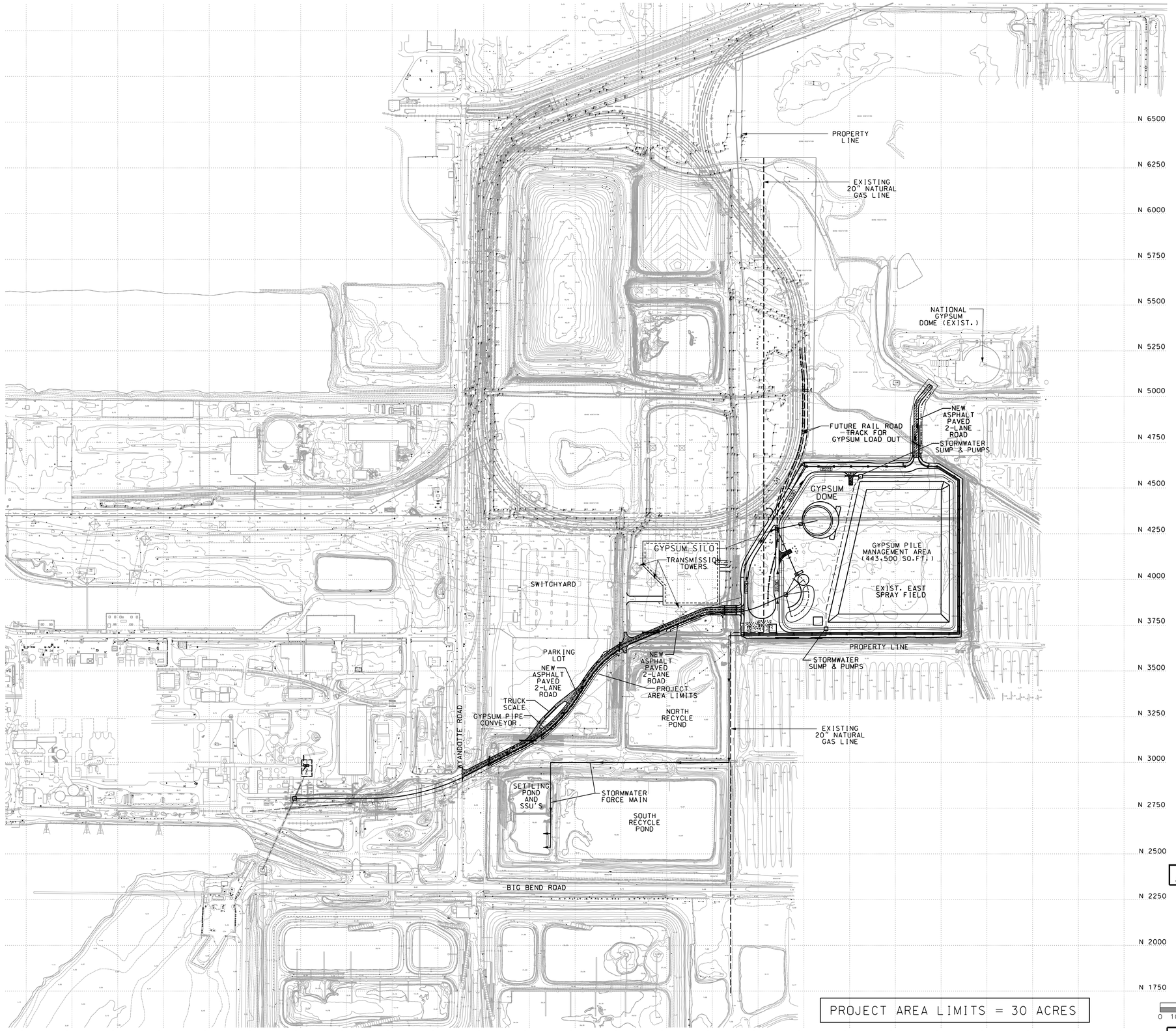
PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
CONSTRUCTION SWPPP

DRAWING NUMBER	REVISION
B2741-YSK-13	A
SHEET 1 OF 1	


NATIONAL GYPSUM FACILITY
FUTURE RAIL ROAD TRACK FOR GYPSUM LOAD OUT
NEW ASPHALT PAVED 2-LANE ROAD
GYPSUM DOME
GYPSUM PILE MANAGEMENT AREA (463,000 SQ. FT.)
EXIST. EAST SPRAY FIELD
NEW GYPSUM HANDLING AREA
SWITCHYARD
NEW ASPHALT PAVED 2-LANE ROAD
TRUCK SCALE
PARKING LOT
WYANDOTTE ROAD
GYPSUM PIPE CONVEYOR
NORTH RECYCLE POND
EXISTING 20" NATURAL GAS LINE
PROJECT AREA LIMITS
SETTLING POND & SSU'S
SOUTH RECYCLE POND
BIG BEND ROAD
EXISTING GYPSUM STORAGE AREA
NORTH
0 100' 200' 400' 600'
SCALE: 1" = 200'



PROJECT AREA LIMITS = 30 ACRES

LEGEND

- ASPHALT PAVED ROAD
- CRUSHED STONE OR GRAVEL ROAD OR AREA SURFACING
- DUST SCREENING FENCE
- TRAFFIC FLOW DIRECTION
- PROPERTY LINE
- PROJECT AREA LIMITS

NOTES

1. THE HORIZONTAL COORDINATE SYSTEM FOR THE SITE PLAN IS THE PLANT GRID COORDINATE SYSTEM.
2. THE VERTICAL DATUM FOR THE TOPOGRAPHY IS THE PLANT VERTICAL DATUM.
3. PLANT DATUM EL.= NAVD 88 DATUM EL. +1.97', BASED ON PLANT BENCHMARKS 101, 103 AND 103.

REFERENCE DRAWINGS

NORTH

0 100' 200' 400' 600'

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TECO TAMPA ELECTRIC

FILE I.D.: **BIG-GHS-71.DGN**

DRAWING RELEASE RECORD

REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD

REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	PURPOSE
A	03-29-2012	D.AMIN	J.PERRY	-	ISSUED FOR AGENCY REVIEW

FORM GDS 2-6-1 REV. 2 (12/1999)

SCALE
1"=200'
PROJECT NUMBER
12877-001

PROJECT AREA LIMITS GYPSUM HANDLING SYSTEM UNITS 1, 2, 3 & 4 BIG BEND POWER STATION TAMPA ELECTRIC CO

Sargent & Lundy LLC
55 E. MONROE STREET
CHICAGO, ILLINOIS 60603-5780
CERTIFICATION OF AUTHORIZATION NO. 6938

DRAWING NO	REV
GHS-71	A

TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
FILED: MARCH 23, 2012

GENERAL NOTES

1. COORDINATES AND ELEVATIONS
   A. THE COORDINATE SYSTEM SHOWN ON THE PERMIT DRAWINGS IS THE FLORIDA STATE PLANE WEST ZONE NAD 83 COORDINATE SYSTEM.
   B. ELEVATIONS SHOWN ON THE DRAWINGS ARE BASED ON NAVD 88 DATUM.

2. HORIZONTAL AND VERTICAL CONTROL POINTS
   A. CONTROL MONUMENTS TO BE USED FOR ALL CONSTRUCTION EXIST AT THE PLANT SITE. MONUMENT INFORMATION SHALL BE OBTAINED FROM TECO.
   B. CONTRACTOR IS RESPONSIBLE FOR SETTING ANY ADDITIONAL MONUMENTS AND CONTROL POINTS THAT THEY MAY DEEM NECESSARY FOR COMPLETION OF WORK.

3. TOPOGRAPHIC MAPS
   THE TOPOGRAPHIC MAPPING OF THE SITE IS A COMPILATION OF TWO SURVEYS. TOPOGRAPHIC SURVEY MAPPING OF THE SITE WAS PREPARED BY GEORGE F. YOUNG, INC. (MAY 11, 2011). THIS SURVEY WAS SUPPLEMENTED BY A MASTER TOPOGRAPHIC SURVEY FURNISHED BY TAMPA ELECTRIC, AND BASED UPON THE PLANT VERTICAL DATUM. GEORGE F. YOUNG, INC. CONVERTED THE MASTER TOPOGRAPHIC SURVEY FROM THE PLANT VERTICAL DATUM TO THE NAVD 88 SYSTEM.

4. GEOTECHNICAL REPORT
   THE GEOTECHNICAL REPORT FOR THE SITE WAS PREPARED BY TEST LAB INC., JUNE 27,2011.

5. EARTHWORK CONSTRUCTION
   A. EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 312201 REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
   B. LINER CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE APPROVED CQA PLAN FOR THE PROJECT.

6. EROSION AND SEDIMENT CONTROL
   A. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES AND UPDATES TO THE APPROVED PLAN THROUGHOUT THE COURSE OF CONSTRUCTION. TECO TO PERFORM INSPECTIONS OF EROSION AND SEDIMENT CONTROL.
   B. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. SOIL STABILIZATION MEASURES SHALL CONSIDER THE TIME OF YEAR, SITE CONDITIONS AND THE USE OF TEMPORARY OR PERMANENT MEASURES.
   C. SOIL EROSION AND SEDIMENT CONTROL FEATURES SHALL BE CONSTRUCTED PRIOR TO THE COMMENCEMENT OF HYDROLOGIC DISTURBANCE OF UPLAND AREAS.
   D. DISTURBED AREAS SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN 14 CALENDER DAYS OF THE END OF ACTIVE HYDROLOGIC DISTURBANCE OR REDISTURBANCE.
   E. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED.
   F. ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES MUST BE MAINTAINED AND REPAIRED AS NEEDED.
   G. A STABILIZED MAT OF AGGREGATE UNDERLAIN WITH FILTER CLOTH SHALL BE LOCATED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING AND LEAVING A CONSTRUCTION SITE TO OR FROM A PUBLIC RIGHT-OF-WAY, STREET, ALLEY, OR PARKING AREA. ANY SEDIMENT REACHING AN IMPROVED PUBLIC RIGHT-OF-WAY, STREET, OR PARKING AREA SHALL BE REMOVED BY SCRAPING OR STREET CLEANING AS ACCUMLATIONS WARRANT AND BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.
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   J. ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS.

7. UTILITY COORDINATION
   A. FLORIDA ONE-CALL SHALL BE NOTIFIED 24 HOURS PRIOR TO ANY SOIL DISTURBANCE ON THE SITE.

8. ALL WARNINGS, SIGNS, PAVEMENT MARKINGS, AND TRAFFIC CONTROL DURING CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

DRAWING LIST

B2741-YSK-1	GENERAL NOTES AND DRAWING LIST
B2741-YSK-2	LEGEND AND ABBREVIATIONS
B2741-YSK-3	EXISTING CONDITIONS, BORING PLAN, AND PROJECT LIMITS
B2741-YSK-4	HAUL ROAD SECTIONS AND DETAILS
B2741-YSK-5	FINAL SITE PLAN
B2741-YSK-6	GYPSUM HANDLING AREA CROSS-SECTION SHEET 1
B2741-YSK-7	GYPSUM HANDLING AREA CROSS-SECTION SHEET 2
B2741-YSK-8	LINER SECTIONS AND DETAILS
B2741-YSK-9	STORMWATER FORCEMAIN PLAN AND PROFILE
B2741-YSK-10	STORMWATER FORCEMAIN P&ID
B2741-YSK-11	STORMWATER DRAINAGE DETAILS
B2741-YSK-12	STORMWATER SUMP DETAILS

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RELEASE INFORMATION

REV.	DATE	DESCRIPTION
0	01-20-2012	FOR COMMENT

ISSUE PURPOSE: COMMENT
SPECIFICATION: NONE
PROJECT NO.: 12877-001

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CHARLES J. NELSON
ENTER DATE

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CAD FILE NAME: B2741-YSK-1.DGN
PREPARED BY: G. CHOW/A. SLACH
REVIEWED BY: J. PERRY
APPROVED BY: ----

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Sargent & Lundy LLC

SARGENT & LUNDY LLC
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CHICAGO, ILLINOIS 60603-5780

TECO
TAMPA ELECTRIC

PROJECT

GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

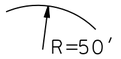
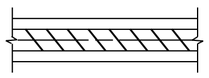
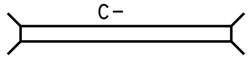
BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE

GENERAL NOTES AND DRAWING LIST

DRAWING NUMBER	REVISION
B2741-YSK-1	0
SHEET 1 OF 1	

LEGEND

	RADIUS OF CURVATURE
	CHAIN LINK FENCE
	WATER LINE
	BURIED GAS LINE
	BURIED ELECTRICAL CABLE
	ELEVATION CONTOUR
	EXISTING DEPRESSION
X 8.00	SPOT ELEVATION
	EXISTING UTILITY POLE
	EXISTING UTILITY POLE WITH GUY
	WOOD OR BRUSH OUTLINE
	EXISTING TRACK
	℄ OF DITCH
	ASPHALT PAVED ROAD. OUTER LINES SHOW OVERALL WIDTH. INTERIOR HATCHED LINES SHOW EDGES OF PAVEMENT.
	RIPRAP EROSION PROTECTION
	PIPE CULVERT CULVERT NUMBER SHOWN
	EXISTING AMMONIA LINE
	EXISTING WATER LINE
	EXISTING DESALINATION LINE
	PROPERTY LINE
	BORING LOCATION

ABBREVIATIONS

CHDPE	CORRUGATED HIGH DENSITY POLYETHYLENE PIPE
℄	CENTERLINE
CMP	CORRUGATED METAL PIPE
FG	FINISHED GRADE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
INV.EL.	INVERT ELEVATION
PC	POINT OF CURVE
PI	POINT OF INTERSECTION (HORIZONTAL CURVE)
PVI	POINT OF INTERSECTION OF VERT. CURVE
PT	POINT OF TANGENT
PVC	POINT OF VERTICAL CURVE
PVT	POINT OF VERTICAL TANGENT
R	RADIUS
RCP	REINFORCED CONCRETE PIPE, CLASS IV
STA.	STATION
VC	VERTICAL CURVE
T/BERM	TOP OF BERM
HP	HIGH POINT

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CAD FILE NAME: B2741-YSK-2
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REVIEWED BY: J. PERRY
APPROVED BY: ----

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SARGENT & LUNDY LLC
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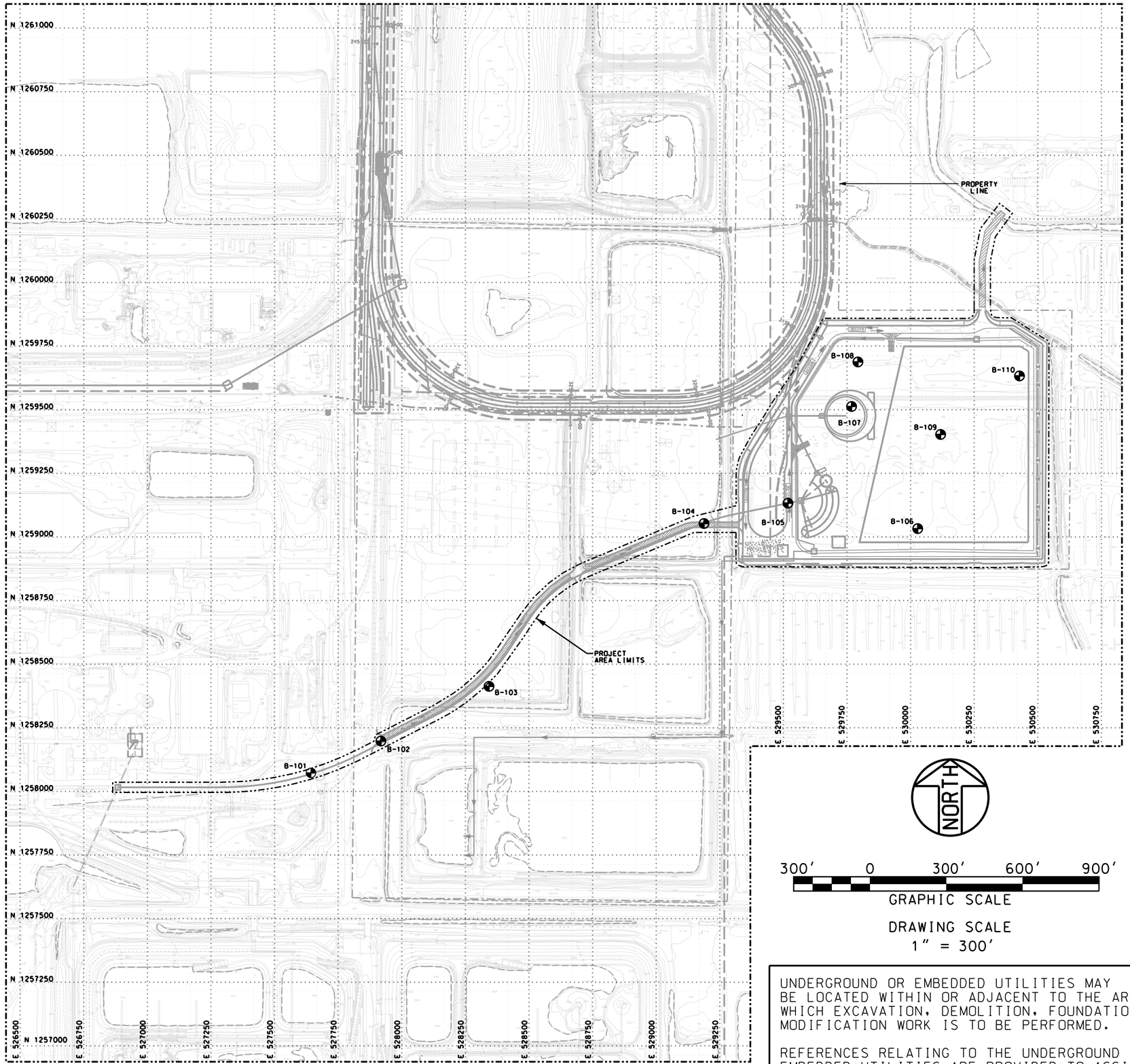
TECO
TAMPA ELECTRIC

PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
LEGEND AND ABBREVIATIONS

DRAWING NUMBER	REVISION
B2741-YSK-2	0
SHEET 1 OF 1	



PROJECT AREA LIMITS = 30 ACRES

PRELIMINARY
NOT FOR CONSTRUCTION

NORTH

300′ 0 300′ 600′ 900′

GRAPHIC SCALE

DRAWING SCALE
1″ = 300′

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REVIEWED BY: J. PERRY
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TECO
TAMPA ELECTRIC

PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

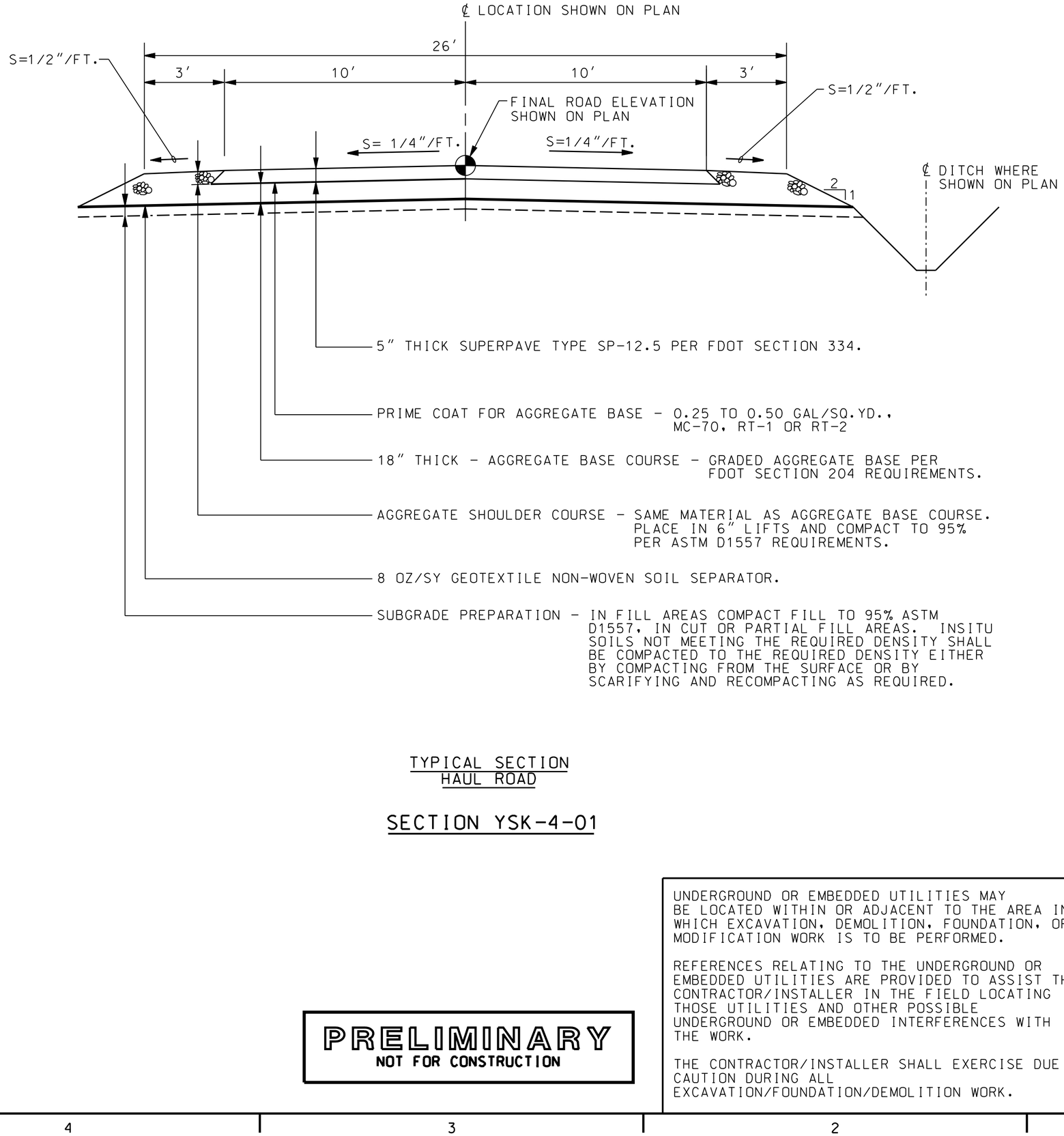
BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
EXISTING CONDITIONS, BORING PLAN, AND PROJECT LIMITS

DRAWING NUMBER	REVISION
B2741-YSK-3	0
SHEET 1 OF 1	

ZL5755/028307/S:*CivilDesign*1-Big-Bend-Gypsum*B2741-YSK-3.dgn 1/19/2012 11:47:29 AM ...*B2741-YSK-3.dgn
Form GDG-0401-01-10, ANSI (Imperial) MicroStation Border - Size C - 17 x 22
Revision 11A, Revision Date: 04-30-2010

TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
FILED: MARCH 23, 2012



TYPICAL SECTION
HAUL ROAD

SECTION YSK-4-01

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PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
HAUL ROAD SECTIONS AND DETAILS

DRAWING NUMBER	REVISION
B2741-YSK-4	0
SHEET 1 OF 1	

ZD7116/Or9972/S:*CivilDesign*1-Big-Bend-Gypsum*B2741-YSK-4.dgn
Form GDG-0401-01-10, ANSI (Imperial) MicroStation Border - Size C - 17 x 22
Revision 11A, Revision Date: 04-30-2010

1/18/2012 10:16:51 AM ...*B2741-YSK-4.dgn

TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
FILED: MARCH 23, 2012

ATTACHMENT XX

TAMPA ELECTRIC COMPANY
GYPSUM CONVEYOR PROJECT
CONVEYOR AND EQUIPMENT DATA AND PICTURES

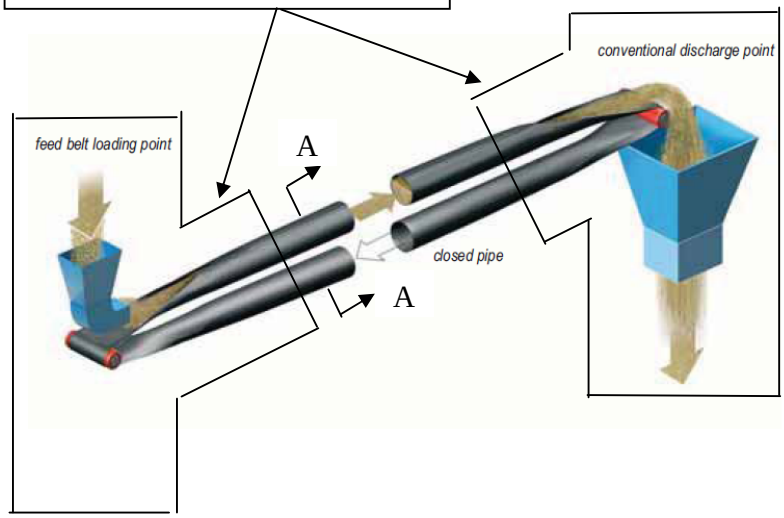
Revision A	03-01-2012	Final Comments to ECT & TEC

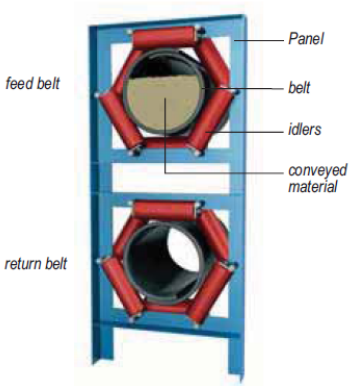
GYPSUM CONVEYOR & EQUIPMENT DATA

No.	Designation	Belt Width Inches	Capacity Tons/hour	Type of Enclosure	Reference Information
1.	Conveyor G-1	30”	300	Existing totally enclosed gallery	Page 5
2.	Conveyor G-2	42”	300	Pipe conveyor & totally enclosed gallery	Pages 3, 4 & 5
3.	Conveyor G-3	30”	300	Radial Stacker with full hood cover	Page 6 & 7
4.	Conveyor G-4	30”	300	Full hood cover	Page 7
5.	Conveyor G-5	30”	300	Full hood cover	Page 7
6.	Above grade receiving and reclaim hopper with belt feeder GBF-1	36”	75 - 300	Continuous skirtboard	Page 8
7.	Transfer House GTH-1	NA	NA	Totally enclosed	NA
8.	Transfer House GTH-2	NA	NA	Roof only	NA
9.	Truck & future railcar loadout silo with rotary plow	NA	NA	Transfer on top of silo has roof only	NA
10.	Gypsum silo	NA	100 tons	Steel silo	NA
11.	Rotary plow	NA	75 - 300	NA	Page 9
12.	Storage dome	NA	25,000 tons	Concrete dome 200 ft dia x 90 ft high	Page 10

PIPE CONVEYOR
CONVEYOR G-2

50 feet on both ends of conveyor is totally enclosed walk through gallery, also see conveyor cross-section on Page 5.





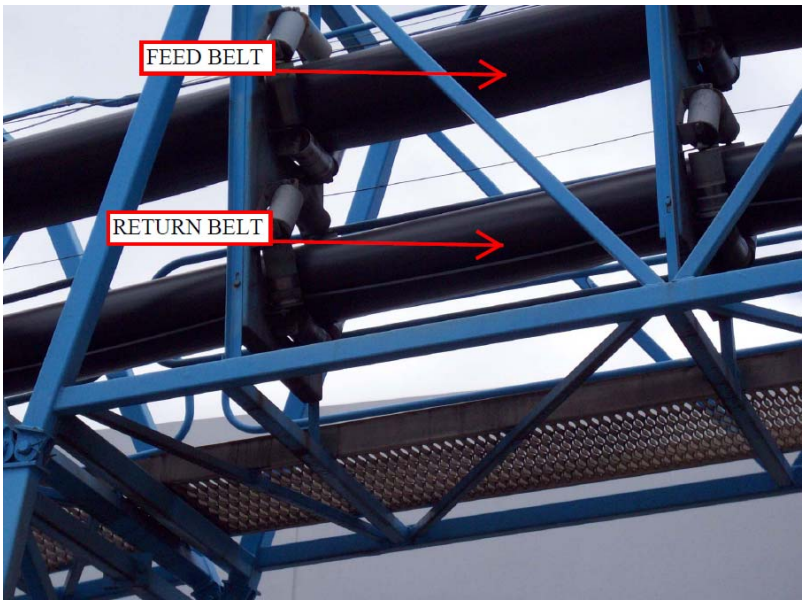
Section A-A

Material loading area:
The conveyor belt is open and is loaded like a conventional belt conveyor.

Belt closing section:
Special devices close the conveyor carrying the conveyed material.

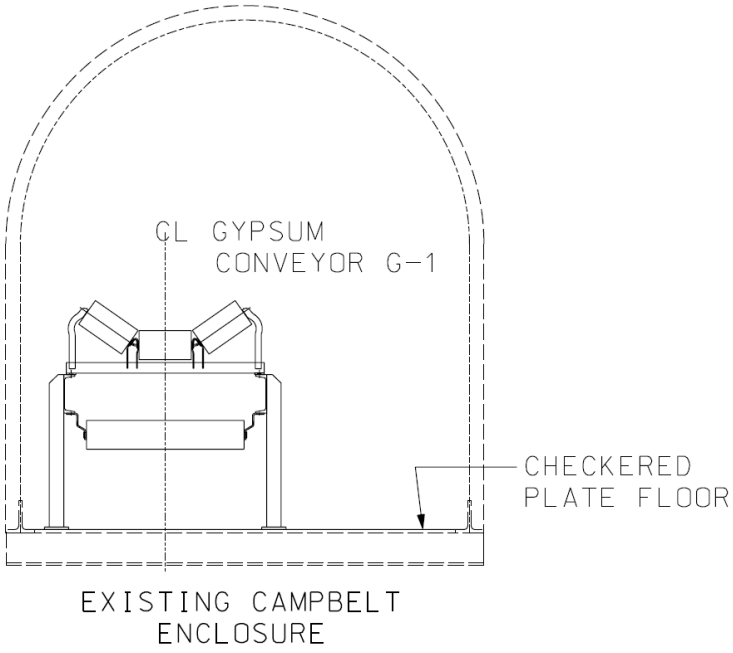
PIPE CONVEYOR
CONTINUED

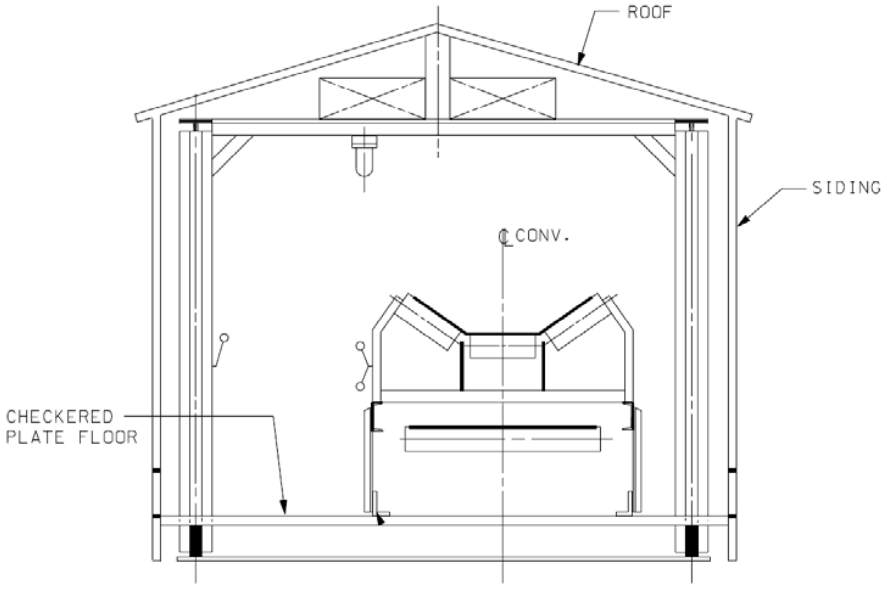
Picture of typical overland pipe conveyor.



View of pipe conveyor with carrying belt on top and return belt on bottom.

TOTALLY ENCLOSED WALK THRU GALLERY





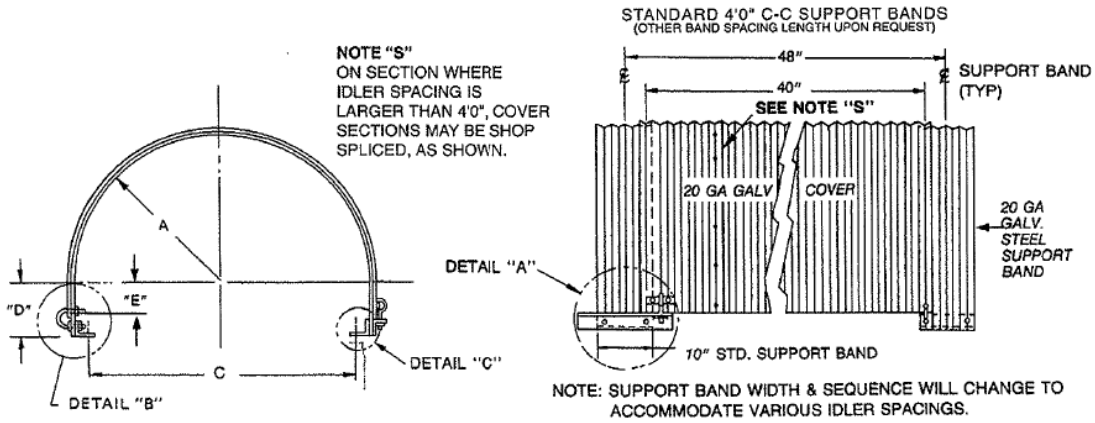
First and last 50 feet of pipe conveyor G-2

**RADIAL STACKER
WITH FULL HOOD
CONVEYOR G-3**

Picture of typical radial stacker

CONVEYOR HOOD COVER
CONVEYORS G-3, G-4 AND G-5

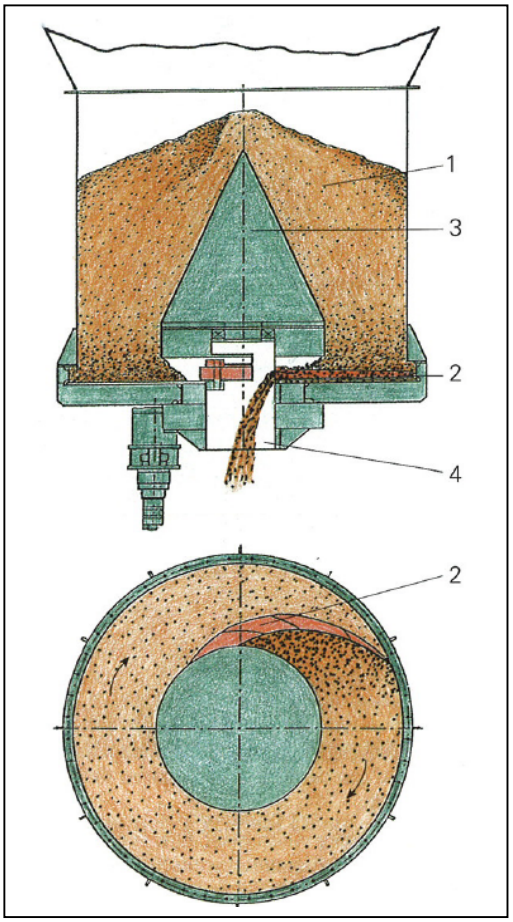
Picture of installed hood cover.



Details of hood cover design.

**ABOVE GRADE RECEIVING AND RECLAIM HOPPER
WITH BELT FEEDER GBF-1**

ROTARY PLOW
UNDER THE TRUCK LOADOUT SILO

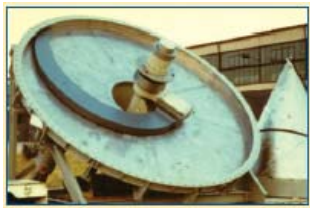


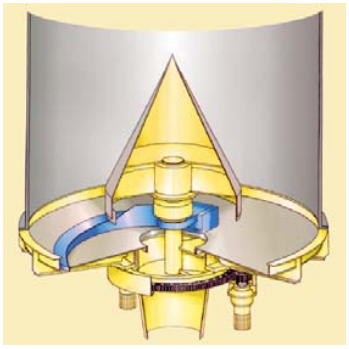
Functional Description
The components of the rotary plow are the silo bottom, internal cone, discharge arm and drive, integrally mounted in the silo.

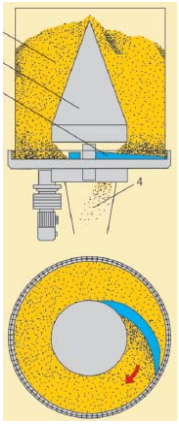
The silo bottom has a central discharge opening (4), which is covered by the internal cone (3), with a gap in the floor. During the filling of the silo a natural angle of repose is formed under the internal cone sealing the discharge opening.

The special designed discharge arm (2), which rotates around the central vertical axis, conveys the gypsum on the silo bottom into the discharge opening.

Controlled discharge of the gypsum (1) is therefore accomplished by varying the speed of the drive. The discharge arm undercuts the silo wall eliminating any material buildup on the wall edges.

