Aboveground Storage Tank Facility Plan Checklist

- **Edwards Aquifer Application Cover Page (TCEQ-20705)**
- **General Information Form (TCEQ-0587)**

  Attachment A - Road Map
  Attachment B - USGS / Edwards Recharge Zone Map
  Attachment C - Project Description

- **Geologic Assessment Form (TCEQ-0585)**

  Attachment A - Geologic Assessment Table (TCEQ-0585-Table)
  Attachment B - Stratigraphic Column
  Attachment C - Site Geology
  Attachment D - Site Geologic Map(s)

- **Aboveground Storage Tank Facility Plan (TCEQ-0575)**

  Attachment A - Alternative Methods of Secondary Containment (if proposed)
  Attachment B - Scaled Drawing(s) of Containment Structure
  ~~Attachment C - Exception to the Geologic Assessment (if requested)~~ N/A
  Attachment D - Spill and Overfill Control
  Attachment E - Response Actions to Spills
  Site Plan

- **Temporary Stormwater Section (TCEQ-0602)**

  Attachment A - Spill Response Actions
  Attachment B - Potential Sources of Contamination
  Attachment C - Sequence of Major Activities
  Attachment D - Temporary Best Management Practices and Measures
  ~~Attachment E - Request to Temporarily Seal a Feature (if requested)~~ N/A
  Attachment F - Structural Practices
  Attachment G - Drainage Area Map
  ~~Attachment H - Temporary Sediment Pond(s) Plans and Calculations~~ N/A
  Attachment I - Inspection and Maintenance for BMPs
  Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices

- **Agent Authorization Form (TCEQ-0599), if application submitted by agent**
- **Application Fee Form (TCEQ-0574)**
- **Check Payable to the "Texas Commission on Environmental Quality"**
- **Core Data Form (TCEQ-10400)**

N/A. Fees will be paid separately.

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with 30 TAC 213.

Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

   To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http://www.tceq.texas.gov/field/eapp.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

   An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains "possibly sensitive" features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied **the application fee will be forfeited**.
4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "Mid-Review Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is denied/withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

1. Regulated Entity Name: Costco Warehouse (Loc. No. 1385)						**2. Regulated Entity No.:**			
3. Customer Name: Costco Wholesale						**4. Customer No.:**			
5. Project Type: **(Please circle/check one)**	(New)		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	CZP	SCS	UST	(AST)	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		(Non-residential)			**8. Site (acres):**		20.042	
9. Application Fee:	$1,300		**10. Permanent BMP(s):**			See enclosed			
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**			2 AST			
13. County:	Williamson		**14. Watershed:**			Granger Lake-San Gabriel River			

Application Distribution

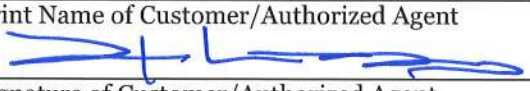
Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which cross into multiple jurisdictions, can require additional copies. Refer to the "Texas Groundwater Conservation Districts within the EAPP Boundaries" map found at:

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

For more detailed boundaries, please contact the conservation district directly.

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	___	___	X
Region (1 req.)	___	___	X
County(ies)	___	___	X
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence X Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	___	___	___	___
Region (1 req.)	___	___	___	___	___
County(ies)	___	___	___	___	___
Groundwater Conservation District(s)	___ Edwards Aquifer Authority ___Trinity-Glen Rose	___Edwards Aquifer Authority	___Kinney	___EAA ___Medina	___EAA ___Uvalde
City(ies) Jurisdiction	___Castle Hills ___Fair Oaks Ranch ___Helotes ___Hill Country Village ___Hollywood Park ___San Antonio (SAWS) ___Shavano Park	___Bulverde ___Fair Oaks Ranch ___Garden Ridge ___New Braunfels ___Schertz	NA	___San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. M. Alexia Inigues, Authorized Agent for Costco Wholesale
Print Name of Customer/Authorized Agent
 4/28/2023 Signature of Customer/Authorized Agent Date

FOR TCEQ INTERNAL USE ONLY				
Date(s)Reviewed:		Date Administratively Complete:		
Received From:		Correct Number of Copies:		
Received By:		Distribution Date:		
EAPP File Number:		Complex:		
Admin. Review(s) (No.):		No. AR Rounds:		
Delinquent Fees (Y/N):		Review Time Spent:		
Lat./Long. Verified:		SOS Customer Verification:		
Agent Authorization Complete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):	
Core Data Form Complete (Y/N):			Signed (Y/N):	
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):	

GENERAL
INFORMATION FORM

General Information Form

Texas Commission on Environmental Quality

For Regulated Activities on the Edwards Aquifer Recharge and Transition Zones and Relating to 30 TAC §213.4(b) & §213.5(b)(2)(A), (B) Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **General Information Form** is hereby submitted for TCEQ review. The application was prepared by:

Print Name of Customer/Agent: M. Alexia Inigues, Authorized Agent for Costco Wholesale

Date: 4/28/2023

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: Costco Warehouse (Loc. No. 1385)
2. County: Williamson
3. Stream Basin: Brazos River Basin
4. Groundwater Conservation District (If applicable): N/A
5. Edwards Aquifer Zone:

   [X] Recharge Zone
   [ ] Transition Zone

6. Plan Type:

   [ ] WPAP
   [ ] SCS
   [ ] Modification
   [X] AST
   [ ] UST
   [ ] Exception Request

7. Customer (Applicant):

Contact Person: Dwight Larsen
Entity: Costco Wholesale
Mailing Address: P.O. Box 35005
City, State: Seattle, WA Zip: 98124
Telephone: (425) 313-8100 FAX: _____
Email Address: costco@barghausen.com

8. Agent/Representative (If any):

Contact Person: M. Alexia Inigues, Authorized Agent for Costco Wholesale
Entity: Barghausen Consulting Engineers, Inc.
Mailing Address: 18215 72nd Avenue South
City, State: Kent, WA Zip: 98032
Telephone: (425) 251-6222 FAX: _____
Email Address: snelson@barghausen.com

9. Project Location:

[X] The project site is located inside the city limits of Georgetown
[ ] The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of _____.
[ ] The project site is not located within any city's limits or ETJ.

10. [X] The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

2201A North Interstate Highway 35, Georgetown, TX 78628

11. [X] **Attachment A – Road Map**. A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.

12. [X] **Attachment B - USGS / Edwards Recharge Zone Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show: Attached to Geologic Assessment Form

[X] Project site boundaries.
[X] USGS Quadrangle Name(s).
[X] Boundaries of the Recharge Zone (and Transition Zone, if applicable).
[ ] Drainage path from the project site to the boundary of the Recharge Zone.

13. [X] **The TCEQ must be able to inspect the project site or the application will be returned**. Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment. ALTA Survey included

[ ] Survey staking will be completed by this date: _____

14. [X] **Attachment C – Project Description**. Attached at the end of this form is a detailed narrative description of the proposed project. The project description is consistent throughout the application and contains, at a minimum, the following details:

- [X] Area of the site
- [ ] Offsite areas (N/A)
- [X] Impervious cover
- [X] Permanent BMP(s) See enclosed Stormwater Pollution Prevention Plan
- [X] Proposed site use
- [X] Site history
- [X] Previous development
- [X] Area(s) to be demolished

15. Existing project site conditions are noted below:

- [ ] Existing commercial site
- [ ] Existing industrial site
- [ ] Existing residential site
- [X] Existing paved and/or unpaved roads
- [ ] Undeveloped (Cleared)
- [ ] Undeveloped (Undisturbed/Uncleared)
- [ ] Other: _____

Prohibited Activities

16. [X] I am aware that the following activities are prohibited on the Recharge Zone and are not proposed for this project:

(1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);

(2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;

(3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;

(4) The use of sewage holding tanks as parts of organized collection systems; and

(5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

(6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

17. [X] I am aware that the following activities are prohibited on the Transition Zone and are not proposed for this project:

(1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);