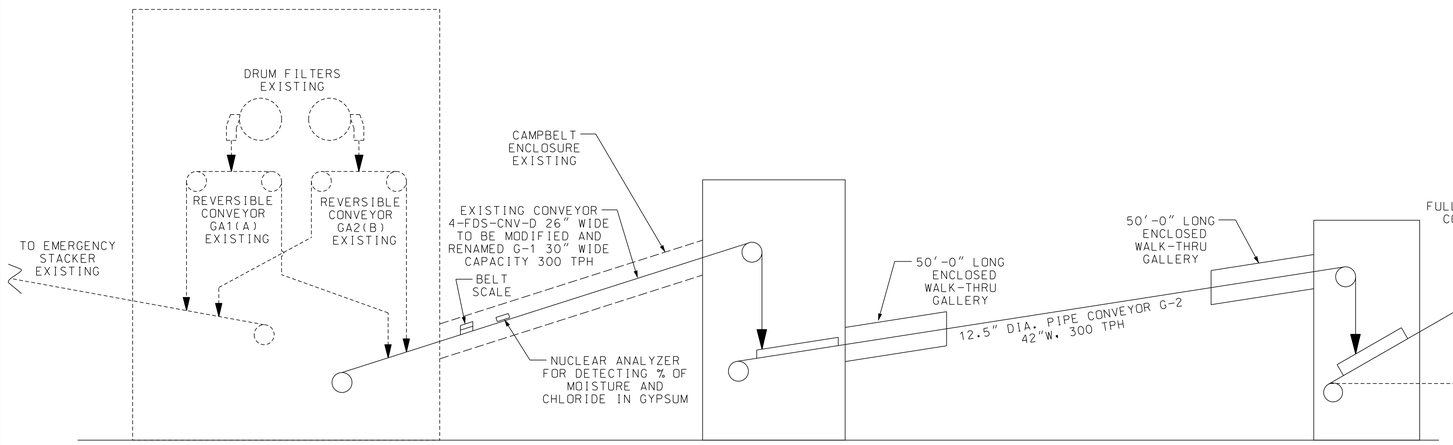


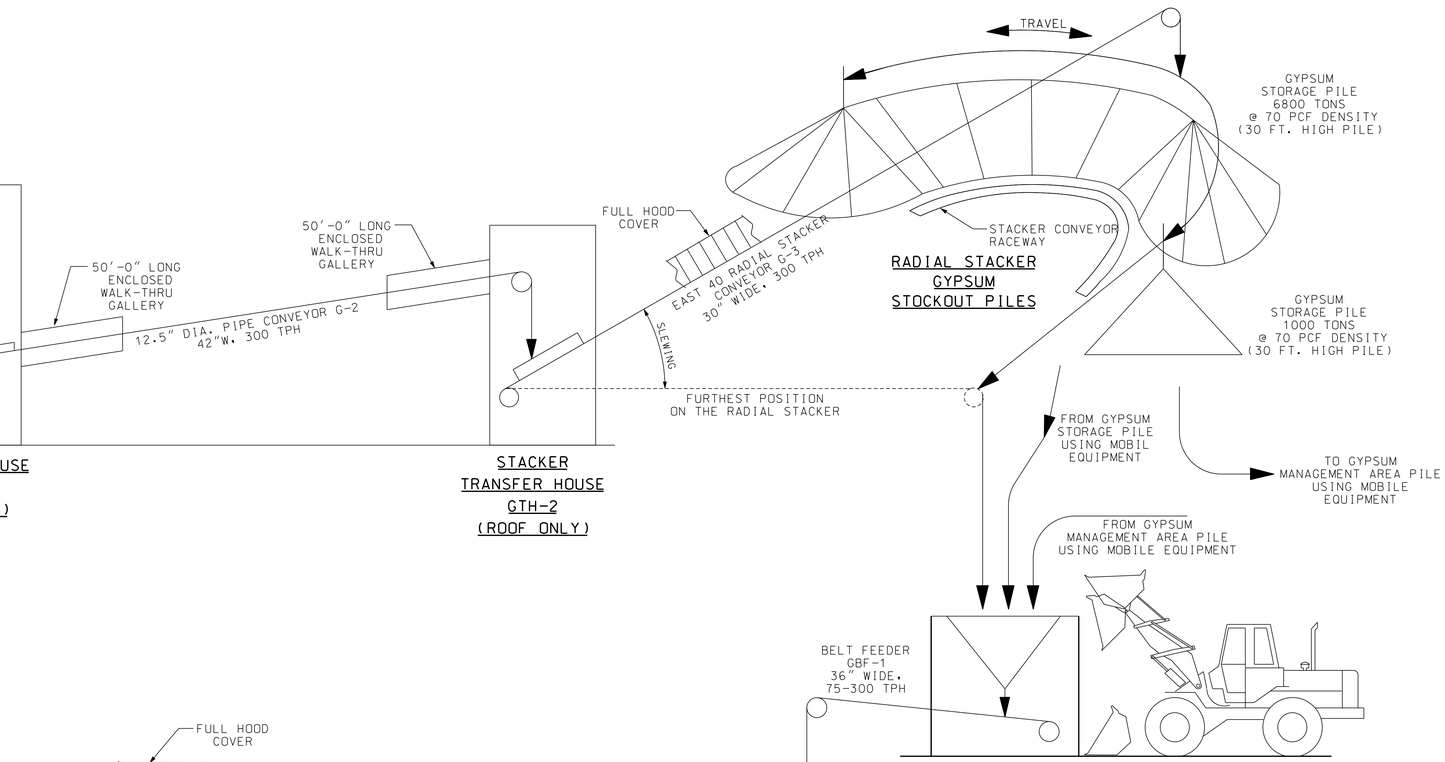


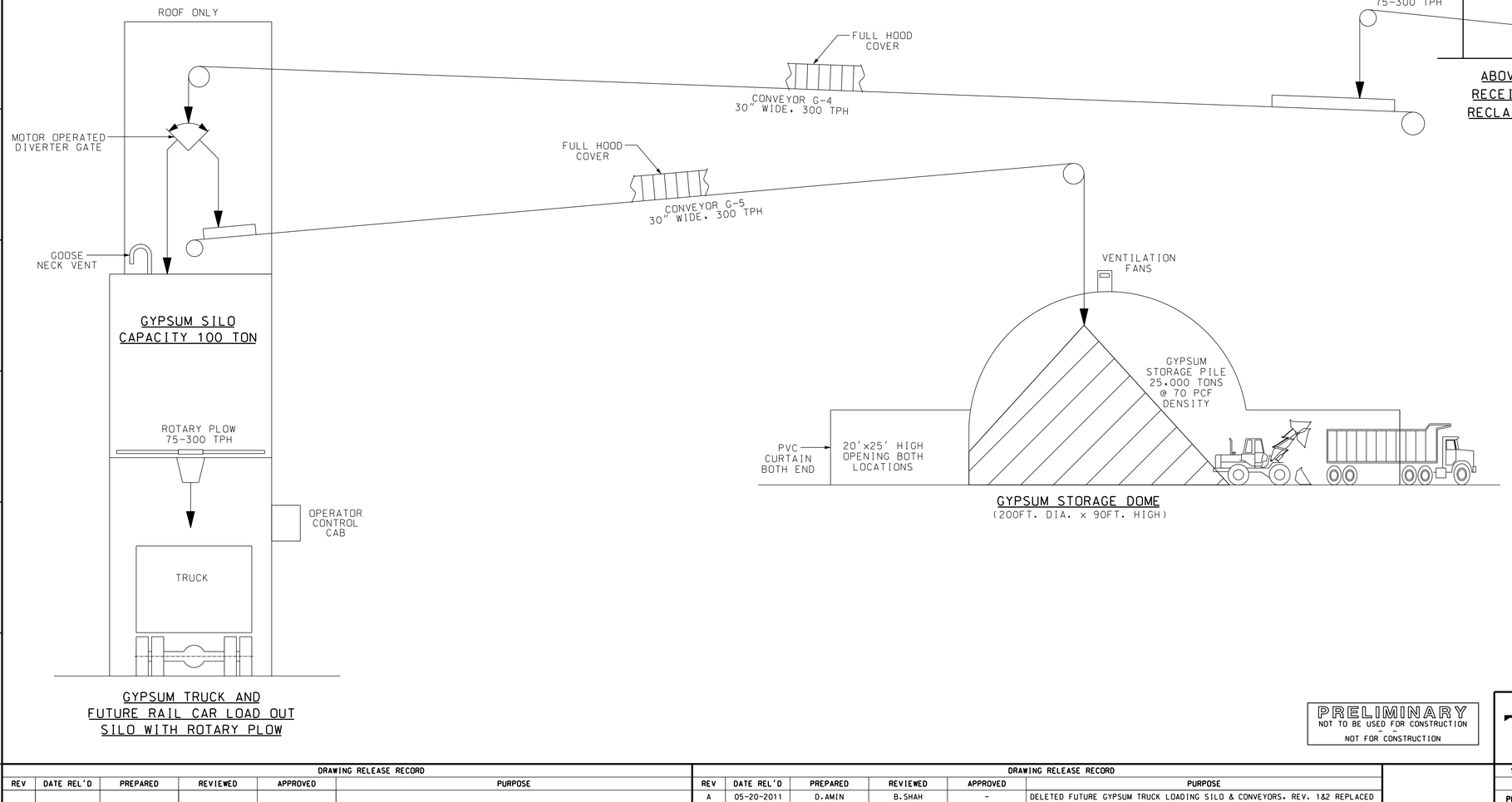


GYPSUM STORAGE DOME

Picture of Typical Dome







NOTES

REFERENCE DRAWINGS

PRELIMINARY
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TAMPA ELECTRIC

FILE I.D.: BIG-GHS-61.DGN

DRAWING RELEASE RECORD

REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD

REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	PURPOSE
A	05-20-2011	D.AMIN	B.SHAH	-	DELETED FUTURE GYPSUM TRUCK LOADING SILO & CONVEYORS. REV. 1&2 REPLACED
					WITH REV. A
B	09-15-2011	D.AMIN	B.SHAH	-	GENERAL REVISION
C	09-28-2011	D.AMIN	B.SHAH		FOR ECT COMMENTS
D	10-07-2011	D.AMIN	B.SHAH	-	ISSUED TO TEC AND ECT
E	02-03-2012	D.AMIN	B.SHAH	-	REVISED RADIAL STACKER PILE CAPACITY AND HEIGHT
F	03-01-2012	D.AMIN	B.SHAH	-	FINAL COMMENTS TO ECT AND TEC

FORM GDS 2.6.1 REV. 2 (12/1999)

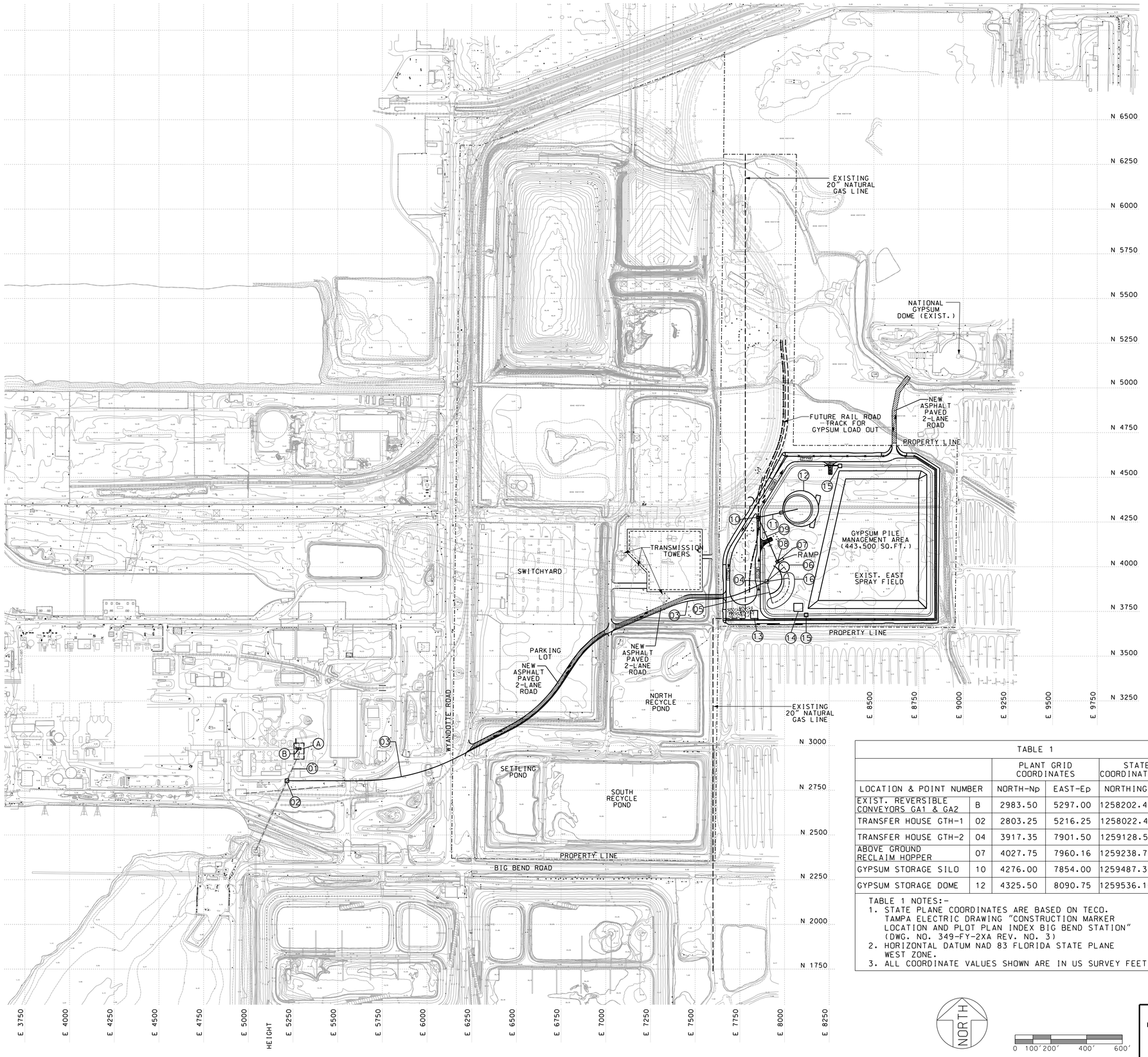
SCALE: NONE

PROJECT NUMBER: 12877-001

FLOW DIAGRAM FOR GYPSUM HANDLING SYSTEM UNITS 1, 2, 3 & 4 BIG BEND POWER STATION TAMPA ELECTRIC CO

Sargent & Lundy LLC
55 E. MONROE STREET
CHICAGO, ILLINOIS 60603-5780
CERTIFICATION OF AUTHORIZATION NO. 6938

DRAWING NO	REV
GHS-61	F



NO.	DESCRIPTION	SIZE (APPROXIMATE)
01	CONVEYOR G-1 30"W. 300 TPH	217 FT. LONG
02	TRANSFER HOUSE GTH-1 (ENCLOSED)	20FT x 20FT x 40FT HIGH
03	12.5" DIA. PIPE CONVEYOR G-2. 42"W. 300 TPH	3035 FT. LONG
04	TRANSFER HOUSE GTH-2 (ROOF ONLY)	20FT x 30FT x 40 FT HIGH
05	EAST 40 RADIAL STACKER CONVEYOR G-3. 30"W. 300 TPH	125'LG
06	GYPSUM STORAGE CONICAL PILE BY RADIAL STACKER	1000 TONS @ 70 PCF DENSITY
07	ABOVE GRADE RECEIVING AND RECLAIM HOPPER	20 TON NET CAPACITY
08	BELT FEEDER GBF-1 36"W. 75 TO 300 TPH	15 FT. LONG
09	CONVEYOR G-4. 30"W. 300 TPH	270 FT. LONG
10	GYPSUM STORAGE SILO WITH TRUCK LOAD OUT	14 FT. DIA. CAPACITY 100 TON
11	CONVEYOR G-5. 30"W. 300 TPH	225 FT. LONG
12	GYPSUM STORAGE DOME WITH TWO (2) OPENINGS IN THE WALL FOR TRUCKS AND FRONT END LOADERS ACCESS	200' DIA. x 90' HIGH 25,000 TONS STORAGE CAP. @ 70 PCF DENSITY
13	50FT x 45 FT FGD BYPRODUCT STORAGE AREA BUILDING	E.E. ROOM. BATTERY ROOM. BREAK ROOM. COMPRESSOR ROOM AND UTILITY ROOM
14	MOBILE EQUIPMENT WASHDOWN PAD	
15	TWO (2) STORM WATER COLLECTING SUMPS WITH 2x100% CAPACITY PUMPS IN EACH SUMP	
16	GYPSUM STORAGE PILE BY RADIAL STACKER	6800 TONS @ 70 PCF DENSITY
A	WASTE HANDLING BUILDING EXISTING	
B	REVERSIBLE CONVEYORS GA1 (A) AND GA2 (B) EXISTING	

LEGEND

- ASPHALT PAVED ROAD
- CRUSHED STONE OR GRAVEL ROAD OR AREA SURFACING
- DUST SCREENING FENCE
- TRAFFIC FLOW DIRECTION

NOTES

1. THE HORIZONTAL COORDINATE SYSTEM FOR THE SITE PLAN IS THE PLANT GRID COORDINATE SYSTEM.
2. THE VERTICAL DATUM FOR THE TOPOGRAPHY IS THE PLANT VERTICAL DATUM.
3. PLANT DATUM EL. = NAVD 88 DATUM EL.+1.97'. BASED ON PLANT BENCHMARKS 101, 102, AND 103.

REFERENCE DRAWINGS

TABLE 1

LOCATION & POINT NUMBER		PLANT GRID COORDINATES NORTH-Np	PLANT GRID COORDINATES EAST-Ep	STATE PLANE COORDINATES (NOTE 1) NORTHING	STATE PLANE COORDINATES (NOTE 1) EASTING
EXIST. REVERSIBLE CONVEYORS GA1 & GA2	B	2983.50	5297.00	1258202.42	526961.19
TRANSFER HOUSE GTH-1	02	2803.25	5216.25	1258022.41	526879.91
TRANSFER HOUSE GTH-2	04	3917.35	7901.50	1259128.51	529568.46
ABOVE GROUND RECLAIM HOPPER	07	4027.75	7960.16	1259238.74	529627.45
GYPSUM STORAGE SILO	10	4276.00	7854.00	1259487.30	529522.03
GYPSUM STORAGE DOME	12	4325.50	8090.75	1259536.10	529758.92

TABLE 1 NOTES:-
1. STATE PLANE COORDINATES ARE BASED ON TECO. TAMPA ELECTRIC DRAWING "CONSTRUCTION MARKER LOCATION AND PLOT PLAN INDEX BIG BEND STATION" (DWG. NO. 349-FY-2XA REV. NO. 3)
2. HORIZONTAL DATUM NAD 83 FLORIDA STATE PLANE WEST ZONE.
3. ALL COORDINATE VALUES SHOWN ARE IN US SURVEY FEET.

NORTH

0 100' 200' 400' 600'

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
-
NOT FOR CONSTRUCTION

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FILE I.D.: BIG-GHS-62.DGN

TECO
TAMPA ELECTRIC

SCALE: 1"=200'

PROJECT NUMBER: 12877-001

SITE PLAN
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4
BIG BEND POWER STATION
TAMPA ELECTRIC CO

Sargent & Lundy LLC
55 E. MONROE STREET
CHICAGO, ILLINOIS 60603-5780
CERTIFICATION OF AUTHORIZATION NO. 6938

DRAWING NO: GHS-62
REV: I

DRAWING RELEASE RECORD

REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	PURPOSE
G	11-15-2011	D.AMIN	J.PERRY	-	REVISED PER ECT COMMENTS
H	02-03-2012	D.AMIN	B.SHAH/J.PERRY	-	REVISED GYPSUM PILE HEIGHT AND AREA
I	03-01-2012	D.AMIN	B.SHAH	-	FINAL COMMENTS TO ECT AND TEC

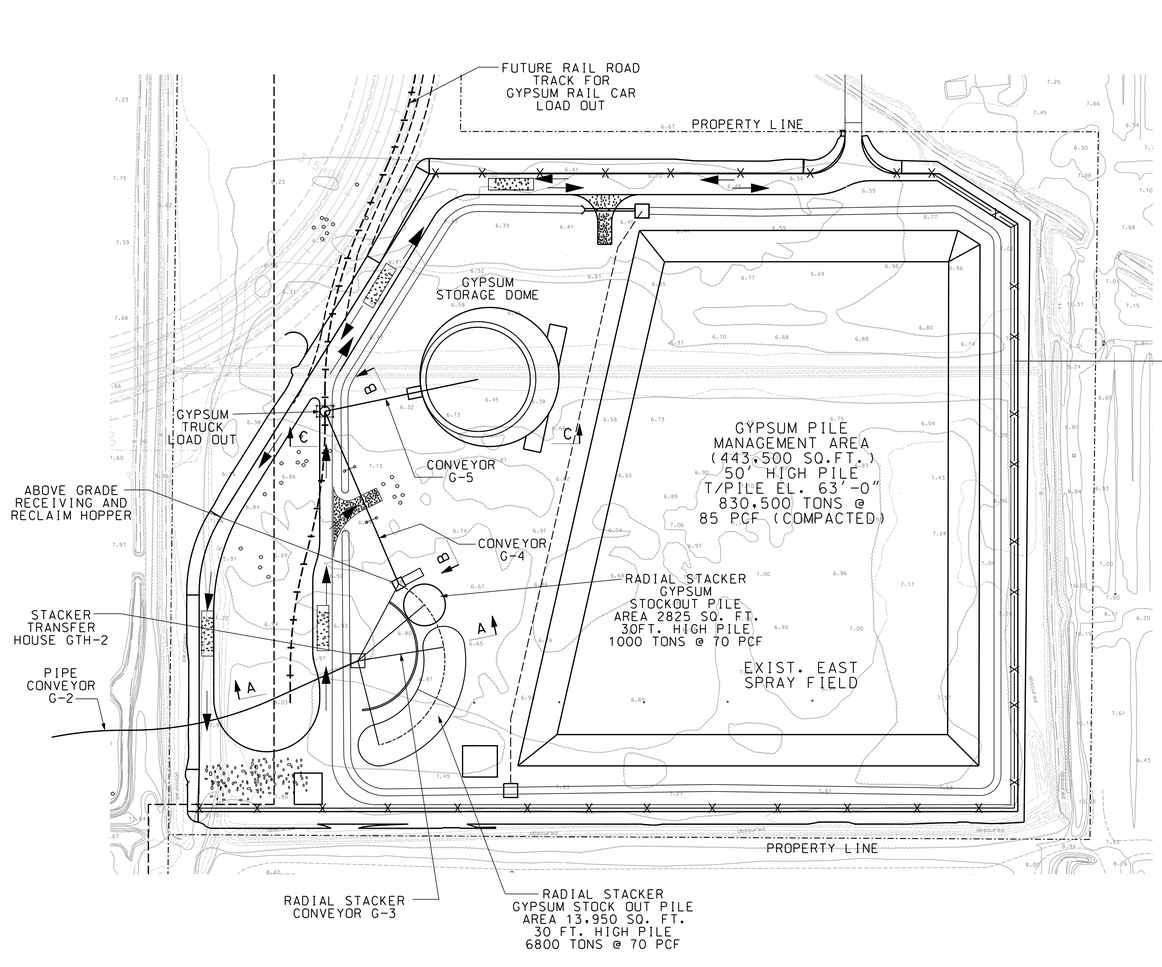
DRAWING RELEASE RECORD

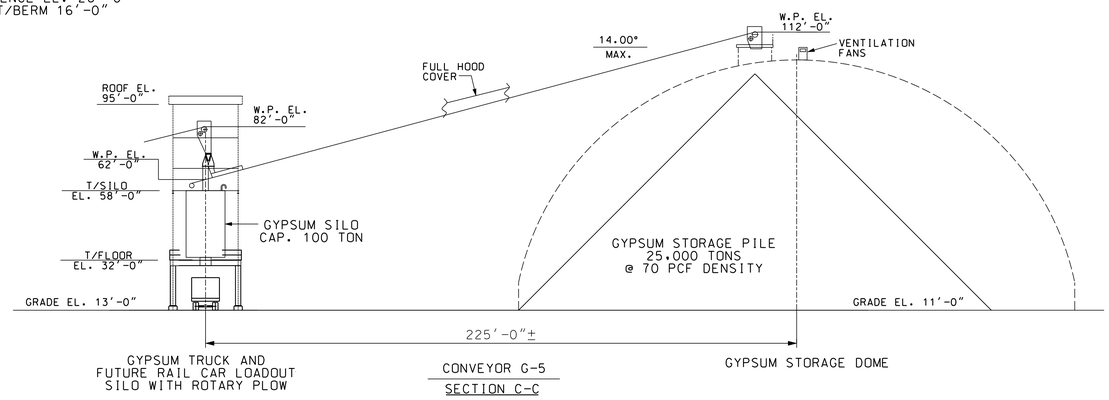
REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	PURPOSE
A	05-20-2011	D.AMIN	B.SHAH	-	DELETED FUTURE GYPSUM TRUCK LOADING SILO & CONVEYORS. REV. 1&2 REPLACED WITH REV. A
B	08-29-2011	D.AMIN	B.SHAH	-	FOR TEC COMMENTS
C	08-31-2011	D.AMIN	B.SHAH	-	ISSUED FOR ECT USE
D	09-15-2011	D.AMIN	B.SHAH	-	FOR TEC ANDS ECT COMMENTS
E	09-28-2011	D.AMIN	B.SHAH	-	PLANT COORDINATE ADDED
F	10-07-2011	D.AMIN	J.PERRY	-	STATE PLANE COORDINATE AND FUTURE RAILROAD GRADING ADDED. ISSUED TO TEC AND ECT

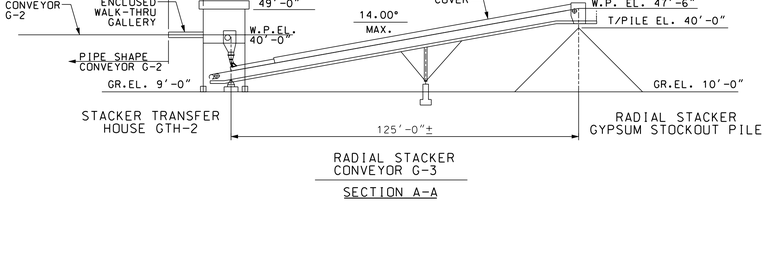
FORM GDS 2-6-1 REV. 2 (12/1999)

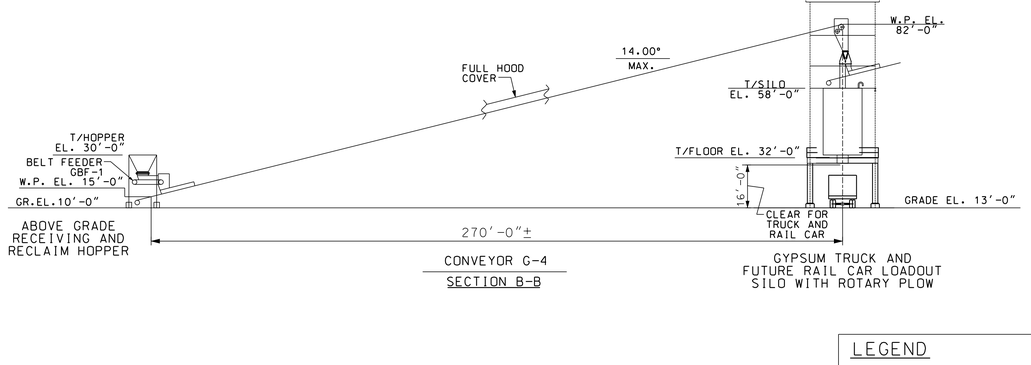
134

TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
FILED: MARCH 23, 2012









NOTES

1. ELEVATION ARE BASED ON THE BIG BEND PLANT DATUM. PLANT DATUM EL.= NAVD88 EL. +1.97', BASED ON PLANT BENCHMARKS 101, 102, AND 103.

REFERENCE DRAWINGS

LEGEND

—x——x— DUST SCREENING FENCE

TRAFFIC FLOW DIRECTION

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
–
NOT FOR CONSTRUCTION

0 40' 80' 160' 240'

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TECO
TAMPA ELECTRIC

FILE I.D.: **BIG-GHS-63.DGN**

DRAWING RELEASE RECORD

REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD

REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	PURPOSE
A	09-15-2011	D.AMIN	B.SHAH	–	FOR TEC AND ECT COMMENTS
B	09-28-2011	D.AMIN	B.SHAH	–	REVISED PER ECT COMMENTS
C	10-07-2011	D.AMIN	J.PERRY	–	FUTURE RAILROAD GRADING ADDED. ISSUED TO TEC AND ECT
D	11-15-2011	D.AMIN	J.PERRY	–	REVISED PER ECT COMMENTS
E	02-03-2012	D.AMIN	B.SHAH	–	REVISED GYPSUM PILE HEIGHT AND AREA
F	03-01-2012	D.AMIN	B.SHAH	–	FINAL COMMENTS TO ECT AND TEC

SCALE: 1"=80'

PROJECT NUMBER: 12877-001

CONVEYOR PROFILES GYPSUM HANDLING SYSTEM UNITS 1, 2, 3 & 4 BIG BEND POWER STATION TAMPA ELECTRIC CO

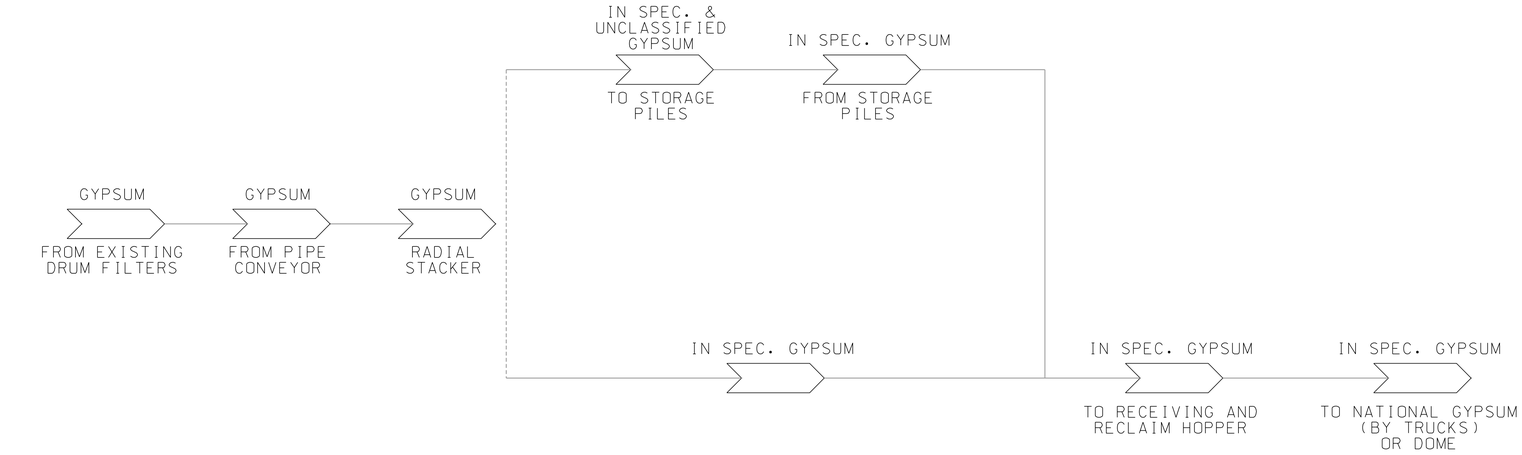
Sargent & Lundy LLC
55 E. MONROE STREET
CHICAGO, ILLINOIS 60603-5780
CERTIFICATION OF AUTHORIZATION NO. 6938

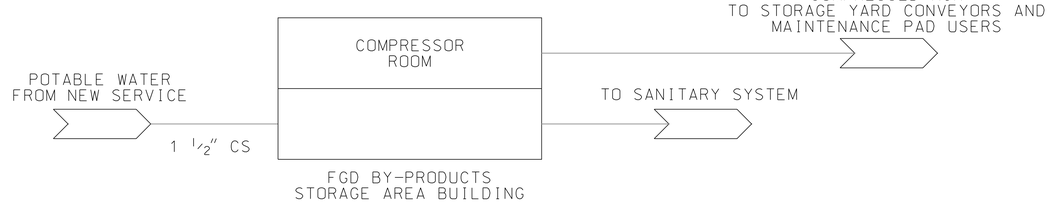
DRAWING NO	REV
GHS-63	F

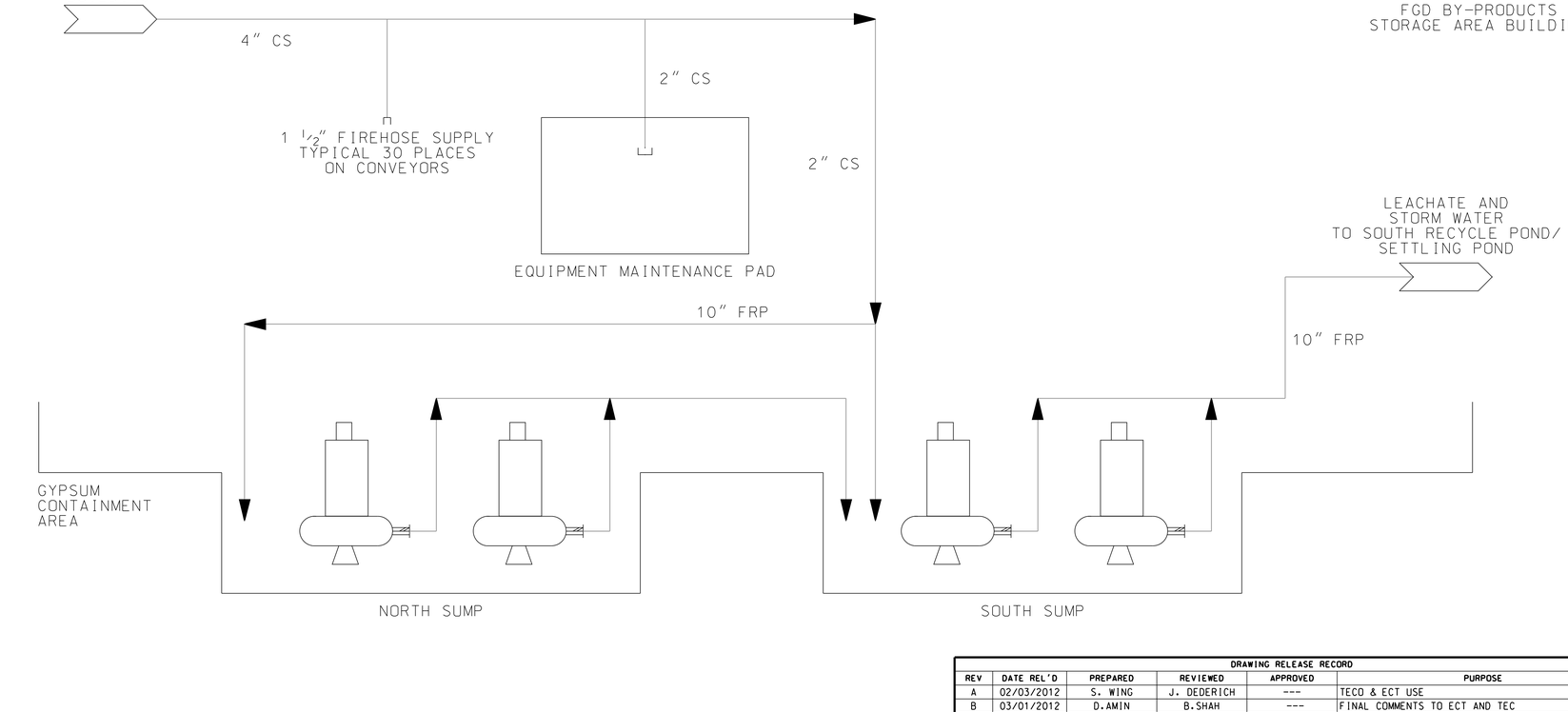
FORM GDS 2.6.1 REV. 2 (12/1999)

135

TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
FILED: MARCH 23, 2012







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TECO
TAMPA ELECTRIC

FILE I.D.:

DRAWING RELEASE RECORD

REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	PURPOSE
A	02/03/2012	S. WING	J. DEDERICH	---	TECO & ECT USE
B	03/01/2012	D.AMIN	B.SHAH	---	FINAL COMMENTS TO ECT AND TEC

SCALE: NONE

PROJECT NUMBER: 11860-001

PROCESS FLOW DIAGRAM

BASE GYPSUM HANDLING SYSTEM

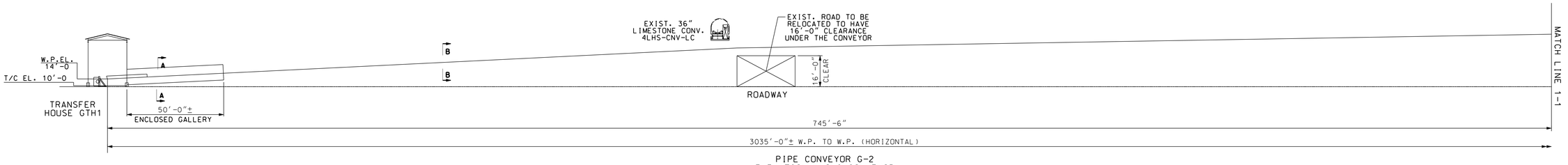
BIG BEND POWER STATION TAMPA ELECTRIC CO

Sargent & Lundy LLC
55 E. MONROE STREET
CHICAGO, ILLINOIS 60603-5780
CERTIFICATION OF AUTHORIZATION NO. 6938

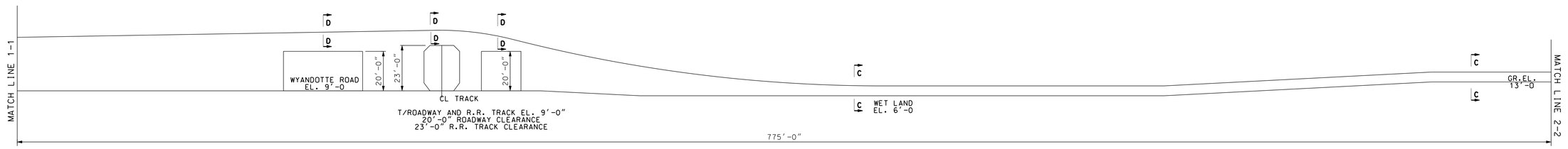
DRAWING NO: GHS-64
REV: B

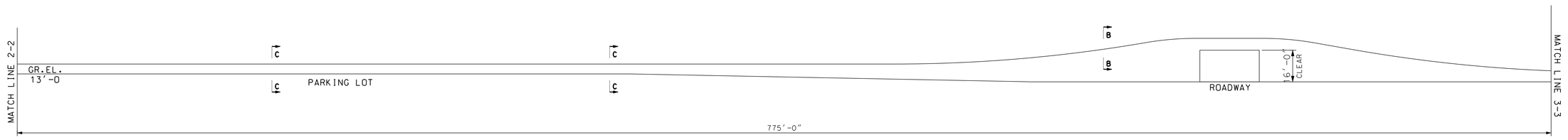
FORM 005 2-6-1 REV. 2 (12/1999)

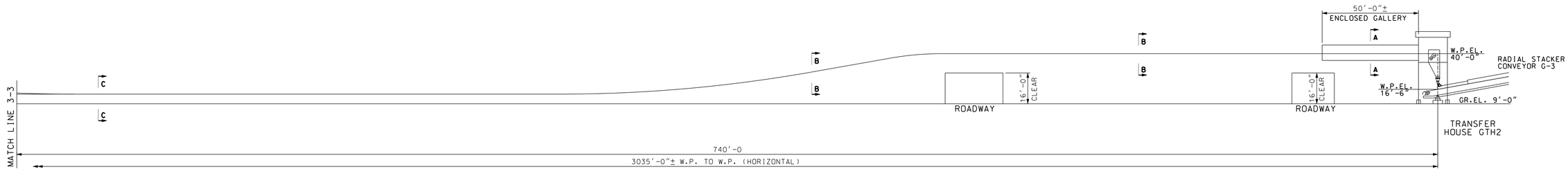
TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
FILED: MARCH 23, 2012



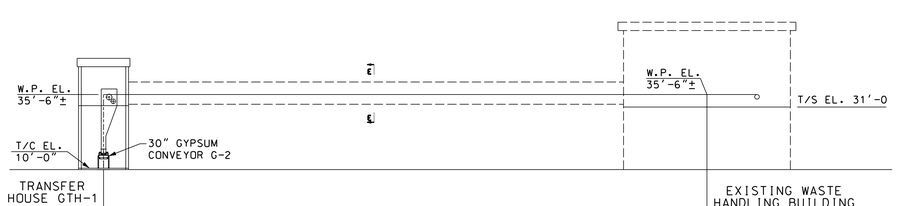
PIPE CONVEYOR G-2
ELEVATION ALONG CONVEYOR



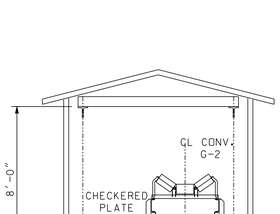




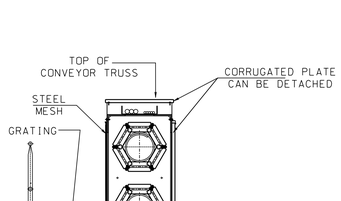
PIPE CONVEYOR G-2
ELEVATION ALONG CONVEYOR



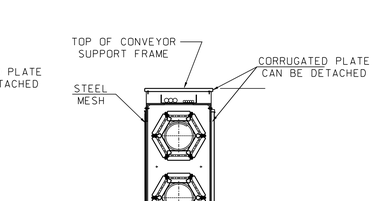
CONVEYOR G-1



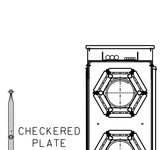
SECTION A-A
CONVEYOR AT TAIL
AND HEAD END



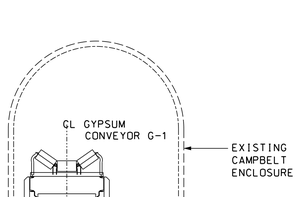
SECTION B-B
ELEVATED CONVEYOR TRUSS



SECTION C-C
CONVEYOR AT GRADE



SECTION D-D
ELEVATED CONVEYOR
ABOVE WYANDOTTE ROAD AND
RAIL ROAD TRACK



SECTION E-E

0 10' 20' 40' 60'

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
NOT FOR CONSTRUCTION

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TECO
TAMPA ELECTRIC

FILE I.D.: BIG-GHS-65.DGN

DRAWING RELEASE RECORD

REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD

REV	DATE REL'D	PREPARED	REVIEWED	APPROVED	PURPOSE
A	03-01-2012	D.AMIN	B.SHAH	-	FINAL COMMENTS TO ECT AND TEC

SCALE
1"=20'

PROJECT NUMBER
12877-001

ELEVATION - PROFILE OF CONVEYOR G-1 PIPE CONVEYOR G-2 GYPSUM HANDLING SYSTEM UNITS 1, 2, 3 & 4 BIG BEND POWER STATION TAMPA ELECTRIC CO

Sargent & Lundy LLC
55 E. MONROE STREET
CHICAGO, ILLINOIS 60603-5780
CERTIFICATION OF AUTHORIZATION NO. 6938

DRAWING NO	REV
GHS-65	A

FORM 005 2-6.1 REV. 2 (12/1999)

ISSUE SUMMARY
Form SOP-0402-07, Revision 8

DESIGN CONTROL SUMMARY

CLIENT: Tampa Electric Company — UNIT NO.: 1 – 4 — PAGE NO.: 1

PROJECT NAME: **Big Bend Gypsum Handling Project**

PROJECT NO.: 12877-001

CALC. NO..: BB-101

S&L NUCLEAR QA PROGRAM
APPLICABLE ☐ YES ☒ NO

TITLE: Containment Berm Stability Evaluation

EQUIPMENT NO.:

IDENTIFICATION OF PAGES ADDED/REVISED/SUPERSEDED/VOIDED & REVIEW METHOD

Started Issue Summary on Page 1 and calculations from Pages 2 to 7. Attachment pages A-1 to A-3.