(2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and

(3) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

Administrative Information

18. The fee for the plan(s) is based on:

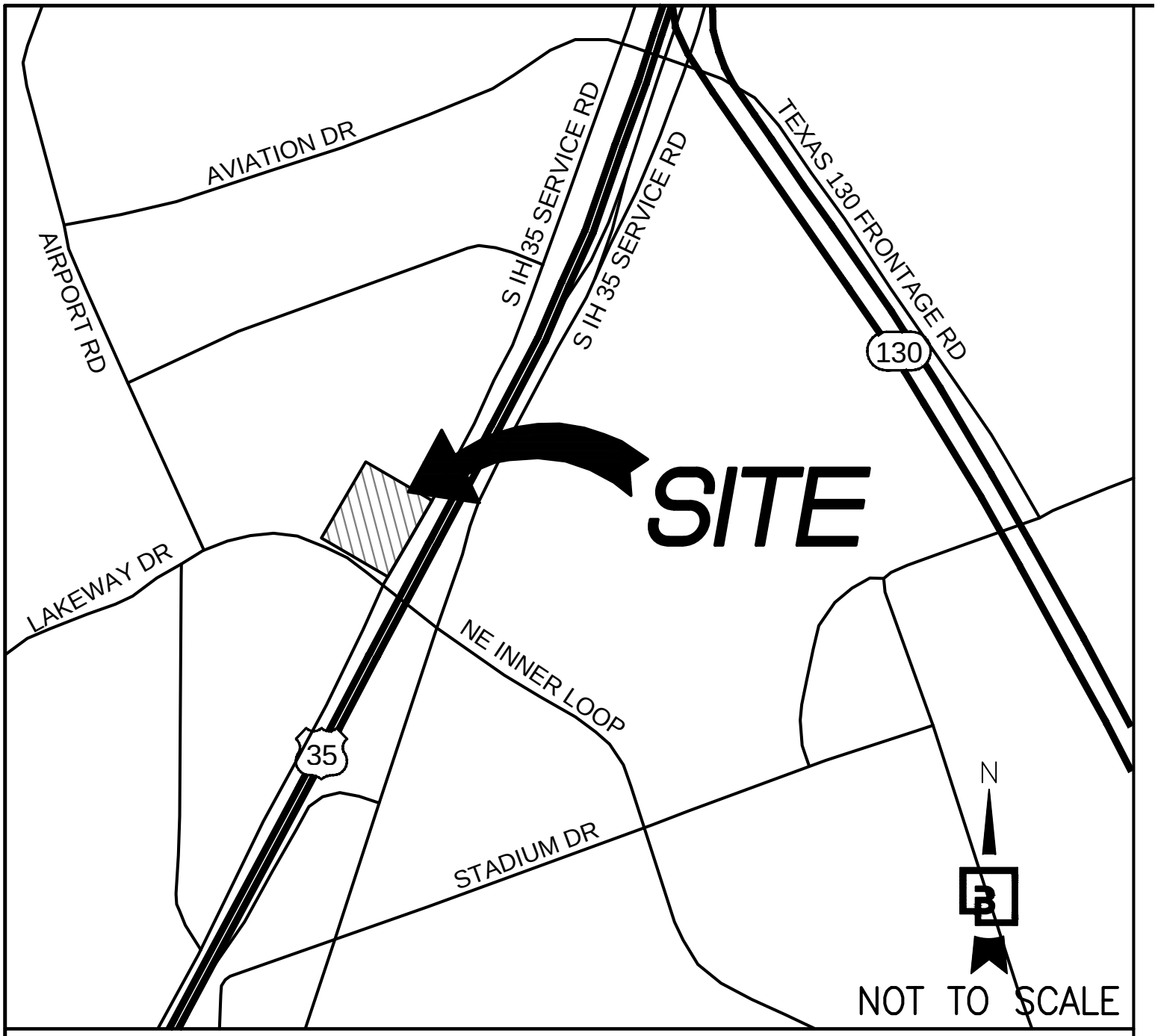
- ☐ For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
- ☐ For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
- ☒ For a UST Facility Plan or Modification or an AST Facility Plan or Modification, the total number of tanks or piping systems.
- ☐ A request for an exception to any substantive portion of the regulations related to the protection of water quality.
- ☐ A request for an extension to a previously approved plan.

19. ☒ Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

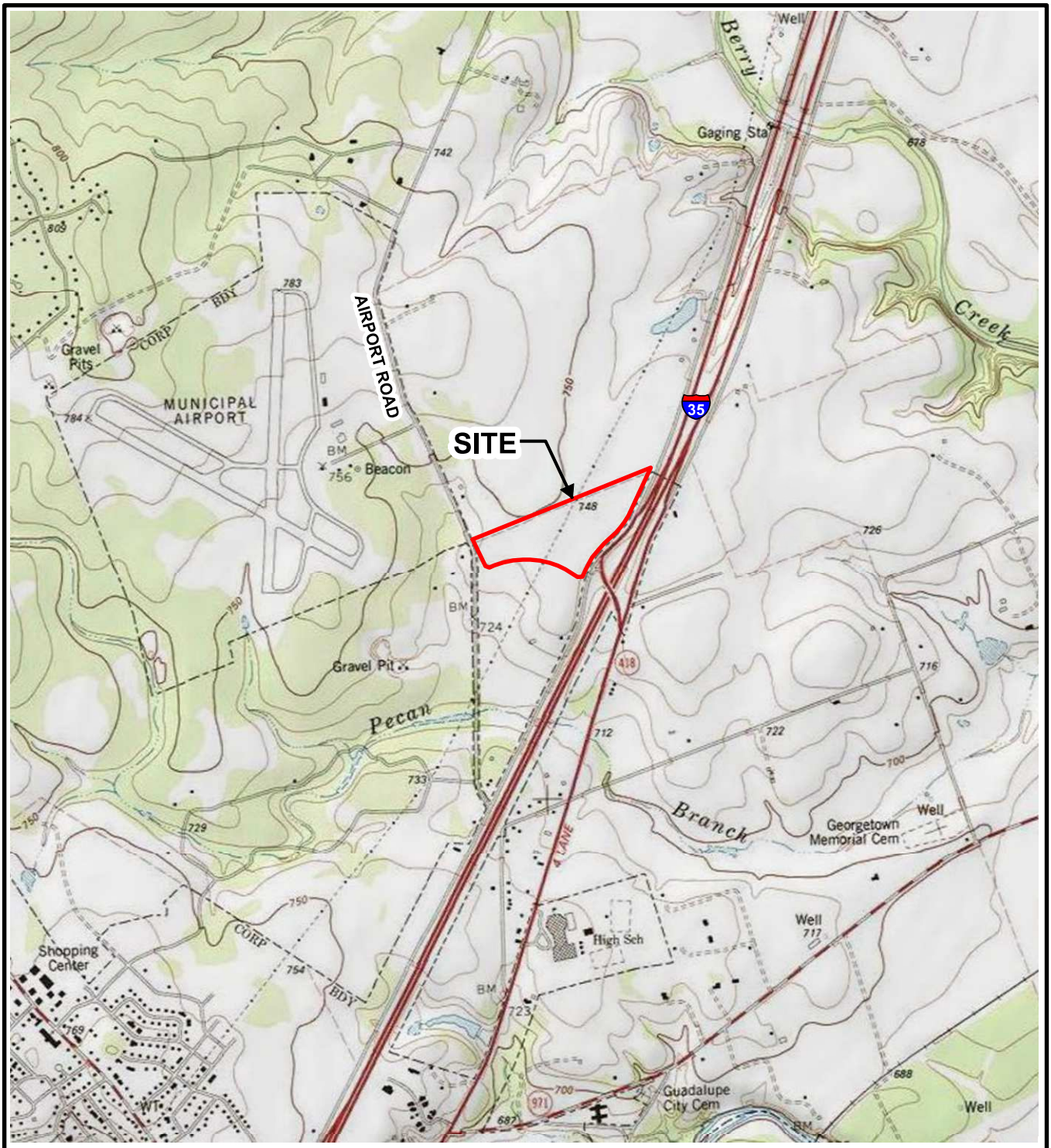
- ☐ TCEQ cashier
- ☒ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
- ☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

20. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

21. ☒ No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.