INPUTS/ ASSUMPTIONS
☐ VERIFIED
☒ UNVERIFIED

REVIEW METHOD: Detailed — REV.: 0
STATUS: ☒ APPROVED ☐ SUPERSEDED BY CALCULATION NO. ☐ VOID — DATE FOR REV.: 2/27/12
PREPARER: D. Nielson — DATE: 2/23/12
REVIEWER: E. S. Motan — DATE: 2/27/12
APPROVER: D. Kocunik — DATE: 2/27/12

IDENTIFICATION OF PAGES ADDED/REVISED/SUPERSEDED/VOIDED & REVIEW METHOD

INPUTS/ ASSUMPTIONS
☐ VERIFIED
☐ UNVERIFIED

REVIEW METHOD: — REV.:
STATUS: ☐ APPROVED ☐ SUPERSEDED BY CALCULATION NO. ☐ VOID — DATE FOR REV.:
PREPARER: — DATE:
REVIEWER: — DATE:
APPROVER: — DATE:

IDENTIFICATION OF PAGES ADDED/REVISED/SUPERSEDED/VOIDED & REVIEW METHOD

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☐ VERIFIED
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PREPARER: — DATE:
REVIEWER: — DATE:
APPROVER: — DATE:

NOTE: PRINT AND SIGN IN THE SIGNATURE AREAS

TABLE OF CONTENTS

Total Pages: 10

1.0 PURPOSE

This calculation is to evaluate the stability of the Containment Berms, which will be constructed to form containment for the gypsum storage area. The output of this design is considered suitable for planning, and permitting but not for final design. Once the grading plan and liner materials have been finalized, the final design will be verified.

2.0 DESIGN INPUTS

2.1 Soil Profile

The Contractor (Moretrench) retained Test Labs, Inc. to perform a site-specific geotechnical exploration. Test Labs submitted a data report on June 27, 2011 (Reference 1). The soil borings considered for this preliminary evaluation are B-107 through B-110 (Reference 1). Boring Location Diagram and soils profiles at the boring locations are reproduced and attached as pages A-2 and A-3 of this calculation.

The soil profile considered consists of fine to medium sand from the current grade to a depth of 30 feet. The average SPT N-value in the upper 10 feet of borings B107 through B-110 is approximately 7 blows per foot. Limestone bedrock is considered below a depth of 30 feet. A total unit weight of 110 pcf is assumed for the in situ soil.

2.2 Natural Groundwater Table

Based on Reference 1, the groundwater is considered to be at a depth of 3 feet below the current ground surface.

3.0 ASSUMPTIONS

At the time of this calculation, the final location, height and slope of the gypsum containment berms is not considered final. Thus, this calculation is based on the S&L conceptual design.

The project is in a conceptual design phase. The following assumptions will require verification before final design of the containment berms.

3.1 Berm Height and Slope

The anticipated maximum height of the berms will be 9 feet during construction of the liner for the gypsum storage area. The minimum side slope of the berms is 3H to 1V.

3.2 Fill Material

It is assumed the berms will be constructed of a fine to medium sand similar to that encountered in the soil borings reported in Reference 1 with an internal friction angle (ϕ) equal to or greater than 30°.

3.3 GCL and Geomembrane Materials

It is understood that the gypsum containment berms will include 1 to 2 feet of compacted gypsum over a geomembrane liner placed over a geosynthetic clay liner (GCL) over the sand core of the berms. It is assumed the GCL will be selected to assure that the internal shear strength of the hydrated product is sufficient for the final slope conditions. It is also assumed that the textured geomembrane placed on the interior side slopes of the berms will be selected to assure suitable friction, with the GCL below and gypsum above, for the intended slope.

3.4 Gypsum Properties

The gypsum fill placed above the geomembrane will have an internal friction angle (ϕ) equal to or greater than 30° and a moist unit weight of 120 pcf, which is conservative (Reference 5, page 10, Table 5.4.1.5).

4.0 METHODOLOGY

This evaluation of slope stability is based on accepted methods from Reference 2, while the evaluation of shear failure of the subgrade soils is based on References 3 and 4.

5.0 CALCULATIONS

5.1 Factor of Safety against sliding

The ratio of the available shear strength of the soil to the average shear stress developed along the potential failure surface is defined as the factor of safety in Reference 2, equation 4.1. This is a simplified approach applicable when no water is retained by the berm. Since the natural soil as well as the gypsum are considered to be granular soils with $\phi = 30°$, the analysis is the same when considering failure in the sand or gypsum. Considering the slope (β) and soil friction angle (ϕ) the factor of safety (FS) is further defined as:

$$FS = \tan(\phi) / \tan(\beta)$$

$$\phi = 30°$$

$\tan(\beta)$ = slope vertical rise / slope horizontal run = 1 / 3 = 0.33

FS = tan(30) / 0.33 = 1.75

Since the safety factor against sliding slope failure is greater than the minimum recommended for static conditions (1.5 per Reference 2, page 448), the slope of 3H to 1V is considered stable for material with an internal friction angle of 30° and no water against the slopes.

Due to the frictional nature of both gypsum and the berm materials, the most critical stability condition occurs at the slope surface (gypsum or berm slope). The factors of safety against slope failure are higher than 1.75 if potential failure planes deeper within the gypsum pile or the berm are considered.

5.2 Bearing Capacity of Subgrade Soils

This calculation conservatively evaluates the bearing capacity of a narrow section of the berm base. Considering a 9 foot high berm with a 5 foot wide crest and 3H to 1 V slopes, the foundation width is anticipated to be 59 feet (2• (9 • 3) + 5 = 59) feet. However, for conservatism a strip loading with a bearing width of 10 feet is considered. This calculation also conservatively considers no surcharge on the soils adjacent to the berm (no stored gypsum) and the site sand subgrade with the average SPT N value of 7 blows per foot (bpf). The calculated gross ultimate bearing capacity is 5,330 psf (see calculation page 6). Considering a safety factor of 3, the gross allowable bearing pressure is calculated as 1,780 psf for the sand subgrade without improvement or compaction.

Considering an average unit weight of 120 pcf for the compacted sand and gypsum, the stress applied by a portion of the berm 9 feet high (conservatively assuming vertical edges of the portion considered) is 1,080 psf, which is less than the calculated allowable bearing pressure.

Allowable Bearing Capacity

(Not Considering Settlement)

Square Contact Area - 10 feet by 10 feet

Inputs	Value	Source
Cohesive or NonCohesive Soils (C or N)	N	Reference 1
Unconfined Compressive Strength, Q_u	0 psf	Reference 1
Average SPT N value, **N**	7 bpf	Reference 1
Moist Soil Unit Weight, γ_s	110 pcf	Engineering Judgment Based on Ref. 1
Submerged Soil Unit Weight, $\gamma_{submerged}$	50 pcf	Engineering Judgment Based on Ref. 1
Depth to Groundwater, GW_{depth}	3 ft	Reference 1
Strip, Square, Rect. or Round	ST (ST/SQ/RECT/R)	
Foundation Depth, **Df**	0 ft	
Foundation Width, **B**	10 ft	

Calculate Angle of Internal Friction, ϕ

$\phi = (15.4 \times N)^{0.5} + 20 =$ 30 Deg. Ref. 3 Equation 72, Page 184

Look up Nc, Nq and Nγ

Reference 4 Table 2.3, Page 39 (Table reproduced at right)

For ϕ °	Nc	Nq	Nγ
30	30.14	18.40	15.67

General Bearing Factors (Meyerhof)
Reference 4, Table 2.3, Page 39

ϕ	N_c	N_q	N_γ
0	5.14	1.00	0.00
30	**30.14**	**18.40**	**15.67**
32	35.49	23.18	22.02
34	42.16	29.44	31.15
36	50.59	37.75	44.43
38	61.35	48.93	64.07
40	75.31	64.20	93.69
42	93.71	85.38	139.32

Calculate Soil Surcharge q

Unsaturated soil thickness above found. $T_{s, us}$ = 0 ft

Saturated soil thickness above foundation $T_{s, sat}$ = 0 ft

Reference 4, Figure 2.1, Page 12

$q = (\gamma_s \times T_{s, us}) + (\gamma_{s, submerged} \times T_{s, sat}) =$ 0 psf

Calculate Average Soil Density within 1 B below the Foundation $\gamma_{f, ave}$

Unsaturated thickness within B of found. $T_{f, us}$ = 3 ft

Saturated thickness within B of found. $T_{f, sat}$ = 7 ft

$\gamma_{f, ave} = [(\gamma_s \times T_{f, us}) + (\gamma_{submerged} \times T_{f, sat})] / B =$ 68 pcf

Meyerhof Shape & Depth Factors
Reference 3, Table 2.5, Page 52

Shape	λ_{cs}	λ_{qs}	$\lambda_{\gamma s}$
	1.00	1.00	1.00
Depth	λ_{cd}	λ_{qd}	$\lambda_{\gamma d}$
	1.00	1.00	1.00

Calculate Ultimate Bearing Capacity for Foundations q'_u

$q_u = (c \times N_c \times \lambda_{cs} \times \lambda_{cd}) + (q \times N_q \times \lambda_{qs} \times \lambda_{qd}) + (0.5 \times \gamma \times B \times N_\gamma \times \lambda_{\gamma s} \times \lambda_{\gamma d})$ Reference 4, Eq. 2.83, Page 51

B (FT)	Portion of Ultimate Bearing Capacity, which is dependent on Cohesion of the Soil $c \times N_c \times \lambda_{cs} \times \lambda_{cd}$	Portion of Ultimate Bearing Capacity, which is dependent on Surcharge Above the Bearing Level $q \times N_q \times \lambda_{qs} \times \lambda_{qd}$	Portion of Ultimate Bearing Capacity, which is dependent on the Density of Soil Below the Bearing Level to a depth of B and the Width of the Bearing Surface $0.5 \times \gamma \times B \times N_\gamma \times \lambda_{\gamma s} \times \lambda_{\gamma d}$	Calculated Ultimate Bearing Pressure q_u (psf)
10	0	0	5,330	**5,330**

Calculate Allowable Bearing Capacity for Foundations q_a

Considering Safety Factor = 3

$q_a = q_u$ / **Safety Factor =** **1,780 psf** Reference 4, Eq. 1.4, Page 7

6.0 SUMMARY OF RESULTS

This preliminary calculation evaluates the stability of the berms, which will be constructed to form a containment area for the gypsum storage. The output of this design is considered suitable for planning, and permitting but not for final design. Once the grading plan and liner materials have been finalized, the final design will be verified.

It is understood that the gypsum containment berms will include 1 to 2 feet of compacted gypsum over a geomembrane liner placed over a geosynthetic clay liner (GCL) over the sand core of the berms. It is assumed the GCL will be selected to assure that the internal shear strength of the hydrated product is sufficient for the final slope conditions and configuration. It is also assumed that the textured geomembrane placed on the interior side slopes of the berms will be selected to assure suitable friction, with the GCL below and gypsum above, for the intended slope.

Slopes constructed of compacted sands similar to the existing soils at the site, with slopes no steeper than 3 horizontal to 1 vertical exhibit a safety factor of 1.75, which is considered suitable for the intended purpose. The evaluation of the conditions indicates the allowable bearing capacity exceeds the applied load with a suitable safety factor and is considered suitable for the intended design.

7.0 REFERENCES

1. Test Lab, Inc, Report of Geotechnical Exploration, Big Bend Gypsum Handling, 13031 Wyandotte Road, Apollo Beach, Hillsborough County, Florida, Test Lab Project No: 11-3609, June 27, 2011.

2. Das, B. M., Principles of Geotechnical Engineering, Fifth Edition, 2002, Brooks/Cole.

3. Federal Highway Administration (FHWA), Evaluation of Soil and Rock Properties, 2002, Publication No. FHWA-Geotechnical Engineering Circular (GEC) No. 5.

4. Das, B. M., Shallow Foundations Bearing Capacity and Settlement, 1999, CRC Press.

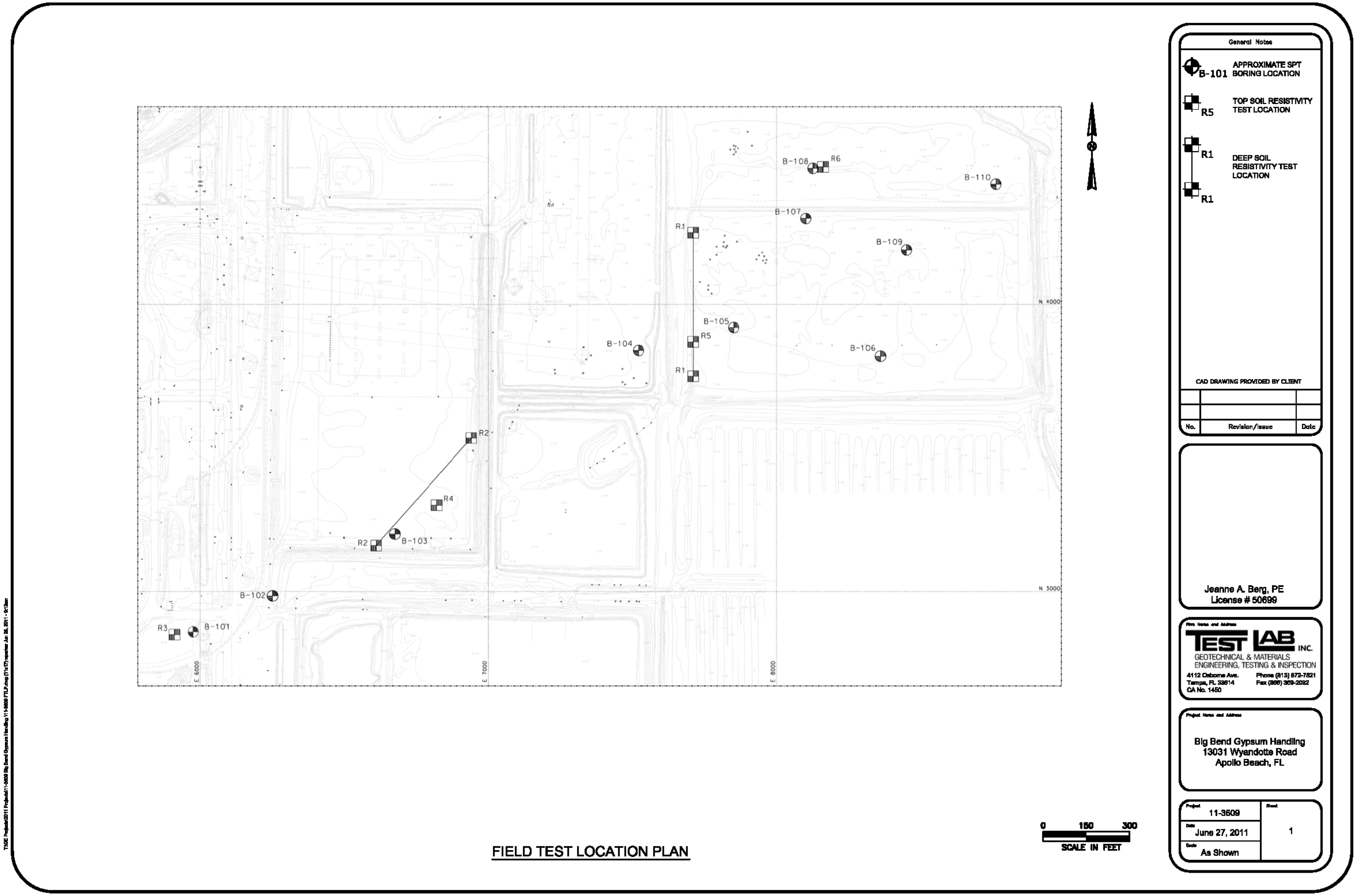
5. Sargent & Lundy, LLC, Structural Design Guideline SDS-E5, Section 5.4.1, Revision 4, July 30, 2010.

Attachment A

Field Test Location Plan

Soil Profile

Taken From Reference 1



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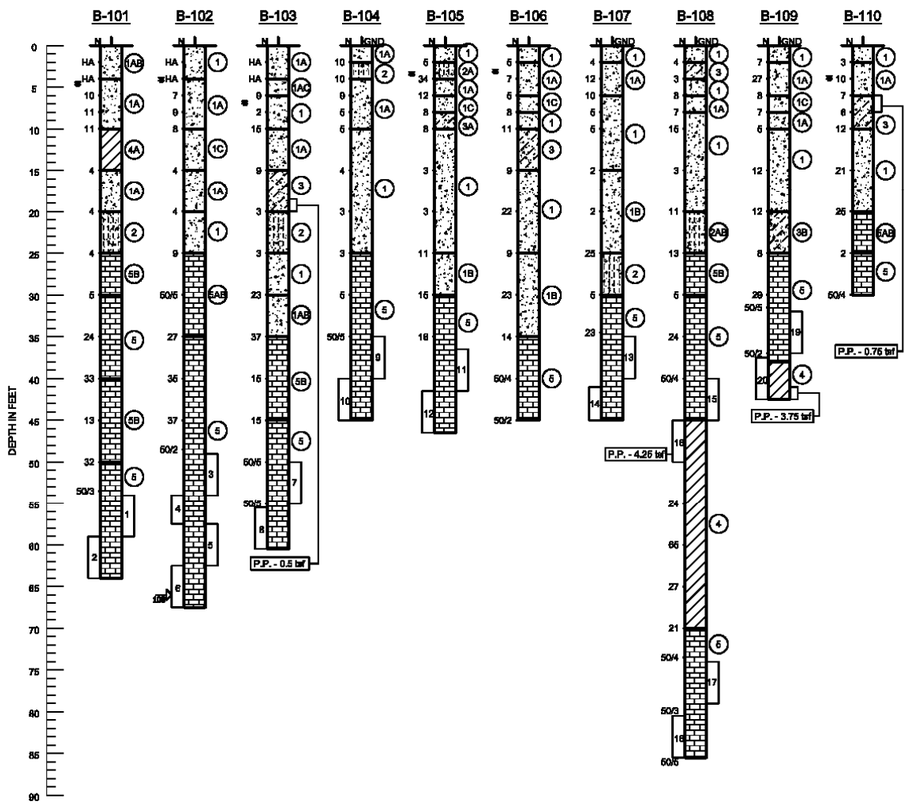
Taken From Reference 1