VICINITY MAP



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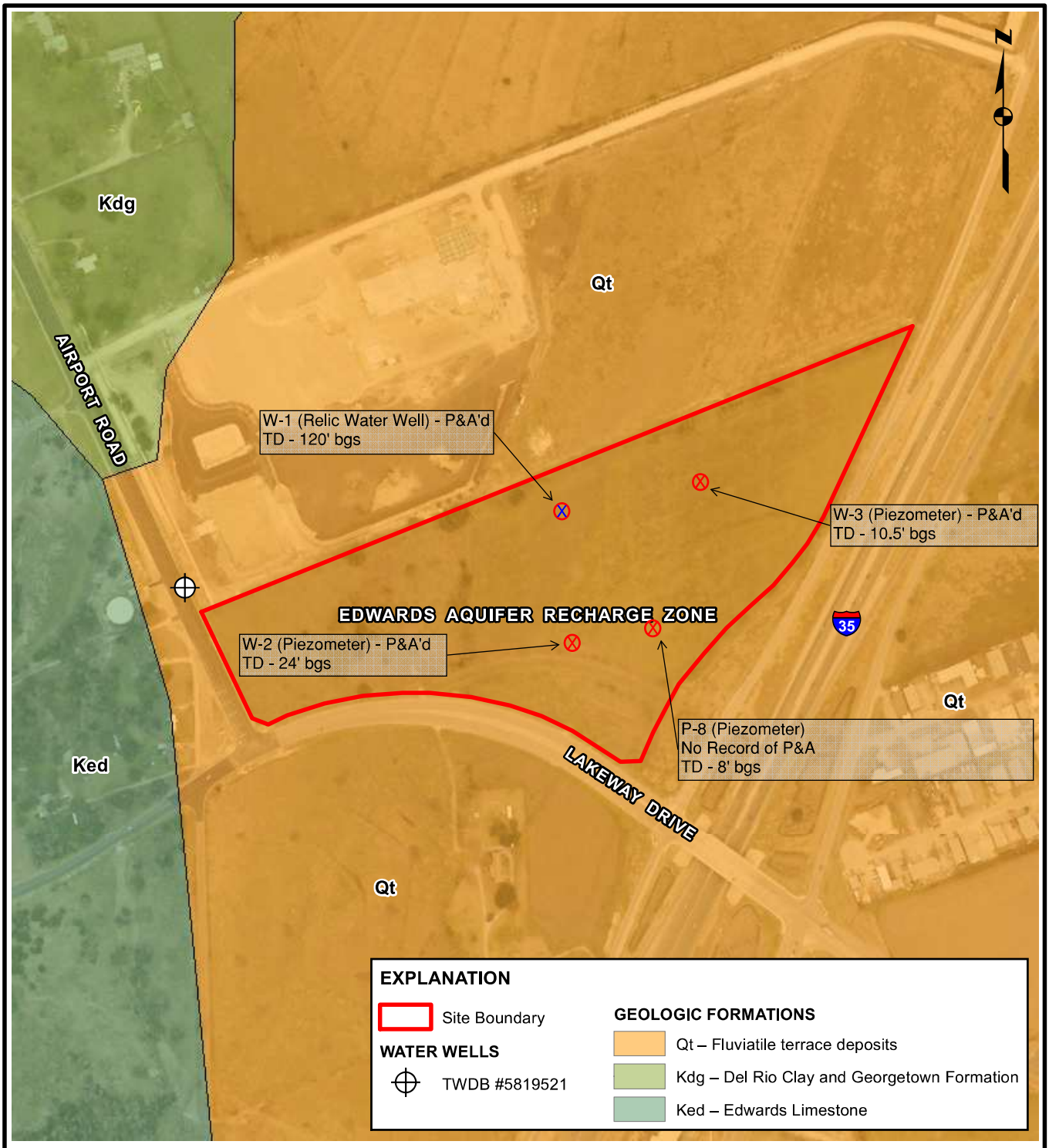
PROJECT NO. 20193536	
DRAWN: 3/8/2019	
DRAWN BY: JP	
CHECKED BY: AR	
FILE NAME: 20193536_Vic.mxd	

SITE VICINITY MAP

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PROPOSED COSTCO WHOLESALE WAREHOUSE CW# 17-0374
NWC OF LAKEWAY DRIVE AND I-35
GEORGETOWN, WILLIAMSON COUNTY, TEXAS

FIGURE
1

\\sandiego\sandiego-data\GRAPHICS_clients\COSTCO\20193536\mxd\20193536_Vic.mxd



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Geology: Geologic Database of Texas, Version 3.0, U.S. Geological Survey, \\b8653abc\abc02\Final_Data\Geologic Database of Texas\Geologic Database of Texas.mdb

0 250 500 1,000 Feet

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PROJECT NO.	20193536
DRAWN:	11/15/2019
DRAWN BY:	RA
CHECKED BY:	KB
FILE NAME:	20193536_Geo.mxd

GEOLOGIC MAP

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PROPOSED COSTCO WHOLESALE WAREHOUSE CW# 17-0374
NWC OF LAKEWAY DRIVE AND I-35
GEORGETOWN, WILLIAMSON COUNTY, TEXAS

FIGURE
2

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Soil Units: Web Soil Survey, Natural Resources Conservation Service

0 250 500 1,000 Feet

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PROJECT NO.	20193536
DRAWN:	11/15/2019
DRAWN BY:	RA
CHECKED BY:	KB
FILE NAME:	20193536_Soils.mxd

SOILS MAP

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PROPOSED COSTCO WHOLESALE WAREHOUSE CW# 17-0374
NWC OF LAKEWAY DRIVE AND I-35
GEORGETOWN, WILLIAMSON COUNTY, TEXAS

FIGURE
3

C:\Workspace\GIS_Projects\20193536\mxd\20193536_Soils.mxd

Attachment C – Project Description for Aboveground Storage Tank (AST)

Warehouse: 2201A North Interstate Highway 35, Georgetown, TX 78628
2-Diesel Emergency Generators shall be installed adjacent to the east facade of the Warehouse
Costco Location No. 1385
BCE Job No. 20818
MG2 Job No. 19-0183-01

The project site is 21.43 acres of undeveloped land with no existing structures to be demolished, located within the jurisdiction of the City of Georgetown. The Project area is zoned Planned Development (PD) in the City Code and the Fueling Station is an allowed use.

Overall site development includes a 160,437 SF warehouse and an 8,400 SF fuel dispensing canopy which were approved for Building, WPAP, and SCS Wastewater approval through the TCEQ Edwards Aquifer Recharge Program (WPAP 11002465, BLDGS 11002806, SCS 11002810).

2-Kohler Standby Generators, Model 600REOZVB, are planned for this location.

The Bill of Included Materials was submitted by Power Systems West, an authorized Kohler Distributer.

Configuration is as follows:

- A UL142 double-walled tank with secondary containment of 135% of total capacity
- Inner Tank capacity: 1033 gal
- Outer Tank capacity: 1395 gal
- Engine: Volvo 16.12L 6-cyl, turbocharged, EPA certified, 1800 rpm
- UL2200 Listed
- Output: 600kW/750kVA; 60-Ha
- Alternator: Standby 130C Rise
- Alternator Frame: 5M4032
- Volts: 480/277, 3-Ph, 4-W, 0.8-PF
- Set Mounted Radiator 50-deg C
- Heavy Duty Air Cleaner with restriction indicator
- Engine Block Heater: 4,0000W, 240-volt, 1-Ph
- Alternator Heater: 500-W, 240 volt

The concrete generator pad drains toward a 1000-gal capacity Sand Oil Separator with an Oil Trooper Coalescing Media Pack to separate the oil and/or diesel from the storm discharge and is being supplied by Park PipeUSA Central Texas.