SOIL PROFILES



1		11	
54 ft to 59 ft		36 ft to 41 ft	
d (DIAMETER)	2.4	d (DIAMETER)	2.4
t (TIME)	14:48	t (TIME)	21:37
CORE RECOVERY	52%	CORE RECOVERY	73%
RQD	36%	RQD	22%
2		**12**	
59 ft to 64 ft		41.5 ft to 46.5 ft	
d (DIAMETER)	2.4	d (DIAMETER)	2.4
t (TIME)	14:45	t (TIME)	16:23
CORE RECOVERY	68%	CORE RECOVERY	70%
RQD	8%	RQD	0%
3		**13**	
49 ft to 54 ft		36 ft to 40 ft	
d (DIAMETER)	2.4	d (DIAMETER)	2.4
t (TIME)	19:39	t (TIME)	15:32
CORE RECOVERY	80%	CORE RECOVERY	10%
RQD	30%	RQD	0%
4		**14**	
54 ft to 57.5 ft		41 ft to 46 ft	
d (DIAMETER)	2.4	d (DIAMETER)	2.4
t (TIME)	36:53	t (TIME)	50:04
CORE RECOVERY	67%	CORE RECOVERY	66%
RQD	14%	RQD	17%
5		**15**	
57.5 ft to 62.5 ft		40 ft to 45 ft	
d (DIAMETER)	2.4	d (DIAMETER)	2.4
t (TIME)	18:08	t (TIME)	24:15
CORE RECOVERY	43%	CORE RECOVERY	67%
RQD	7%	RQD	60%
6		**16**	
62.5 ft to 67.5 ft		45 ft to 50 ft	
d (DIAMETER)	2.4	d (DIAMETER)	2.4
t (TIME)	15:43	t (TIME)	14:46
CORE RECOVERY	33%	CORE RECOVERY	31%
RQD	0%	RQD	0%
7		**17**	
50 ft to 55 ft		74 ft to 79 ft	
d (DIAMETER)	2.4	d (DIAMETER)	2.4
t (TIME)	22:13	t (TIME)	13:28
CORE RECOVERY	51%	CORE RECOVERY	40%
RQD	17%	RQD	0%
8		**18**	
55.5 ft to 60.5 ft		80.5 ft to 84 ft	
d (DIAMETER)	2.4	d (DIAMETER)	2.4
t (TIME)	46:50	t (TIME)	44:55
CORE RECOVERY	80%	CORE RECOVERY	57%
RQD	45%	RQD	0%
9		**19**	
35 ft to 40 ft		32 ft to 37 ft	
d (DIAMETER)	2.4	d (DIAMETER)	2.4
t (TIME)	14:42	t (TIME)	14:30
CORE RECOVERY	73%	CORE RECOVERY	53%
RQD	38%	RQD	0%
10		**20**	
40 ft to 45 ft		37.5 ft to 42.5 ft	
d (DIAMETER)	2.4	d (DIAMETER)	2.4
t (TIME)	13:32	t (TIME)	19:33
CORE RECOVERY	40%	CORE RECOVERY	80%
RQD	0%	RQD	0%

LEGEND

1. Light Gray to Dark Gray, Light Brown to Dark Brown Reddish Yellow and Yellowish Brown SAND to SAND with Silt (SP/SP-SM)
2. Light Gray to Dark Gray and Dark Brown Silty SAND (SM)
3. Bluish Gray, Grayish Brown, Light Gray, Light Brown and Reddish Yellow Clayey SAND (SC)
4. Light Brown to Dark Brown, Bluish Gray and Yellowish Brown CLAY to Sandy CLAY (CL/CH)
5. Highly Weathered to Weathered Limestone
6. Bluish Green Indurated CLAY (CL/CH)

- A with shell fragments
- B with phosphate pebbles
- C with clay lenses
- D with sand lenses
- SP Unified Soil Classification System (ASTM D 2488) Group Symbol As Determined By Visual Review
- Groundwater Level
- GNE Groundwater Table Not Encountered
- N SPT N-Value In Blows/Foot For 12 Inches Of Penetration (unless otherwise noted)
- Loss Of Circulation Of Drilling Fluid (%)
- 50/4 Number Of Blows For 4 Inches Of Penetration
- HA Hand Augered To Avoid Utility Conflicts
- GND Groundwater Table Not Determined Due To Drilling Methods Used
- RQD Rock Quality Designation
- t Time Required To Complete Rock Core (minutes:seconds)
- d Diameter Of Rock Core (inches)
- PP Pocket Penetrometer Reading (tons per square foot)

Granular Materials			*Silts and Clays*		
Relative Density	**Safety Hammer SPT N-Value (Blow/Foot)**	**Automatic Hammer SPT N-Value (Blow/Foot)**	**Consistency**	**Safety Hammer SPT N-Value (Blow/Foot)**	**Automatic Hammer SPT N-Value (Blow/Foot)**
Very Loose	Less than 4	Less than 3	Very Soft	Less than 2	Less than 1
Loose	4 - 10	3 - 8	Soft	2 - 4	1 - 3
Medium Dense	10 - 30	8 - 24	Firm	4 - 8	3 - 6
Dense	30 - 50	24 - 40	Stiff	8 - 15	6 - 12
Very Dense	Greater than 50	Greater than 40	Very Stiff	15 - 30	12 - 24
			Hard	Greater than 30	Greater than 24

Notes:
1. The profiles depicted are of a generalized nature to highlight the major subsurface stratification features and material characteristics. The soil profiles include soil description, stratifications and penetration resistances. The stratifications shown on the boring profiles represent the conditions only at the actual boring location. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual.
2. Groundwater levels generally fluctuate during periods of prolonged drought and extended rainfall and may be affected by man-made influences. In addition, a seasonal effect will also occur in which higher groundwater levels or temporary perched conditions are normally recorded in rainy seasons.
3. Pump pressure used during rock coring was 300 pounds per square inch (psi). Feed pressure used during drilling was 300 psi. The rock coring rate was 200 rotations per minute (rpm).
4. Wet rotary drilling methods were utilized during drilling operations using an automatic hammer with an energy efficiency of 88% to obtain the SPT-N values. The hammer release system used was the free fall method.

General Notes

No.	Revision/Issue	Date

Jeanne A. Berg, PE
License # 50699

Firm Name and Address
TEST LAB INC.
GEOTECHNICAL & MATERIALS ENGINEERING, TESTING & INSPECTION
4112 Osborne Ave. Tampa, FL 33614 CA No. 1480
Phone (813) 872-7821 Fax (866) 369-2032

Project Name and Address
Big Bend Gypsum Handling
13031 Wyandotte Road
Apollo Beach, FL

Project	11-3609	Sheet	2
Date	June 27, 2011		
Scale	NTS		

TAMPA ELECTRIC COMPANY
DOCKET NO. 110262-EI
STAFF'S SECOND DATA REQUEST
REQUEST NO. 11
BATES STAMPED PAGES: 148 - 161
FILED: MARCH 23, 2012

11. Please refer to Exhibit B Net Present Value Analyses of TECO's petition. For each of the five scenarios included, please provide the following information:

(a) All the assumptions (general to all scenarios and specific to the individual scenario) that TECO used to derive the dollar amounts presented;

(b) The environmental regulations which require the construction of the facility evaluated in the scenario, if any new construction is required;

(c) Whether the option evaluated in the scenario satisfies the existing environmental regulations;

(d) Potential of the option evaluated in the scenario to satisfy relevant pending environmental regulations;

(e) Capital costs of all major components, as well as total capital costs, and annual O&M cost amounts;

(f) The estimated initial capital investment amount, if any, and any subsequent estimated investment expressed in nominal and 2011 dollar values, in the years that these investments occur and why;

(g) The estimated annual amount of O&M expense for each year in nominal and 2011 dollar values;

(h) How first and subsequent years' capital costs were computed, including the rate of return assumed;

(i) If each year's revenue requirements include items other than capital and O&M costs, please identify all such items, the annual amount included, and how they were computed;

(j) The discount rate used in these options;

(k) Critical path time line with milestones for the option and its in-service date;

(l) Engineering design, if any new construction is required;

(m) Life cycle of the option analyzed in the scenario, compared to the remaining life of the Big Bend Station Units 1 – 4;

(n) For the Low Sulfur Coal option, please identify the annual escalation rate and discount rate used in the analysis; and

(o) Third-party evaluations of Exhibit B, if any.

A. a. Please see the tables below reflecting the assumptions used by Tampa Electric to derive the dollar amounts present.

Assumptions

Gypsum Options	Capital Investment ($)	AFUDC Amount ($)	Depreciation ($/year)	Depreciation Rate (%)	Asset Life (Years)	O&M**** ($)	O&M Escalation Rate ($)	Transportation Savings* ($)
New Storage Area-Conveyor	54,976,700	5,196,669	143,270	2.4	35	77,000	2.2	56,659,346
New Storage Area-Rail	52,914,600	4,693,873	137,163	2.4	35	590,000	2.2	56,659,346
New Storage Area-Truck	42,776,700	3,577,403	110,367	2.4	35	1,740,700	2.2	56,659,346
Fuel Switch Low Sulfur Coal**	n/a	n/a	n/a	n/a	n/a	94,500,000	2.2	n/a
Offsite Landfill***	160,600,000	n/a	382,381	2.4	35	2,943,243	2.2	n/a

*Transportation Savings is a savings of $2.50 per ton with an escalation rate of 2.2 percent to have gypsum delivered to National Gypsum's facility. Savings increases each year to offset O&M and declines due to retirement of units.
** To perform the analysis on switching fuel to low sulfur coal, Tampa Electric assumed low sulfur, Powder River Basin coal would be the most cost-effective option at $4.39/MMBtu.
***Offsite Landfill is company-owned landfill.
****O&M is reflective of first year costs.

Expected Gypsum Production by Year*

Year	Total Production (Tons)	Year	Total Production (Tons)
2015	709,748	2033	736,762
2016	712,362	2034	736,215
2017	710,289	2035	685,306
2018	710,644	2036	560,944
2019	714,947	2037	560,357
2020	720,387	2038	440,751
2021	733,611	2039	371,236
2022	733,712	2040	378,188
2023	730,204	2041	284,324
2024	735,461	2042	219,017
2025	734,812	2043	218,993
2026	734,383	2044	219,500
2027	733,022	2045	219,111
2028	736,697	2046	218,915
2029	735,952	2047	218,984
2030	735,612	2048	219,562
2031	732,674	2049	218,971
2032	736,412		

*The expected production of gypsum per year was used to calculate the transportation savings.

b. The implementation of any of the five scenarios presented in Tampa Electric's petition would be driven by the necessity to comply with the provisions of the federal Clean Air Act and the state of Florida Groundwater Protection Standards Chapter 62-520, F.A.C.

c. All options evaluated in these five scenarios would satisfy all applicable federal and state environmental regulations.

d. The evaluated options would satisfy all relevant pending environmental regulations. Specifically, the design of the new facility would meet the criteria contained in the EPA's proposed regulations of June 2010 for the management of Coal Combustion Residuals.

e. Please see the table below reflecting the capital costs of all major components as well as the total capital costs and annual O&M cost amounts.

Package	New Storage Area Conveyor ($)	New Storage Area Trucking ($)	New Storage Area Rail ($)
Contingency	8,143,200	8,143,200	7,179,634
25 K Tons Dome			4,640,000
Architectural	274,000	274,000	310,000
Area paving /Misc. W.O.		3,200,000	
Civil Construction Package	2,932,900	2,932,900	3,200,000
Electrical Construction Package	3,011,400	3,011,400	600,000
Mechanical Construction Package	1,100,000	1,100,000	1,800,000
Pile Construction Package	1,696,100	1,696,100	1,184,000
Pipe installation			
Site Prep	224,400	224,400	150,000
Sitework Construction Package	1,991,100	1,991,100	1,200,000
Sleeves for Desal			250,000
Track Construction Package			950,000
Underground relocation			250,000
Construction Activities	*11,229,900*	*14,429,900*	*14,534,000*
Engineering and Construction Management	3,500,000	3,500,000	3,200,000
GeoTech Investigations	80,000	80,000	150,000
Topographic Survey	3,000	3,000	150,000
Engineering	*3,583,000*	*3,583,000*	*3,500,000*

Material Handling Equipment Package	15,400,000		10,100,000
Mechanical Equipment	445,400	445,400	850,000
PCC Building Steel			35,000
PCC Buildings	197,500	197,500	999,666
Purchase Cable	922,800	922,800	350,000
Fire Protection Package	208,200	208,200	
Major Equipment	*17,173,900*	*1,773,900*	*12,334,666*
Flood comp	4,500,800	4,500,800	3,500,000
New Road Access to Big Bend	281,700	281,700	580,000
Wetland Mitigation	660,000	660,000	150,000
Floodplains Compensation, Wetlands Mitigation	*5,442,500*	*5,442,500*	*4,230,000*
Rotery Plow & Truck Loadout Area	1,300,000	1,300,000	
Line Emergency Stackout	1,000,000	1,000,000	
Silo & Stackout	*2,300,000*	*2,300,000*	-
New liner installation and fill	2,756,700	2,756,700	5,986,300
Belt splicing			200,000
Storage Area Liner	*2,756,700*	*2,756,700*	*6,186,300*
T&D Relocations			750,000
Project & Construction Management	4,347,500	4,347,500	4,200,000
New Gypsum Facility (w/o AFUDC)	*54,976,700*	*42,776,700*	*52,914,600*
Annual O&M	*77,000*	*1,740,700*	*590,000*

f. Please see the table below reflecting the estimated initial capital amount and subsequent estimated capital investments for 2011 through 2015 in nominal and 2011 dollars.

Year	New Storage Area Conveyor	New Storage Area Rail	New Storage Area Truck
2011	$ 1,772,000	$ 1,762,000	$ 1,832,000
2012	$ 9,023,000	$ 5,688,300	$ 4,035,000
2013	$ 11,378,600	$ 11,185,000	$ 8,414,600
2014	$ 24,972,400	$ 27,073,666	$ 20,178,000
2015	$ 7,830,700	$ 7,205,634	$ 8,317,100
Capital Investment Total	$ 54,976,700	$ 52,914,600	$ 42,776,700
NPV	$ 45,441,210	$ 43,386,201	$ 34,896,753

g. Please see the table below for the estimated annual amount of O&M expense for each year in nominal and 2011 dollar values.

Year	New Storage Area Conveyor	New Storage Area Rail	New Storage Area Truck	Fuel Switch Low Sulfur Coal	Offsite Landfill
2015	$ 77,000	$ 590,000	$ 1,740,700	$ 94,500,000	$ 2,943,243
2016	$ 154,000	$ 602,980	$ 1,778,995	$ 96,579,000	$ 3,007,995
2017	$ 256,000	$ 616,246	$ 1,818,133	$ 98,703,738	$ 3,074,170
2018	$ 359,000	$ 629,803	$ 1,858,132	$ 100,875,220	$ 3,141,802
2019	$ 359,000	$ 643,659	$ 1,899,011	$ 103,094,475	$ 3,210,922
2020	$ 359,000	$ 657,819	$ 1,940,789	$ 105,362,554	$ 3,281,562
2021	$ 359,000	$ 672,291	$ 1,983,487	$ 107,680,530	$ 3,353,757
2022	$ 360,000	$ 687,082	$ 2,027,123	$ 110,049,501	$ 3,427,539
2023	$ 360,000	$ 702,197	$ 2,071,720	$ 112,470,590	$ 3,502,945
2024	$ 360,000	$ 717,646	$ 2,117,298	$ 114,944,943	$ 3,580,010
2025	$ 360,000	$ 733,434	$ 2,163,879	$ 117,473,732	$ 3,658,770
2026	$ 360,000	$ 749,569	$ 2,211,484	$ 120,058,154	$ 3,739,263
2027	$ 361,000	$ 766,060	$ 2,260,137	$ 122,699,434	$ 3,821,527
2028	$ 361,000	$ 782,913	$ 2,309,860	$ 125,398,821	$ 3,905,600
2029	$ 361,000	$ 800,137	$ 2,360,676	$ 128,157,595	$ 3,991,524
2030	$ 361,000	$ 817,740	$ 2,412,611	$ 130,977,062	$ 4,079,337
2031	$ 362,000	$ 835,731	$ 2,465,689	$ 133,858,558	$ 4,169,082
2032	$ 362,000	$ 854,117	$ 2,519,934	$ 136,803,446	$ 4,260,802
2033	$ 362,000	$ 872,907	$ 2,575,372	$ 139,813,122	$ 4,354,540

Year	New Storage Area Conveyor	New Storage Area Rail	New Storage Area Truck	Fuel Switch Low Sulfur Coal	Offsite Landfill
2034	$ 362,000	$ 892,111	$ 2,632,031	$ 142,889,010	$ 4,450,340
2035	$ 363,000	$ 911,738	$ 2,689,935	$ 146,032,569	$ 4,548,247
2036	$ 363,000	$ 931,796	$ 2,749,114	$ 149,245,285	$ 4,648,309
2037	$ 363,000	$ 952,295	$ 2,809,594	$ 152,528,681	$ 4,750,572
2038	$ 364,000	$ 973,246	$ 2,871,406	$ 155,884,312	$ 4,855,084
2039	$ 364,000	$ 994,657	$ 2,934,576	$ 159,313,767	$ 4,961,896
2040	$ 364,000	$ 1,016,540	$ 2,999,137	$ 162,818,670	$ 5,071,058
2041	$ 364,000	$ 1,038,904	$ 3,065,118	$ 166,400,681	$ 5,182,621
2042	$ 365,000	$ 1,061,760	$ 3,132,551	$ 170,061,496	$ 5,296,639
2043	$ 365,000	$ 1,085,118	$ 3,201,467	$ 173,802,849	$ 5,413,165
2044	$ 365,000	$ 1,108,991	$ 3,271,899	$ 177,626,512	$ 5,532,254
2045	$ 366,000	$ 1,133,389	$ 3,343,881	$ 181,534,295	$ 5,653,964
2046	$ 366,000	$ 1,158,323	$ 3,417,446	$ 185,528,049	$ 5,778,351
2047	$ 366,000	$ 1,183,806	$ 3,492,630	$ 189,609,666	$ 5,905,475
2048	$ 367,000	$ 1,209,850	$ 3,569,468	$ 193,781,079	$ 6,035,395
2049	$ 367,000	$ 1,236,467	$ 3,647,996	$ 198,044,263	$ 6,168,174
NPV	$3,969,428	$9,374,437	$27,657,765	$1,501,498,730	$47,883,190

h. For the new storage area conveyor, rail and truck, as well as the offsite landfill scenarios, AFUDC treatment was applied. Therefore, when each project was placed in-service, the total capital expenditure plus the respective AFUDC total was established as the total plant-in-service. By utilizing the ECRC capitalization and depreciation schedule (Form 42-4P), the first and subsequent year's capital costs for ECRC recovery were estimated. Depreciation of the asset continued until the last Big Bend generating unit was scheduled for retirement. The company used its authorized midpoint return on equity and capital structure from its last approved rate case to calculate the return. The fuel switch low sulfur coal scenario did not include any capital costs.

i. Other than capital and O&M costs, the items included in the evaluations were transportation offset costs and AFUDC for the new storage area conveyor, rail and truck scenarios, and AFUDC for the offsite landfill scenario. These items have been previously identified in response to Part (a) of this data request.

j. The discount rate used in the evaluation of the options was 8.02 percent.

k. A critical time path exists for the new storage area conveyor as it is the most cost-effective option for Tampa Electric. The detailed information is provided as

an attachment to this data request**.** It is reasonable to assume the critical time path for the new storage area rail and truck options would have similar timeframes as the conveyor option had either of those been selected. Since the fuel switch low sulfur coal and offsite landfill options were extremely cost prohibitive, no critical time path was identified.

l. Please see response to Staff's Second Data Request, No. 10, for engineering design specific to the New Storage Area Conveyor. No engineering designs exist for those cost prohibitive options not selected for implementation.

m. All options were analyzed through 2049 - the final full year of operation of the last unretired unit at Big Bend Station.

n. The annual escalation rate used for the low sulfur coal switch option was 2.2 percent. The discount rate was the same for all the gypsum options considered and provided in the company's response to Staff's Second Data Request, No. 11(j).