Emergency response and spill procedures are included within the application.

GEOLOGIC ASSESSMENT

Geologic Assessment

Texas Commission on Environmental Quality

For Regulated Activities on The Edwards Aquifer Recharge/transition Zones and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

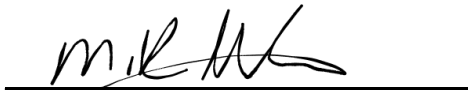
To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Mike McCraw, P.G. Telephone: (972) 868-5900

Date: 4-20-23 Fax: (972) 409-0008

Representing: Kleinfelder, Inc. (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



Regulated Entity Name: Costco Wholesale

Project Information

1. Date(s) Geologic Assessment was performed: November 18, 2019
2. Type of Project:
   - ☐ WPAP
   - ☐ SCS
   - ☒ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone
   - ☐ Contributing Zone within the Transition Zone

4. [X] **Attachment A - Geologic Assessment Table**. Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.

5. [X] Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
See Table 1 Below		

** Soil Group Definitions (Abbreviated)*

A. Soils having a high infiltration rate when thoroughly wetted.

B. Soils having a moderate infiltration rate when thoroughly wetted.

C. Soils having a slow infiltration rate when thoroughly wetted.

D. Soils having a very slow infiltration rate when thoroughly wetted.

6. [X] **Attachment B – Stratigraphic Column**. A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.

7. [X] **Attachment C – Site Geology**. A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.

8. [X] **Attachment D – Site Geologic Map(s)**. The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'

   Applicant's Site Plan Scale: 1" = 500 '
   Site Geologic Map Scale: 1" = 500 '
   Site Soils Map Scale (if more than 1 soil type): 1" = 500 '

9. Method of collecting positional data:

   [X] Global Positioning System (GPS) technology.
   [ ] Other method(s). Please describe method of data collection: _____

10. [X] The project site and boundaries are clearly shown and labeled on the Site Geologic Map.

11. [X] Surface geologic units are shown and labeled on the Site Geologic Map.

12. ☒ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.

    ☐ Geologic or manmade features were not discovered on the project site during the field investigation.

13. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.

14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

    ☒ There are 4 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)

    * ☒ The wells are not in use and have been properly abandoned.
    ☐ The wells are not in use and will be properly abandoned.
    ☐ The wells are in use and comply with 16 TAC Chapter 76.

    ☐ There are no wells or test holes of any kind known to exist on the project site.

*See Section 4.5 below for further details

Administrative Information

15. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

Table 1. Soil Series and Descriptions

Soil Series and Description	Map Unit Name and (ID)	Thickness (ft)	Prime Farmland Soil	Hydric Soil	Hydrologic Group*	Acres within Area	% of Area
The Crawford series consists of moderately deep, well drained, very slowly permeable soils that formed in clayey sediments that are underlain by indurated limestone bedrock. These soils are on broad nearly level or gently sloping uplands and slopes range from 0 to 5 percent.	Crawford clay, 0 to 1 percent slopes (CfA)	3.3 ft	Y	N	D	3.4	11.0%
The Denton series consist of deep, well drained, slowly permeable soils that formed in clayey materials over residuum weathered from limestone bedrock of lower Cretaceous age. These nearly level or gently sloping soils are on backslopes and footslopes of ridges. Slopes range from 0 to 5 percent.	Denton silty clay, 1 to 3 percent slopes (DnB)	6.7 ft	Y	N	D	3.4	11.0%
	Denton silty clay, 3 to 5 percent slopes (DnC)	6.7 ft	Y	N	D	0.01	0.01%
The Houston series consists of moderately well drained, slowly permeable, cyclic soils that formed in alkaline clays and chalk of the Blackland Prairies. These clayey soils have very high shrink-swell potential. Slope ranges from 0 to 8 percent.	Houston Black clay, 0 to 1 percent slopes (HoA)	6.7 ft	Y	N	D	5.1	16.4%

Table 1. Soil Series and Descriptions

The Krum series consists of very deep to clayey alluvium, well drained soils that formed in calcareous clayey alluvium derived from interbedded chalk and marl. These nearly level to moderately sloping soils are on risers and treads of stream terraces on river valleys and dissected plains. Slopes range from 0 to 8 percent.	Krum silty clay, 0 to 1 percent slopes (KrA)	6.0 ft	Y	N	C	14.3	45.7%
	Krum silty clay, 1 to 3 percent slopes (KrB)	6.0 ft	Y	N	C	5.0	15.9%

** Soil Group Definitions (Abbreviated)*

A. Soils having a high infiltration rate when thoroughly wetted.

B. Soils having a moderate infiltration rate when thoroughly wetted.

C. Soils having a slow infiltration rate when thoroughly wetted.

D. Soils having a very slow infiltration rate when thoroughly wetted.

GEOLOGIC ASSESSMENT
PROPOSED COSTCO WHOLESALE WAREHOUSE
CW# 17-0374
NWC OF LAKEWAY DRIVE AND I-35
GEORGETOWN, WILLIAMSON COUNTY, TEXAS
PROJECT NO: 20193536.002A

November 18, 2019
Revised March 2, 2023

7805 Mesquite Bend Drive, Suite 100, Irving, TX. 75063 p | 972.868.5900 f | 972.409.0008

November 18, 2019
Project No.: 20193536.002A

Costco Wholesale
C/o TJ Design Strategies, Ltd
Attention: Mr. Ted Johnson
2311 West 22nd Street, Suite 100
Oak Brook, Illinois

Subject: **Geologic Assessment**
Proposed Costco Wholesale Warehouse CW# 17-0374
NWC of Lakeway Drive and I-35
Georgetown, Williamson County, Texas

Dear Mr. Johnson,

We are pleased to submit our Contract Amendment No. 1 – Geologic Assessment report for a site located on the northwest corner (NWC) of Lakeway Drive and Interstate 35 in Georgetown, Williamson County, Texas. The scope of work on this project was presented in our November 7, 2019 proposal and subsequently approved by you as our client on behalf of Costco Wholesale.

Based on a preliminary site plan dated March 5, 2019 produced by Winkelmann & Associates, Inc. as well as aerial photographs, the site has an area of approximately 30.07-acres and currently consists of undeveloped/vacant land. As we understand, the site was purchased by Costco for development of a Costco Wholesale Warehouse.

We appreciate the opportunity to provide our services to you on this project. Please contact our Irving office at 972.868.5900, or Mr. Kirk Fraser, Kleinfelder's Program Manager, at 918.627.6161, if you have any questions regarding this report or if we can provide assistance with other aspects of the project.

Respectfully,

KLEINFELDER, INC.
Texas Registered Engineering Firm F-16438

Mike McCraw, P.G.
Project Manager on behalf of
Katherine Boniface Staff Geologist

Kirk Fraser
Project Manager

cc: Andy Franks

A Report Prepared for:

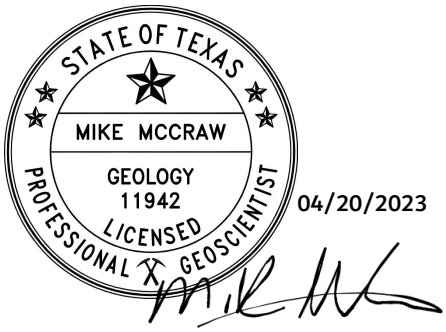
Costco Wholesale
C/o TJ Design Strategies, Ltd
2311 West 22nd Street, Suite 100
Oak Brook, Illinois

GEOLOGIC ASSESSMENT
PROPOSED COSTCO WHOLESALE WAREHOUSE
CW# 17-0374
NWC OF LAKEWAY DRIVE & I-35
GEORGETOWN, WILLIAMSON COUNTY, TEXAS

Prepared by:

KLEINFELDER, INC.

Mike McCraw, P.G.
Project Manager on behalf of
Katherine Boniface Staff Geologist



04/20/2023

Kirk Fraser
Program Manager

KLEINFELDER, INC.
Texas Registered Engineering Firm F-16438

7805 Mesquite Bend Drive
Suite #100
Irving, Texas 75063
Phone: 972.868.5900
Fax: 972.409.0008

November 18, 2019
Kleinfelder Project No.: 20193536.002A

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FIGURES

1. Site Vicinity Map
2. Site Geologic Map
3. Site Soils Map

GEOLOGIC ASSESSMENT
PROPOSED COSTCO WHOLESALE DEPOT CW# 17-0374
GEORGETOWN, WILLIAMSON COUNTY, TEXAS
NWC OF LAKEWAY DRIVE & I-35

1 INTRODUCTION

This report documents the methodology and findings of a Geologic Assessment for an approximate 34.02-acre site. The site is currently vacant undeveloped land. As we understand, the site was purchased by Costco for development of a Costco Wholesale Warehouse. Costco Wholesale Retail retained Kleinfelder to perform the work of this Geologic Assessment in general accordance with the Title 30 Texas Administrative Code (TAC) Chapter 213.

The Geologic Assessment included a review of publicly available databases and records, historical records associated with the site, aerial photographs, topographic maps, and a field survey. The purpose of this report is to identify geological and manmade features, potential pathways for contaminant movement to the Edwards Aquifer, and provide sufficient geologic information so that the appropriate Best Management Practices (BMPs) can be proposed in the Edwards Aquifer Protection Plan (EAPP).

Environmental Professional Statement: We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in Title 30 Texas Administrative Code (TAC) Chapter 213. We have the specific qualifications based on education, training, and experience to assess the nature, history, and setting of the subject property. We have developed and performed the appropriate inquires in general conformance with the standards and practices set forth in Title 30 Texas Administrative Code (TAC) Chapter 213, and subject to the stated limitations of this project.

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GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Geologic Assessment, Proposed Costco Wholesale Warehouse CW#17-0374, NWC of Lakeway Drive and I-35

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	MOD	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	≥40	<1.6	≥1.6	
W-1	30.677222°	-97.666389°	MB	30	HoA/Kdg	0.50	0.50	120.00	NA	0	NA	NA	F	5	35	<40		<1.6		Hilltop
W-2	30.676389°	-97.666111°	MB	30	KrA/Kdg	0.16	0.50	24.00	NA	0	NA	NA	F	5	35	<40		<1.6		Hilltop
W-3	30.677500°	-97.665000°	MB	30	KrA/Kdg	0.16	0.50	10.50	NA	0	NA	NA	F	5	35	<40		<1.6		Hilltop
P-8	30.676260°	-97.664980°	MB	30	KrB/Kdg	0.16	0.50	8.00	NA	0	NA	NA	F	5	35	<40		<1.6		Hilltop

* DATUM WGS-84

**N/A - Not Applicable, No Features On-Site

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING	
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials

12 TOPOGRAPHY
Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, I understood, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field.

My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Date 03/02/2023

Sheet 1 of 1

TCEQ-0585-Table (Rev. 10-01-04)

3 ATTACHMENT B – STRATIGRAPHIC COLUMN

Series	Group	Stratigraphic Unit		Hydrologic Unit	Maximum Thickness (feet)
Gulf	Navarro			Navarro and Taylor Group	850
	Taylor				
	Austin			Austin Chalk	450
Comanche	Eagle Ford				50
	Washita	Buda Limestone			50
		Del Rio Clay			60
		Georgetown Formation		Edwards aquifer	100
	Fredericksburg	Edwards Limestone			200
		Comanche Peak Limestone			50
		Walnut Formation			150
	Trinity	Paluxy Formation		Upper Trinity	10
			Glen Rose Upper Member		450
			Glen Rose Lower Member	Middle Trinity	450
			Travis Peak Hensell Sand Member		100
			Travis Peak Cow Cr. Limestone Member		100
			Travis Peak Hammett Shale Member		50
			Travis Peak Sligo Member	Lower Trinity	150
			Travis Peak Hosston Member		850

The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.

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STRATIGRAPHIC COLUMN

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PROPOSED COSTCO WHOLESALE WAREHOUSE CW# 17-0374
NWC OF LAKEWAY DRIVE AND I-35
GEORGETOWN, WILLIAMSON COUNTY, TEXAS

FIGURE
4

4 ATTACHMENT C – SITE GEOLOGY

4.1 INTRODUCTION AND PURPOSE

As we understand, the site was purchased by Costco for development of a Costco Wholesale Warehouse. Costco Wholesale Retail retained Kleinfelder to perform the work of this Geologic Assessment in general accordance with the Title 30 Texas Administrative Code (TAC) Chapter 213. This report documents the methodology and findings of a Geologic Assessment for an approximate 34.02-acre site. The site is currently vacant land, please refer to Figure 1 for reference.

The following discussion is a site-specific assessment of existing geological conditions and potential aquifer recharge features within the project boundaries. The purpose of this document is to complete a Geologic Assessment compliant with the requirements of Title 30, Texas Administrative Code (TAC) Chapter 213, related to the protection of the Edwards Aquifer Recharge Zone and was prepared in accordance with the revised *Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones* (TCEQ-0585) (TCEQ, 2004). The Geologic Assessment is a component of a Water Pollution Abatement Plan (WPAP), which will be completed based on the final design of the project. The WPAP identities measures that will be implemented to protect the water quality of the aquifer.

This Geologic Assessment report focuses on the project area (Figure 1) defined as the area where the mapped extent of the surface expression of the Edwards Aquifer Recharge Zone intersects the site, which is 100% of the site footprint.

4.2 GEOLOGIC SETTING

The following sections address the geology and soils within the study area. The site is bounded by undeveloped vacant land and construction activities to the north, Lakeway Drive followed by undeveloped vacant land to the south, undeveloped land and I-35 Frontage Road followed by I-35 and vacant land/commercial properties to the east, and undeveloped land followed by Airport Road and single-family residences to the west. Surrounding properties consist primarily of undeveloped vacant land.

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Edwards Aquifer Recharge Zone

Based on available published geologic maps and field observations, the geologic units mapped within the Edwards Aquifer Recharge Zone (EARZ) within the site boundaries include the following from the youngest to the oldest: Quaternary Fluviatile terrace deposits (Qt), and the Edwards Limestone (Ked).

Geologic publications including reports and published maps were used in preparation of this report. The Texas Speleological Survey (TSS) database was queried for possible known, or existing recharge features within the boundaries of the site. The TSS did not find any records for existing recharge features within the site boundaries (TSS, 2019).

As previously discussed, the subject site lies within the environmentally sensitive area known as the Edwards Aquifer Recharge Zone. Numerous enhanced karst features occur within the broader region, and as a result the Edwards Aquifer is a very productive groundwater aquifer. Karst features are formed from the dissolution of soluble rocks, including limestone, and are characterized by sinkholes, caves, and underground drainage systems. The majority of the recharge into the Edwards Aquifer occurs where surface water flows over faults, fractures, and karst features that have been enhanced via solution.

The Edwards Aquifer contains several zones, which are based on how water drains in these areas; these include the Recharge Zone, Transition Zone, and Contributing Zone. The Recharge Zone includes an area where highly faulted and fractured Edwards Limestone outcrops occur at the surface, providing a means for large quantities of water to flow into the aquifer with little filtration. The Transition Zone contains area where limestone that overlies the aquifer are faulted and fractured and include caves and sinkholes. Within this area, it is possible for surface water to flow into the Edwards Aquifer below. The Contributing Zone consists of areas of non-Edwards Aquifer limestones, which outcrop at a higher elevation, causing water to drain to stream courses that overlie the Recharge Zone.

The subject site is located in the Recharge Zone of the Northern Segment of the Edwards Aquifer. Groundwater in this area generally flows from the northeast to the southwest towards a few focused discharge points and recharge is typically focused at faults and karst features, such as caves and sinkholes. Within the subject site, the groundwater hydrology is largely influenced by the karst units of the Edwards Group.