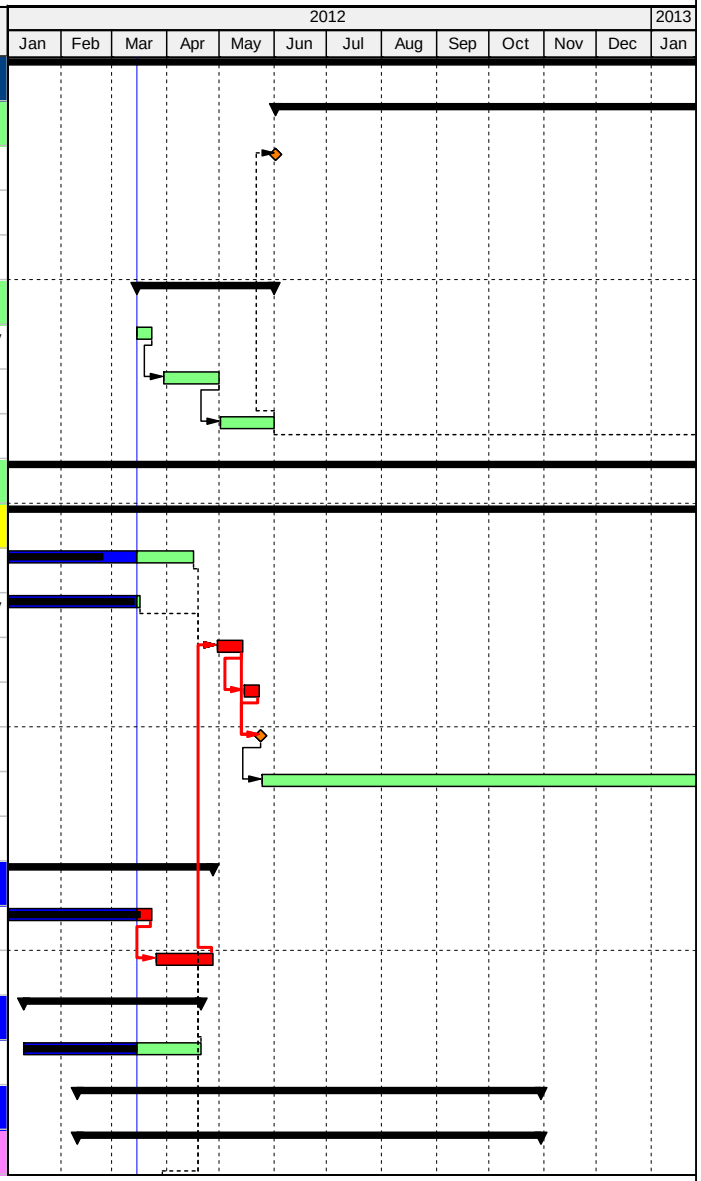
o. Sargent & Lundy ("S&L") was utilized to assist in the estimation of costs associated with Tampa Electric owning a permanent landfill site capable of receiving the gypsum produced at Big Bend Station from 2015 through the balance of the life of the plant. Based on the production of gypsum, S&L provided the information below.

Acreage Needed	436 acres
Capital Costs	$160,600,000
Annual O&M	$2,943,000 per year

Once received, Tampa Electric determined the financial plausibility relative to other options, and as stated in response to Part (e) above, eliminated the option from further consideration.

Gypsum Conveyor Project

Activity ID	Activity Name	Start	Finish	At mpletion	hysical % Comp	Total Float	ES- Responsible
Gypsum Conveyor Project		25-Nov-11 A	31-Dec-15	1048d		0d	
Milestones		01-Jun-12	31-Dec-15	915d		0d	
GYP1090	Anticipated FDEP Preliminary Engineering Approval to Proceed		01-Jun-12*	0d	0%	0d	
GYP1030	Complete All Permitting/Licensing, Bid & Award Construction		29-Oct-13*	0d	0%	0d	
GYP1060	Demo of all Un-Used Equipment - Date TBD per agreement with FDEP		31-Dec-15*	0d	0%	0d	
Preliminary Engineering		15-Mar-12 A	31-May-12	55d		1d	
A1045	Make Changes to all Documents; Stamp and Prepare Submital Packages	15-Mar-12 A	23-Mar-12	7d	0%	1d	Sargent & Lundy
A2580	30-Day Review by Agency	30-Mar-12	30-Apr-12	22d	0%	1d	Alcoz
A2530	Address RAI's as Needed and Recieve Approval to Proceed	01-May-12	31-May-12	23d	0%	1d	Alcoz
Environmental and Zoning permitting		25-Nov-11 A	19-Jul-13	420d		628d	
Site Certification Modification		25-Nov-11 A	19-Jul-13	420d		628d	
A1040	Develop the Construction Pollution Prevention Plan and Document	14-Dec-11 A	16-Apr-12	87d	15%	9d	ECT
A1050	Provide Drawings Required (Plans, Cross Sections, Topo, Sections, etc)	14-Dec-11 A	16-Mar-12	66d	95%	30d	Sargent & Lundy
A2470	Internal Review of all Permitting and licencing submittals	30-Apr-12	14-May-12*	11d	0%	0d	
A2740	Prepare Package	15-May-12	23-May-12*	7d	0%	0d	
A2430	All Permitting and Licensing Submittals		24-May-12*	0d	0%	0d	Melton
A1700	Site Certification Modification - Agency Review/Approval	25-May-12	28-Jun-13	286d	0%	15d	Melton
A2440	All Permitting and Licensing Approvals		19-Jul-13*	0d	0%	0d	Melton
Air Permit		25-Nov-11 A	27-Apr-12	109d		0d	
A1550	Air Permit - Prepare Permit Calculations	25-Nov-11 A	23-Mar-12	86d	95%	0d	Velasco
A1690	Develop Modified Construction Permit	26-Mar-12	27-Apr-12	25d	0%	0d	Velasco
Industrial Wastewater Permit		11-Jan-12 A	20-Apr-12	73d		5d	
A1570	IWW - Prepare SCA forms	11-Jan-12 A	20-Apr-12	73d	10%	5d	Eastley
Wetlands/Stormwater Permits		10-Feb-12 A	30-Oct-12	185d		482d	
USACE CORP PERMIT		10-Feb-12 A	30-Oct-12	185d		482d	



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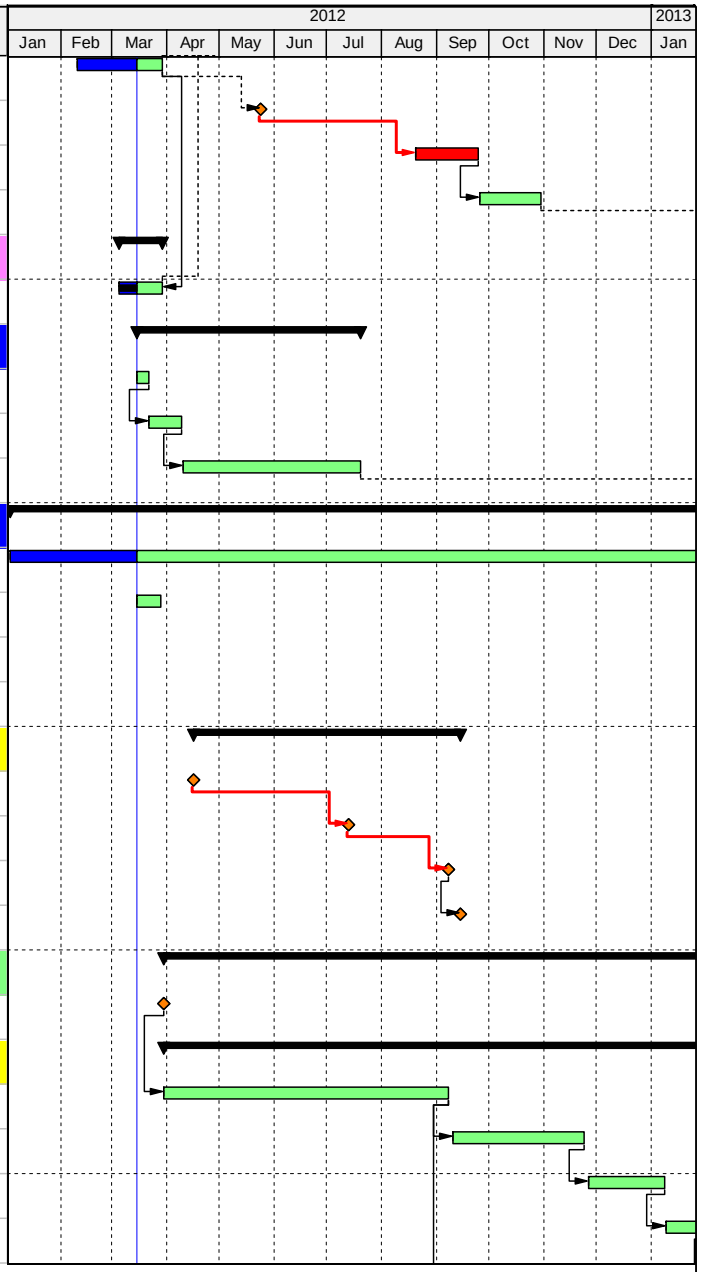
A2660	Prepare Application (both Corp and DEP)	10-Feb-12 A	29-Mar-12	35d	75%	21d	Alcoz
A2730	Submit Application to the Corp		24-May-12*	0d	0%	0d	
A2560	Meet with USACE for Wetlands/UMAM Review	20-Aug-12*	24-Sep-12	26d	0%	0d	Alcoz
A2570	Address RAI's as Needed and recieve permit	25-Sep-12	30-Oct-12	26d	0%	490d	Alcoz
DEP PERMIT		05-Mar-12 A	29-Mar-12	19d		21d	
A2260	Prepare and Provide Drafts of ERP Application for Internal Review	05-Mar-12 A	29-Mar-12	19d	75%	21d	Alcoz
Construction Dewatering Permit		15-Mar-12	19-Jul-12	89d		554d	
A2590	Determine Construction Dewatering Permit Requirements	15-Mar-12	21-Mar-12	5d	0%	569d	Alcoz
A1630	Construction Dewatering Permit - Prepare Permit	22-Mar-12	09-Apr-12	13d	0%	569d	Alcoz
A1640	Construction Dewatering Permit - Submit for Agency Review/Approval	10-Apr-12	19-Jul-12	73d	0%	569d	Alcoz
Potable Water Permitting		03-Jan-12 A	12-Jul-13	390d		633d	
A1610	Dept of Health Permit - Prepare Permit (If Needed)	03-Jan-12 A	28-Jun-13	389d	10%	644d	Eastley
A2750	Determine Location of Potable Water Tie-In	15-Mar-12 A	28-Mar-12	10d	0%	981d	Eastley
A2670	In-House Draft Review of Permit	01-Jul-13	12-Jul-13	10d	0%	644d	Eastley
A1620	Dept of Health Permit - Submit for Agency Review/Approval		12-Jul-13	0d	0%	644d	Eastley
Rezoning of Property		16-Apr-12	14-Sep-12	106d		842d	
A2520	Submit the Zoning Application		16-Apr-12*	0d	0%	0d	
A2450	Zoning Hearing Master Hearing Date		13-Jul-12*	0d	0%	0d	Melton
A2460	Board of County Commissioners Hearing		07-Sep-12*	0d	0%	0d	Melton
A2410	Receive Permitting for Rezoning		14-Sep-12	0d	0%	849d	Melton
Detailed Design & Procurement		30-Mar-12	13-Apr-15	772d		188d	
A2700	Release S&L to initiate the detailed design		30-Mar-12*	0d	0%	0d	
Material Handling Equipment Specification (incl		30-Mar-12	25-Aug-14	611d		249d	
A1180	Equipment Conveyor & Steel Spec - Prepare/Review/Issue for Bid	30-Mar-12	07-Sep-12	115d	0%	200d	
A1190	Equipment Conveyor & Steel Spec - Bid Period	10-Sep-12	23-Nov-12	55d	0%	200d	
A1200	Equipment Conveyor & Steel Spec - Evaluate	26-Nov-12	08-Jan-13	30d	0%	200d	
A1210	Equipment Conveyor & Steel Spec - Award	09-Jan-13	05-Feb-13	20d	0%	200d	



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A1220	Equipment Conveyor & Steel - Fab	06-Feb-13	25-Aug-14	400d	0%	250d	
A1240	Equipment Conveyor & Steel - Final Delivery		25-Aug-14	0d	0%	250d	
Equipment Conveyor & Steel-Final		05-Feb-13	01-Oct-13	168d		477d	
A2600	GA Drawings including "Not to Exceed Loads" issued for review	05-Feb-13	23-Jul-13	120d	0%	200d	
A2610	TECO and S&L-Provide Comments to GA Drawings	24-Jul-13	20-Aug-13	20d	0%	481d	
A2620	Finalize GA Drawings and Reissue to TECO and S&L	21-Aug-13	01-Oct-13	30d	0%	481d	
Stormwater Sump Pump Specification		13-Nov-13	05-Nov-14	249d		186d	
A1890	Stormwater Sump Pump Spec - Prepare/Review/Issue for Bid	13-Nov-13*	24-Dec-13	30d	0%	189d	
A1900	Stormwater Sump Pump Spec - Bid Period	26-Dec-13	23-Jan-14	20d	0%	189d	
A1910	Stormwater Sump Pump Spec - Evaluate	24-Jan-14	13-Feb-14	15d	0%	189d	
A1920	Stormwater Sump Pump Spec - Award	14-Feb-14	27-Feb-14	10d	0%	189d	
A1930	Stormwater Sump Pump Design & Fab/Deliver Materials	05-May-14*	05-Nov-14	132d	0%	186d	
Existing Conveyor and Associated Structures D		23-Jul-14	06-Mar-15	159d		214d	
A1760	Existing Conveyor / Structure Demo Spec - Prepare/Review/Issue for Bid	23-Jul-14	02-Sep-14	30d	0%	212d	
A1770	Existing Conveyor / Structure Demo Spec - Bid Period	03-Sep-14	30-Sep-14	20d	0%	212d	
A1780	Existing Conveyor / Structure Demo Spec - Evaluate	01-Oct-14	21-Oct-14	15d	0%	212d	
A1790	Existing Conveyor / Structure Demo Spec - Award	22-Oct-14	04-Nov-14	10d	0%	212d	
A1800	Existing Conveyor / Structure Demo Spec - Mobilize	19-Nov-14	18-Dec-14	22d	0%	212d	
A1805	Demo Conveyor and Remediate Area	19-Dec-14	06-Mar-15	54d	0%	212d	
Electrical Installation Work Specification (incl El		06-Mar-13	31-Mar-15	527d		187d	
A1840	Electrical Installation Work Spec - Prepare/Review/Issue for Bid	06-Mar-13	28-May-13	60d	0%	365d	
A1850	Electrical Installation Work Spec - Bid Period	29-May-13	24-Jul-13	40d	0%	365d	
A1860	Electrical Installation Work Spec - Evaluate	25-Jul-13	21-Aug-13	20d	0%	365d	
A1870	Electrical Installation Work Spec - Award	22-Aug-13	11-Sep-13	15d	0%	365d	
A1880	Electrical Installation Work Spec - Mobilize	26-Sep-13	23-Oct-13	20d	0%	365d	
A1130	Electrical Installation	07-Jul-14	31-Mar-15	190d	0%	186d	
480 Volt Motor Control Centers Specification		22-Oct-12	13-Oct-14	502d		195d	

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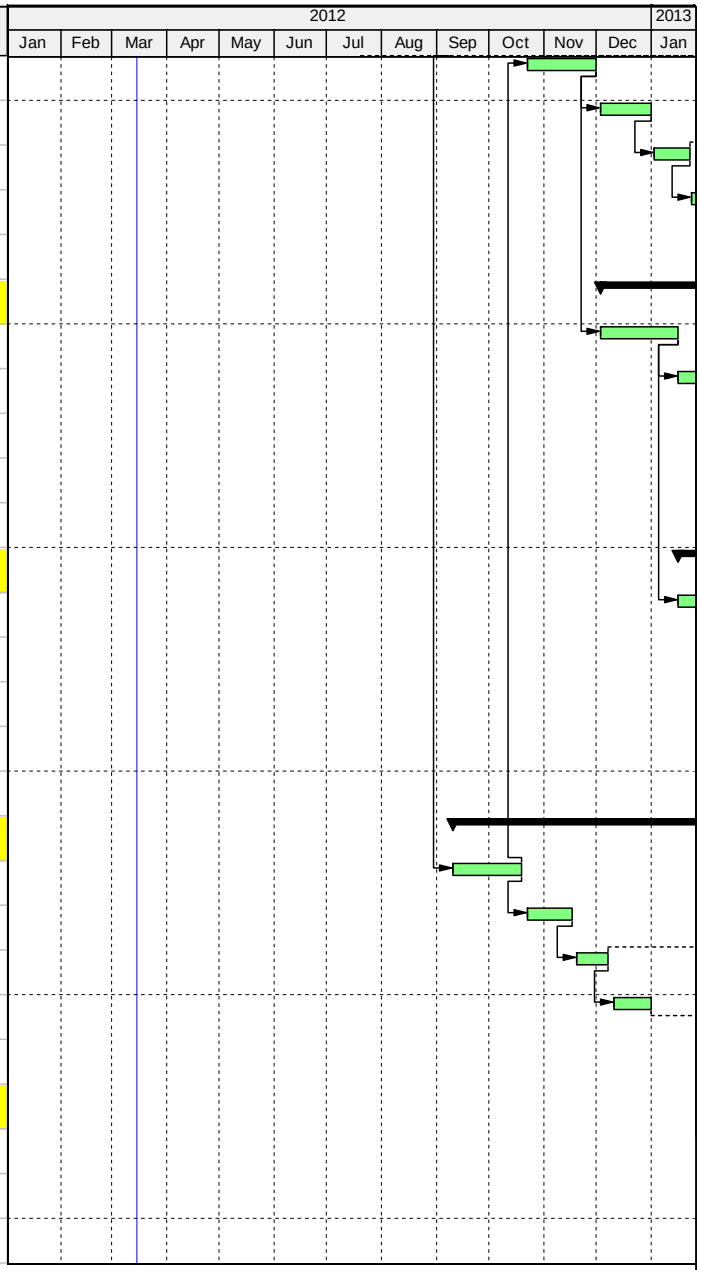
A2040	MCC Spec - Prepare/Review/Issue for Bid	22-Oct-12	30-Nov-12	30d	0%	365d	
A2050	MCC Spec - Bid Period	03-Dec-12	31-Dec-12	20d	0%	390d	
A2060	MCC Spec - Evaluate	02-Jan-13	22-Jan-13	15d	0%	390d	
A2070	MCC Spec - Award	23-Jan-13	12-Feb-13	15d	0%	390d	
A2080	MCC Design & Fab/Deliver Materials	14-Nov-13*	13-Oct-14	235d	0%	195d	
125 VDC UPS Specification		03-Dec-12	13-Oct-14	474d		195d	
A2090	UPS Spec - Prepare/Review/Issue for Bid	03-Dec-12	15-Jan-13	30d	0%	365d	
A2100	UPS Spec - Bid Period	16-Jan-13	12-Feb-13	20d	0%	365d	
A2110	UPS Spec - Evaluate	13-Feb-13	05-Mar-13	15d	0%	365d	
A2120	UPS Spec - Award	06-Mar-13	26-Mar-13	15d	0%	370d	
A2130	UPS Design & Fab/Deliver Materials	28-Nov-13*	13-Oct-14	225d	0%	195d	
Cable Specification		16-Jan-13	26-Nov-14	474d		195d	
A2140	15KV Cable Spec - Prepare/Review/Issue for Bid	16-Jan-13	26-Feb-13	30d	0%	370d	
A2150	15KV Cable Spec - Bid Period	27-Feb-13	26-Mar-13	20d	0%	370d	
A2160	15KV Cable Spec - Evaluate	27-Mar-13	16-Apr-13	15d	0%	370d	
A2170	15KV Cable Spec - Award	17-Apr-13	07-May-13	15d	0%	532d	
A2180	15KV Cable Design & Fab/Deliver Materials	01-Sep-14*	26-Nov-14	63d	0%	193d	
13.8 kV - 480 Volt Step Down Transformer Speci		10-Sep-12	25-Sep-14	520d		207d	
A1990	Transformer Spec - Prepare/Review/Issue for Bid	10-Sep-12	19-Oct-12	30d	0%	365d	
A2000	Transformer Spec - Bid Period	22-Oct-12	16-Nov-12	20d	0%	372d	
A2010	Transformer Spec - Evaluate	19-Nov-12	07-Dec-12	15d	0%	372d	
A2020	Transformer Spec - Award	10-Dec-12	31-Dec-12	15d	0%	372d	
A2030	Transformer Design & Fab/Deliver Materials	22-Aug-13*	25-Sep-14	283d	0%	207d	
DCS BOM Spec (TECO)		06-Feb-13	26-Nov-13	204d		420d	
A2350	DCS BOM Spec - Prepare/Issue for Bid (TECO)	06-Feb-13	19-Mar-13	30d	0%	380d	
A2360	DCS BOM Spec - Bid Period	20-Mar-13	16-Apr-13	20d	0%	380d	
A2370	DCS BOM Spec - Evaluate	17-Apr-13	07-May-13	15d	0%	380d	