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4.3 INVESTIGATION METHODS

The following investigation methods and activities were used to develop this technical memorandum:

- Review of data and literature to determine the regional geology and any known geologic features associated with the subject site;
- Review of existing geological field reports, cave studies, and correspondence regarding geologic features on the subject site, including those previously referenced, and;
- Analysis of collected field data.

Reconnaissance of the site included the methodology described in Texas Commission on Environmental Quality's (TCEQ's) (2004) *Instructions to Geologists for Geologic Assessments.* The geologic assessment was conducted by Mr. Adrian Rodriguez of Kleinfelder on February 25, 2019. Refer to Figure 2, the Site Geologic Map, for locations of features referenced in this section.

Specific publications and data sources reviewed and utilized in this investigation include the following list and those included in References:

- Bureau of Economic Geology (BEG) (1972), which describes the Edwards Group, as present on subject site;
- BEG Geologic Atlas of Texas, Austin Sheet (BEG, 1981);
- Soil descriptions were compiled from the Web Soil Survey of the U.S. Department of Agriculture (USDA) (2015a).
- Texas Water Development Board (TWDB) and TCEQ water well data were used to locate water wells in proximity of the subject site;
- Federal Emergency Management Agency (FEMA), which details hydrological flood plain information.
- Texas Speleological Survey (TSS), 2008. Written communication regarding karst features near the subject site.

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4.4 SURFACE WATER

Kleinfelder reviewed ESRI data, NHD data, and the Texas Water Development Board, Report 189 for mapped springs within Williamson County. Based on the records reviewed and site reconnaissance, the closest mapped spring is approximately 0.9 miles from the site. There does not appear to be a spring on, or near, the site.

Kleinfelder reviewed available information, through the Federal Emergency Management Agency (FEMA), regarding hydrological flood plain information potentially associated with the site. Based on a review of FEMA Flood Maps 48491C0295E, the site is located in Zone X determined to be outside the 500-year flood plain (area of minimal flood hazard).

According to the 2013 Georgetown Topographic Map and site observations, there is no surface water on the site. The closest body of water to the site is a creek located approximately 2,000 feet south of the site.

Kleinfelder reviewed Natural Area Inventory sites, dedicated Nature Preserves, and registered Land and Water Reserves in the vicinity of the project location listed in available government records reviewed within one-mile radius of the site. Based on the records reviewed, the closest mapped wetland (freshwater emergent wetland) is located approximately 2,000 feet south of the site. Additionally, a freshwater pond is located approximately 2,000 feet north of the site. No obvious wetlands were observed on site and no land/water preserves were noted during the field survey.

4.5 WELL LOGS

According to the EDR Government Records Report, there are approximately 31 water / monitoring wells within a one-mile radius of the proposed Costco site property. No oil/gas wells are noted onsite or within 1-mile of the site. A search of the Texas Water Development Board (TWDB) Groundwater Database (GEDB) was completed (2019). Several wells were located near the property boundaries, but none are located within the subject site boundaries. One well in the TWDB database was identified within 50ft of the survey area, TWDB #5819521. The TWDB GWDB information on this well indicated that is at an elevation of 729 feet and owned by the City of Georgetown for the use of public water supply. The well penetrated the

Edwards and Associated Limestones. The location of the well according to TWDB GWDB is mapped on Figure 2.

During the field survey, one (1) PVC pipe (W-1) was observed protruding from the ground on the central portion of the site. According to Mr. Dennis Busch, current site owner, the feature may have been associated with a former water well but he was not certain. Based on a review of the Texas Water Development Board records and correlation from the field survey, the well was 120' in depth and was plugged and abandoned by Austin Geo-Logic in October 2022. The location of the suspected water well is noted on Figure 2 – Geologic Map.

In addition, Kleinfelder conducted a Geotechnical Investigation at the site in February 2019 and installed three (3) piezometers at depths of 8 feet bgs (P-8), 10.5 feet bgs (W-3), and 24 feet bgs (W-2). The locations of the three (3) Piezometers are noted on Figure 2 – Geologic Map. Based on a review of Texas Water Development Board records, two (2) of the three (3) piezometers (W-2 and W-3) were plugged and abandoned by Austin Geo-Logic in October 2022. No plugging or abandonment records are available for P-8.

Kleinfelder reviewed the Texas Railroad Commission Public GIS Map Viewer for a search of oil and gas wells located onsite. A review of the Public GIS Map Viewer did not reveal oil/gas wells or pipelines located onsite or on adjoining properties.

4.6 FIELD SURVEY

The initial site reconnaissance was performed by Mr. Adrian Rodriguez of Kleinfelder on February 25, 2019. Transects were walked across the site. No bedrock outcrops were observed, and no unusual topography or structural features were observed. Additional onsite activities were performed by Mr. Adrian Rodriguez of Kleinfelder from February 26, 2019 to March 4, 2019. These activities involved geotechnical drilling, in which Kleinfelder drilled fifty-eight (58) borings throughout the site to determine site geology.

Based on the drilling investigation, the samples indicate the site to be underlain by Terrace Deposits overlying the Georgetown Limestone Formation. Terrace Deposits typically consist of gravel, sand, silt, and clay in various proportions. The Georgetown Limestone Formation typically consists of fat and lean clay overlying weathered and unweathered limestone bedrock. The

limestone encountered during the drilling investigation was interbedded with clay layers. No evidence of dissolution or active karst processes was observed.

4.7 INFORMATION REPORTED BY CLIENT

The client provided Kleinfelder with site location information prior to commencing work. This information assisted Kleinfelder in identifying the site location, site borders, and history of the site. Costco Wholesale provided information including property documents for the parcel contained in this tract. Kleinfelder has reviewed the property documents, and the findings of these documents are summarized below.

Edwards Aquifer Recharge Zone Water Quality Ordinance, Performed by Capital Environmental, Inc., dated January 18, 2015

- The letter report was prepared for the site in response to the City of Georgetown Ordinance Number 2013-59. The Ordinance applies to all property within the corporate limits of the City of Georgetown and within the limit of its ETJ. The Ordinance adopted local regulations intended to protect water quality for spring and stream features in the Edwards Aquifer recharge zone and to identify and protect habitat of the Georgetown Salamander.
- No springs or streams were identified in connection with the subject property.
- The subject property is not located within an Occupied Site as defined in the Ordinance. The subject property, therefore, is not located within a City of Georgetown mapped No-Disturbance Zone (Red Zone), therefore, the establishment of a City of Georgetown "Minimal-Distance Zone (Orange Zone) is not warranted.
- No springs or streams are identified in connection with the subject property. Therefore, a stream buffer coincidental with the FEMA 1% Floodplain to protect water quality for spring and stream features in the Edwards Aquifer Recharge Zone in accordance with the Ordinance is not warranted.
- Based on the above conditions, no spring and/or stream buffers are required to be shown on Plats, Site Plan and infrastructure Construction Plans.