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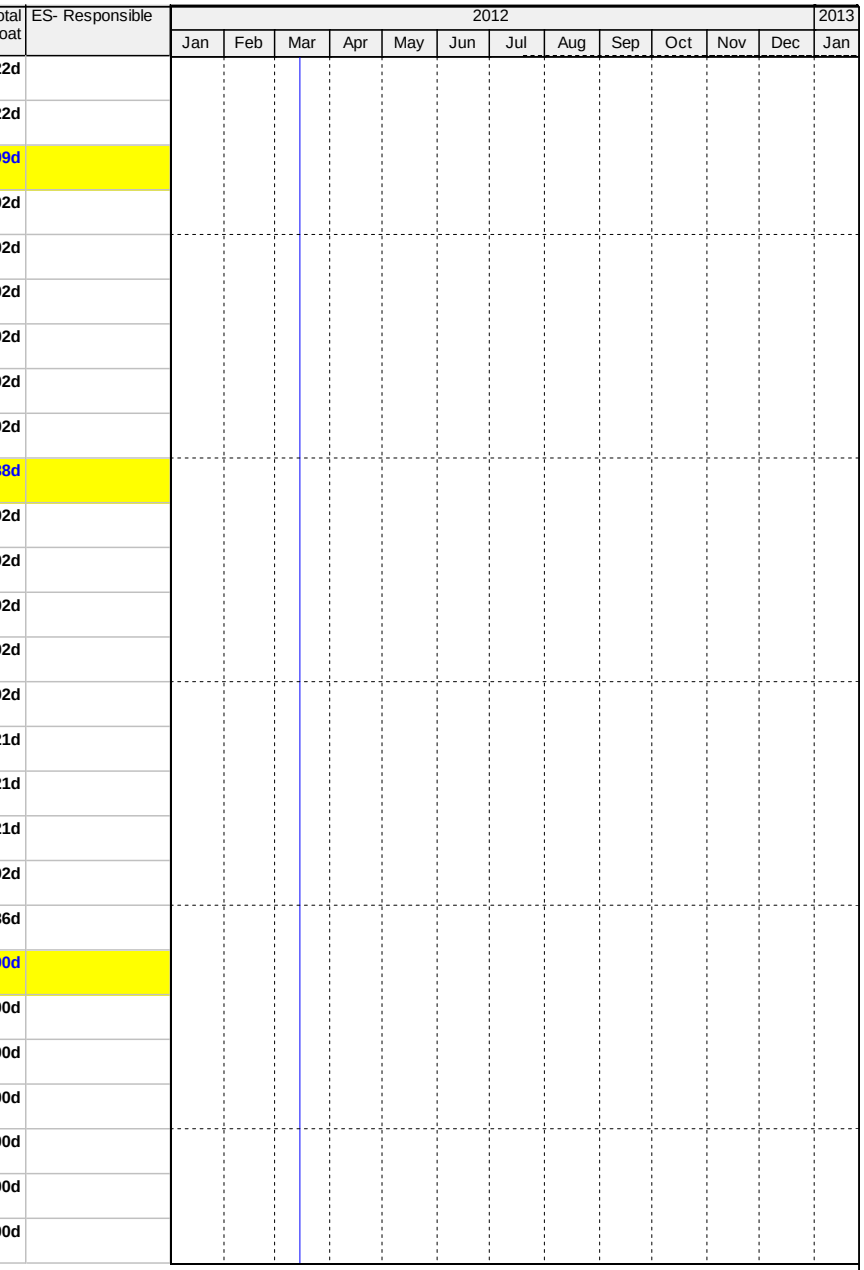
A2380	DCS BOM Spec - Award	08-May-13	28-May-13	15d	0%	422d	
A2390	DCS BOM Design & Fab/Deliver Cabinet	29-May-13	26-Nov-13	128d	0%	422d	
Pile Installation Specification		27-Sep-13	30-Apr-14	150d		199d	
A1250	Pilings Spec - Prepare/Review/Issue for Bid	27-Sep-13*	07-Nov-13	30d	0%	202d	
A1260	Pilings Spec - Bid Period	08-Nov-13	28-Nov-13	15d	0%	202d	
A1270	Pilings Spec - Evaluate	29-Nov-13	12-Dec-13	10d	0%	202d	
A1280	Pilings Spec - Award	13-Dec-13	27-Dec-13	10d	0%	202d	
A1810	Pilings Spec - Mobilize	16-Jan-14	31-Jan-14	12d	0%	202d	
A1090	Pilings Installation	03-Feb-14	30-Apr-14	63d	0%	202d	
Civil/Sitework/GCL Liner Specification		11-Jun-13	13-Apr-15	468d		188d	
A1330	Civil/Sitework/GCL Liner Spec - Prepare/Review/Issue for Bid	11-Jun-13*	06-Aug-13	40d	0%	192d	
A1340	Civil/Sitework/GCL Liner Spec - Bid Period	21-Aug-13	17-Sep-13	20d	0%	192d	
A1350	Civil/Sitework/GCL Liner Spec - Evaluate	18-Sep-13	01-Oct-13	10d	0%	192d	
A1360	Civil/Sitework/GCL Liner Spec - Award	02-Oct-13	15-Oct-13	10d	0%	192d	
A1370	GCL Liner - Fab & Deliver	16-Oct-13	16-Jan-14	65d	0%	192d	
A1070	Mobilize (Civil / Sitework Contractor)	15-Nov-13	29-Nov-13	11d	0%	221d	
A2330	Sitework Spec - Mobilize	15-Nov-13	29-Nov-13	11d	0%	221d	
A1080	Civil / Sitework	02-Dec-13	28-Mar-14	83d	0%	221d	
A1110	GCL Liner Installation	29-Jan-14	14-Mar-14	33d	0%	192d	
A1170	Final Sitework, Roads & Grading	11-Feb-15	13-Apr-15	44d	0%	186d	
Concrete Foundation Installation Specification		24-Jul-13	15-Jul-14	248d		190d	
A2630	Prepare Foundation Drawings based on "Not to Exceed Loads" received from MHC	24-Jul-13	01-Oct-13	50d	0%	200d	
A2640	Revise Foundation Drawings based on Final Locations & Loads Received from MHC	02-Oct-13	04-Dec-13	46d	0%	200d	
A1290	Foundations Spec - Prepare/Review/Issue for Bid	10-Oct-13*	04-Dec-13	40d	0%	200d	
A1300	Foundations Spec - Bid Period	05-Dec-13	03-Jan-14	20d	0%	200d	
A1310	Foundations Spec - Evaluate	06-Jan-14	17-Jan-14	10d	0%	200d	
A1320	Foundations Spec - Award	20-Jan-14	31-Jan-14	10d	0%	200d	



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Activity ID	Activity Name	Start	Finish	At mpletion	hysical % Comp	Total Float	ES- Responsible
A1820	Foundations Spec - Mobilize	19-Feb-14	04-Mar-14	10d	0%	200d	
A1100	Foundations Installation & Grounding	17-Mar-14	15-Jul-14	86d	0%	192d	
Gypsum Storage Dome		16-Aug-13	17-Nov-14	319d		205d	
A1380	Gypsum Storage Dome Spec - Prepare/Review/Issue for Bid	16-Aug-13*	26-Sep-13	30d	0%	215d	
A1390	Gypsum Storage Dome Spec - Bid Period	27-Sep-13	24-Oct-13	20d	0%	215d	
A1400	Gypsum Storage Dome Spec - Evaluate	25-Oct-13	14-Nov-13	15d	0%	215d	
A1410	Gypsum Storage Dome Spec - Award	15-Nov-13	28-Nov-13	10d	0%	215d	
A1420	Gypsum Storage Dome Design & Fab/Deliver Materials	29-Nov-13	04-Jun-14	132d	0%	215d	
A2340	Gypsum Storage Dome Spec - Mobilize	01-Apr-14*	30-Apr-14	22d	0%	212d	
A1160	Dome Erection	12-May-14	17-Nov-14	135d	0%	205d	
General Work Specification (incl MH Equip & Pu		14-Aug-13	10-Mar-15	399d		187d	
A1480	GWC Spec - Prepare/Review/Issue for Bid	14-Aug-13*	05-Nov-13	60d	0%	189d	
A1490	GWC Spec - Bid Period	06-Nov-13	30-Jan-14	60d	0%	189d	
A1500	GWC Spec - Evaluate	31-Jan-14	27-Feb-14	20d	0%	189d	
A1510	GWC Spec - Award	28-Feb-14	20-Mar-14	15d	0%	189d	
A1830	GWC Spec - Mobilize	07-Apr-14	30-Apr-14	18d	0%	189d	
A1140	Conveyor Components & Steel Erection	01-May-14	18-Nov-14	143d	0%	189d	
A1120	Misc Mechanical Installation	07-Jul-14	10-Mar-15	175d	0%	186d	
FGD Byproduct Storage Area Building Specifica		24-Apr-13	30-Sep-14	365d		234d	
A1940	FGD Byproduct Storage Area Building Spec - Prepare/Review/Issue for Bid	24-Apr-13*	04-Jun-13	30d	0%	265d	
A1950	FGD Byproduct Storage Area Building Spec - Bid Period	05-Jun-13	02-Jul-13	20d	0%	265d	
A1960	FGD Byproduct Storage Area BuildingSpec - Evaluate	03-Jul-13	24-Jul-13	15d	0%	265d	
A1970	FGD Byproduct Storage Area Building Spec - Award	25-Jul-13	07-Aug-13	10d	0%	265d	
A1980	FGD Byproduct Storage Area Building Design & Fab/Deliver Materials	23-Oct-13*	01-Aug-14	200d	0%	211d	
A2320	FGD Byproduct Storage Area Building Spec - Mobilize	01-May-14*	21-May-14	15d	0%	234d	
A1150	FGD Byproduct Storage Area Building Erection	02-Jun-14	30-Sep-14	86d	0%	234d	
Construction		29-Oct-13	29-Apr-15	382d		0d	

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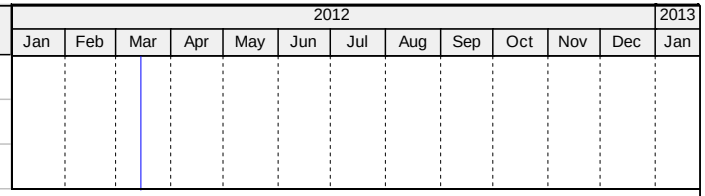
A2420	Construction Period	29-Oct-13*	29-Apr-15	387d	0%	0d	
A2710	Start Construction	29-Oct-13*		0d	0%	0d	
A2720	End Construction		29-Apr-15*	0d	0%	0d	



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12. Referring to Table 4, at 13 below, compared with TECO's proposed new storage option (1), please evaluate the options of (2) retrofitting the existing gypsum storage, and (3) leasing part of the proposed new storage facility to another company. Please discuss:

(a) The feasibility of options (2) and (3); and

(b) Estimated costs and benefits to customers of options (2) and (3).

A. a. The feasibility of option 2, retrofitting the existing gypsum storage area, will not create the additional temporary storage area Tampa Electric requires to manage the ebb and flow of gypsum inventory. Likewise, option 3, leasing part of the proposed new storage facility to another company, will not create the working area necessary to manage Big Bend Station's gypsum production. Therefore, these options are not feasible.

b. Since these options are not feasible, there are no benefits; however, the ultimate cost and detrimental impact of mistakenly selecting these options and not alleviating the gypsum inventory at Big Bend Station through constructing option 1 – New Storage Area Conveyor - is discussed in response to Staff's Second Data Request, No. 3.

13. Please complete Table 4 below.

Table 4: Customer Bill Impact Comparisons								
	Residential Rate ($/1,000 kWh)							
Scenarios	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	New Storage Area Conveyor (TECO proposed)	Retrofit Existing Storage	Partial Leasing New Storage Area Conveyor	No New Storage No Retrofitting Existing Storage	New Storage Area Rail	New Storage Area Truck	Fuel Switch Low Sulfur Coal	Offsite Landfill
2015								
2016								
2017								
2018								
2019								

A.

Table 4: Customer Bill Impact Comparisons								
	Residential Rate ($/1,000 kWh)							
Scenarios	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	New Storage Area Conveyor (TECO proposed)	Retrofit Existing Storage	Partial Leasing Storage Area Conveyor	No New Storage No Retrofitting Existing Storage	New Storage Area Rail	New Storage Area Truck	Fuel Switch Low Sulfur Coal	Offsite Landfill
2015	0.41	N/A	N/A	N/A	0.40	0.38	4.90	1.27
2016	0.39	N/A	N/A	N/A	0.39	0.37	4.95	1.25
2017	0.38	N/A	N/A	N/A	0.38	0.36	5.02	1.22
2018	0.37	N/A	N/A	N/A	0.37	0.35	5.08	1.19
2019	0.35	N/A	N/A	N/A	0.36	0.35	5.13	1.16

The table above contains corrected data for Scenario 1 – New Storage Area Conveyor. The company made an inadvertent error in its calculations submitted in response to Staff's First Set of Interrogatories, No. 3. The table above provides a lower 2015 through 2019 rate impact for the new storage area. This rate impact is less than

originally provided for a residential customer's 1,000 kWh bill. The correction does not detract from the overall cost analysis conducted for the project. The rates are simply the incremental increase due to the ECRC recovery of the project but are absent any impacts of the changing costs of any of Tampa Electric's existing projects currently recovered through the ECRC.

Scenarios 2, 3 and 4 were not components of Tampa Electric's evaluation process to manage gypsum production at Big Bend Station. Neither option provides the necessary area to handle the plant's gypsum production. The detrimental impacts of these options are discussed in responses to Staff's Second Data Request, Nos. 3 and 12.

Finally, the rates provided for Scenarios 5 and 6 appear to be less than those for Scenario 1; however, with only a five-year window of observation, a false conclusion can be derived. Exhibit B of the company's petition provides an accurate review of the net present value of all options evaluated and demonstrates Tampa Electric's proposal for a new storage area conveyor is the most cost-effective option. This is due to the overall lower operation and maintenance costs during the life of the asset.

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14. Referring to revenues from sales of gypsum, Mr. H. Bryant of TECO stated, at the March 13, 2012, agenda conference, that "it is basically split fifty-fifty. 50% goes to the Company, and 50% goes back to customers. . . ." Is this statement correct? Please provide a detailed explanation of how the revenues generated by selling gypsum are distributed between the ECRC, base rates, and the Company (and the methodology employed), and why this distribution is reasonable and fair. Please cite the Commission order(s), if any, approving the allocation methodology and indicate how long TECO has employed the current methodology.

A. The statement is referring to the disposition of gypsum revenue derived from the sale of gypsum produced from the operation of two FGD systems ("scrubbers") at Big Bend Station. The key to understanding the statement is determining the source of funding for the construction of the scrubbers. The scrubber for Big Bend Unit 4 went in-service in 1985 and was funded through base rates. Big Bend Unit 3 was integrated into that scrubber in 1996. The scrubber for Big Bend Units 1 and 2 went in-service December 1999 and by Commission decision was funded through the ECRC. Therefore, the revenue from the sale of gypsum produced by the scrubbers is nominally split at a 50 percent level, namely, 50 percent is allocated toward base rates as an offset to total overall costs included in base rates and 50 percent is allocated toward the ECRC as an offset to total overall costs included in the ECRC. In both cases, the revenue offset has the impact of lowering the two rates that would otherwise be levied against customers.

The decision to manage gypsum revenues in this manner was determined during the FPSC audit of the 2000 ECRC True-up Filing. At that time, the scrubber for Big Bend Units 1 and 2 had been online for one year of commercial operation and it was necessary to establish the procedure in which the revenue from the sale of gypsum as well as the cost of raw materials, or consumables, used to produce the gypsum would be managed. The method utilized has been audited every year since 2000 and has been accepted at the annual ECRC hearings as the appropriate, fair and reasonable treatment of gypsum revenue and consumables cost from Big Bend Station.

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15. For the proposed new storage facility:

(a) How many years will it take to reach its full capacity assuming no sales of gypsum?

(b) How many years will it take to reach its full capacity assuming that there is the same amount of excess gypsum at Big Bend Station as has been the case during the last 2 years?

(c) How many years will the storage facility benefit customers?

(d) How long will it take for the new facility to reach its full capacity assuming sales of gypsum revert to the Company's (i) average historic sales levels over the period 2000-2011, (ii) 2007 sales level, and (iii) 2011 sales level. Please explain what levels would need to be achieved, and the resulting life of the facility.

A. a. If no sales of gypsum were made from the Big Bend Station, the proposed new gypsum storage facility is forecasted to reach full capacity in approximately 1.2 years.

b. Assuming the FGD systems at Big Bend Station will produce the same amount of excess gypsum by-product as produced in the last two years, 2010-2011, the proposed gypsum storage facility is forecasted to reach full capacity in approximately 3.6 years. The same question was asked in Staff's First Set of Interrogatories, No. 1 for the years 2009-2010 but the response contained an error in the calculation. The correct number of years to reach full capacity with the excess the company had over those years is 7.1 years.

c. The new storage facility is designed to benefit customers through the operating life of the Big Bend Station. The new gypsum storage area addition is not being designed as a permanent storage area. It is intended to provide an appropriate amount of "working storage" to manage temporary imbalances in supply and demand. The new gypsum storage area is expected to hold 870,000 tons of gypsum at full capacity complementing the existing storage area which has 1,000,000 tons of total capacity. The previous two years' excess production is an example of the volatility in the supply/demand relationship that has occurred in history. The company expects these fluctuations in demand will continue going forward and that the proposed new gypsum storage area will adequately accommodate the company's working storage area needs.

d. Assuming sales of gypsum revert to the company's average historic sales levels over the period 2000-2011, 2007 sales level, and 2011 sales level, the proposed gypsum storage facility is forecasted to reach full capacity in approximately 7.3, beyond the retirement of Big Bend generating units, and 2.4 years, respectively.

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16. Referring to the table in Exhibit A, page 13, of TECO's petition, please provide the following information:

(a) Identify each of the major "Construction Activities" and the associated estimated costs;

(b) Identify each of the major components of the "Engineering" and the associated estimated costs;

(c) Identify each of the major components of the "Major Equipment" and the associated estimated costs;

(d) A cost breakdown of the "Floodplain Compensation, Wetland Mitigation" and why it is necessary;

(e) Identify each of the major components of the "Project/Construction Management" and the associated estimated costs;

(f) What is the "Silo & Stackout"? Why it is necessary and why are its associated estimated costs reasonable; and

(g) Why the $8 million "Contingency" fund would be necessary, and the major risks involved in the proposed new program.

A. a. See response to Staff's Second Data Request, No. 11(e).

b. See response to Staff's Second Data Request, No. 11(e).

c. See response to Staff's Second Data Request, No. 11(e).

d. The necessity of the Floodplain Compensation cost is driven by the Florida Department of Environmental Protection's ("FDEP") Basis of Review (developed by SWFWMD and adopted by FDEP) Section 4.4 which states the following:

> Flood plain encroachment — No net encroachment into the flood plain, up to that encompassed by the 100-year event, which will adversely affect conveyance, storage, water quality or adjacent lands will be allowed. Any required compensating storage shall be equivalently provided between the seasonal high water level and the 100 year flood level to allow storage function during all lesser flood events.

The scope of work for the new gypsum storage area includes removal of 120,000 cubic yards of earth excavated down three feet. Material is to be

trucked in from offsite and used in the construction of the new berm area surrounding the new gypsum storage area.

The Wetland Mitigation cost is an FDEP requirement where every acre of wetlands impacted from the new gypsum storage area requires Tampa Electric to purchase credits through the Hillsborough County wetlands mitigation bank at an estimated cost of $165,000 per acre. An estimated four acres of wetlands will be impacted by the construction of the new gypsum storage facility.

For the associated costs of the Floodplain Compensation and Wetland Mitigation component, see response to Staff's Second Data Request, No. 11(e).

e. See response to Staff's Second Data Request, No. 11(e).

f. The silo is a storage dome used to manage gypsum material in a moisture controlled environment for greater value at time of beneficial reuse. The stack out area is used to store gypsum suitable for reuse in markets other than the wallboard industry. Utilization of the two areas allows for segregating gypsum by the quality necessary for beneficial reuse in different markets. S&L provided the estimate for this component. For the associated costs of the Silo and Stackout component, see response to Staff's Second Data Request, No. 11(e).

g. The Contingency fund is necessary to manage the risks associated with a project of this size and duration. Specifically, risks can be associated with material (e.g., steel) pricing and wage escalation, potential scope change, infrastructure currently underground but not known until construction begins, weather impacts, overall construction coordination issues and delays, delivery schedule of offsite fabricated equipment, and permit issuance dates relative to project schedule.