5 ATTACHMENT D – SITE GEOLOGIC MAPS

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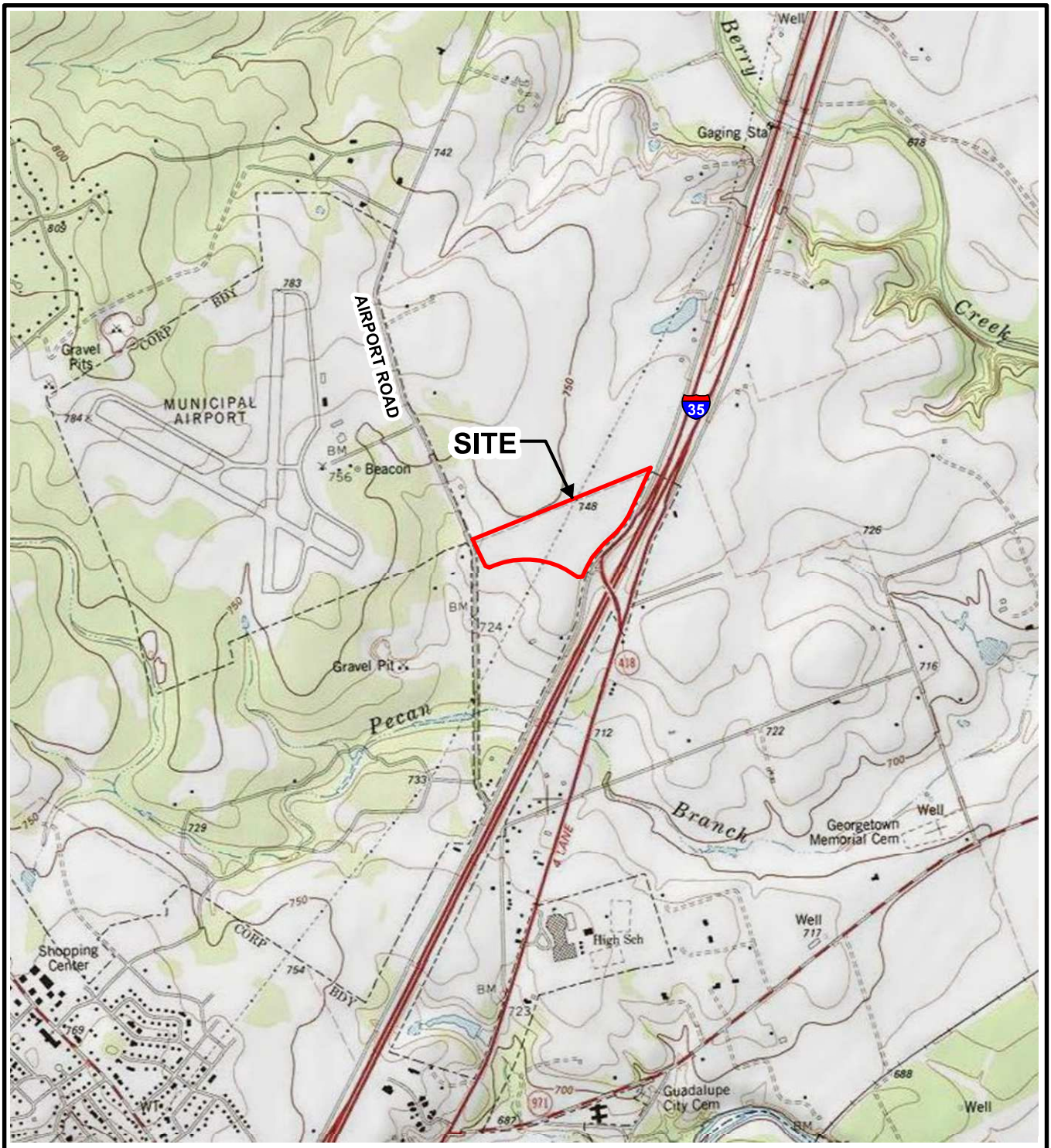

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0 1,000 2,000 4,000 Feet

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SITE VICINITY MAP

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PROPOSED COSTCO WHOLESALE WAREHOUSE CW# 17-0374
NWC OF LAKEWAY DRIVE AND I-35
GEORGETOWN, WILLIAMSON COUNTY, TEXAS

FIGURE
1

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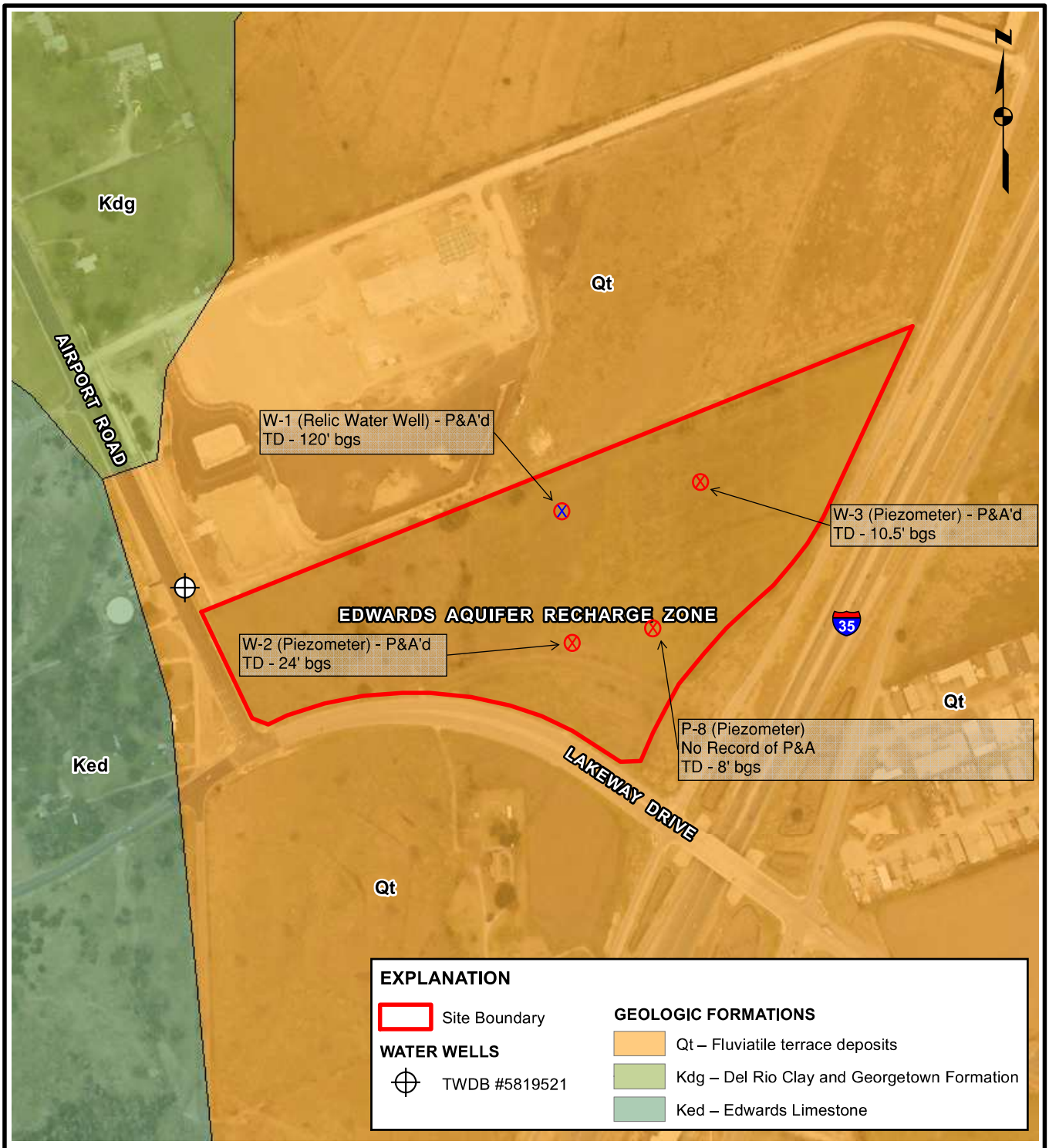

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Geology: Geologic Database of Texas, Version 3.0, U.S. Geological Survey, \\b8653abc\abc02\Final_Data\Geologic Database of Texas\Geologic Database of Texas.mdb

0 250 500 1,000 Feet

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GEOLOGIC MAP

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PROPOSED COSTCO WHOLESALE WAREHOUSE CW# 17-0374
NWC OF LAKEWAY DRIVE AND I-35
GEORGETOWN, WILLIAMSON COUNTY, TEXAS

FIGURE
2

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Soil Units: Web Soil Survey, Natural Resources Conservation Service

0 250 500 1,000 Feet

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FILE NAME:	20193536_Soils.mxd

SOILS MAP

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PROPOSED COSTCO WHOLESALE WAREHOUSE CW# 17-0374
NWC OF LAKEWAY DRIVE AND I-35
GEORGETOWN, WILLIAMSON COUNTY, TEXAS

FIGURE
3

C:\Workspace\GIS_Projects\20193536\mxd\20193536_Soils.mxd

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Environmental Data Resources, Inc. (2019). EDR Historical Topo Map Report, NWC of Lakeway Drive & I-35, Georgetown, TX 78628. Inquiry Number: 5566609.4, dated February 19, 2019.

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United States Fish and Wildlife Service – National Wetlands Inventory Mapper accessed October 15, 2019, https://www.fws.gov/wetlands/data/mapper.html

KLEINFELDER 7805 Mesquite Bend Drive, Suite 100, Irving, TX. 75063 p | 972.868.5900 f | 972.409.0008

7 PROFESSIONAL AUTHENTICATION

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in Section 312.10 of 40 CFR 312. We have the specific qualifications based on education, training, and/or experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in CFR Part 312.

Mike McCraw, P.G
Project Manager on behalf of
Katherine Boniface Staff Geologist

C. Kirk Fraser
Program Manager

The resumes of the above-listed environmental professionals are available upon request.

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AST FACILITY PLAN APPLICATION

Aboveground Storage Tank Facility Plan Application

Texas Commission on Environmental Quality

For Permanent Storage on The Edwards Aquifer Recharge and Transition Zones And Relating to 30 TAC §213.5(e), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Aboveground Storage Tank Facility Plan Application** is hereby submitted for TCEQ review and Executive Director approval. The application was prepared by:

Print Name of Customer/Agent: M. Alexia Inigues, Authorized Agent for Costco Wholesale

Date: 4/28/2023

Signature of Customer/Agent:

Regulated Entity Name: Costco Warehouse (Loc. No. 1385)

Aboveground Storage Tank (AST) Facility Information

1. Tanks and substance stored:

Table 1 - Tank and Substance Storage

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
1	1,033	Diesel Fuel	Steel
2	1,033	Diesel Fuel	Steel
3			
4			

AST Number	Size (Gallons)	Substance to be Stored	Tank Material
5			

Total x 1.5 = 3,099 **Gallons**

2. [X] The AST will be placed within a containment structure that is sized to capture one and one-half (1 1/2) times the storage capacity of the system. For facilities with more than one tank system, the containment structure is sized to capture one and one-half (1 1/2) times the cumulative storage capacity of all systems. (Including double-walled tanks and ground containment)

   [X] **Attachment A - Alternative Methods of Secondary Containment**. Alternative methods for providing secondary containment are proposed. Specifications that show equivalent protection for the Edwards Aquifer are attached.

3. Inside dimensions and capacity of containment structure(s):

Table 2 - Secondary Containment

	Length (L) (Ft.)	Width (W) (Ft.)	Height (H) (Ft.)	L x W x H = (Ft3)	Gallons
Inner Wall	11' 9.5"	5' 2"	2' 2"	138' 5"	1,033
Outer Wall	15' 6"	5' 4"	2' 3"	186' 11"	1,395
					x2 tanks

Total: 2,790 **Gallons**

4. [X] All piping, hoses, and dispensers will be located inside the containment structure.

   [ ] Some of the piping to dispensers or equipment will extend outside the containment structure.
   - [ ] The piping will be aboveground
   - [ ] The piping will be underground

5. [X] The containment area must be constructed of and in a material impervious to the substance(s) being stored. The proposed containment structure will be constructed of Concrete Pad, Steel Oil/Water Separator

6. [X] **Attachment B - Scaled Drawing(s) of Containment Structure**. A scaled drawing of the containment structure that shows the following is attached:

   - [X] Interior dimensions (length, width, depth and wall and floor thickness).
   - [X] Internal drainage to a point convenient for the collection of any spillage.
   - [X] Tanks clearly labeled.
   - [X] Piping clearly labeled.
   - [ ] Dispenser clearly labeled. (Fill box not available on standard tank)

Site Plan Requirements

Items 7 - 18 must be included on the Site Plan.

7. [X] The Site Plan must have a minimum scale of 1" = 400'.

   Site Plan Scale: 1" = 60 '.

8. 100-year floodplain boundaries:

   [ ] Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.

   [X] No part of the project site is located within the 100-year floodplain.

   [X] The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA, 12/20/2019

9. [X] The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.

   [ ] The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.

10. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

    [X] There are 3 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply):

    [X] The wells are not in use and have been properly abandoned.

    [ ] The wells are not in use and will be properly abandoned.

    [ ] The wells are in use and comply with 16 TAC § 76.

    [ ] There are no wells or test holes of any kind known to exist on the project site.

11. Geologic or manmade features which are on the site:

    [ ] All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.

    [X] No sensitive geologic or manmade features were identified in the Geologic Assessment.

    [ ] **Attachment C - Exception to the Geologic Assessment**. A request and justification for an exception to a portion of the Geologic Assessment is attached.

12. [X] The drainage patterns and approximate slopes anticipated after major grading activities.

13. [X] Areas of soil disturbance and areas which will not be disturbed.

14. [X] Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

15. [X] Locations where soil stabilization practices are expected to occur.

16. [ ] Surface waters (including wetlands).

    [X] N/A

17. [ ] Locations where stormwater discharges to surface water or sensitive features.

    [X] There will be no discharges to surface water or sensitive features.

18. [X] Legal boundaries of the site are shown.

Best Management Practices

19. [X] Any spills must be directed to a point convenient for collection and recovery. Spills from storage tank facilities must be removed from the controlled drainage area for disposal within 24 hours of the spill.

    [ ] In the event of a spill, any spillage will be removed from the containment structure within 24 hours of the spill and disposed of properly.

    [X] In the event of a spill, any spillage will be drained from the containment structure through a drain and valve within 24 hours of the spill and disposed of properly. The drain and valve system are shown in detail on the scaled drawing.

20. [X] All stormwater accumulating inside the containment structure will be disposed of through an authorized waste disposal contractor.

    [ ] Containment area will be covered by a roof.

    [X] Containment area will not be covered by a roof.

    [X] A description of the alternate method of stormwater disposal is submitted for the executive director's review and approval and is attached.

21. [X] **Attachment D - Spill and Overfill Control**. A site-specific description of the methods to be used at the facility for spill and overfill control is attached.

22. [X] **Attachment E - Response Actions to Spills**. A site-specific description of the planned response actions to spills that will take place at the facility is attached.

Administrative Information

23. A Water Pollution Abatement Plan (WPAP) is required for construction of any associated commercial, industrial or residential project located on the Recharge Zone.

    [X] The WPAP application for this project was approved by letter dated 3/11/22. A copy of the approval letter is attached at the end of this application. (11002809 & 11002465)

    [ ] The WPAP application for this project was submitted to the TCEQ on _____, but has not been approved.

    [ ] A WPAP application is required for an associated project, but it has not been submitted.

☐ There will be no building or structure associated with this project. In the event a building or structure is needed in the future, the required WPAP will be submitted to the TCEQ.

☐ The proposed AST is located on the Transition Zone and a WPAP is not required. Information requested in 30 TAC 213.5 subsection (b) (4)(B) and (C) and (5) is provided with this application. (Forms TCEQ-0600 Permanent Stormwater Section and TCEQ-0602 Temporary Stormwater Section or Stormwater Pollution Prevention Plan/SW3P).

24. ☒ This facility is subject to the requirements for the reporting and cleanup of surface spills and overfills pursuant to 30 TAC 334 Subchapter D relating to Release Reporting and Corrective Action.

25. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

26. ☒ Any modification of this AST Facility Plan application will require executive director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

POWER SYSTEMS WEST

Submittal Package

Contacts:

Kevin Lee
General Manager, Generators Sales
D: 208.342.6541
M: 208.859.7451
E: Kevin.Lee@PowerSystemsWest.com

Bruce Yee
Kohler Power Systems
Engineered Solutions Manager
M: 360.979.9343
E: Bruce.Yee@kohler.com

GENERATORS

PARTS

SERVICE

Powering the West
Since 1955

KOHLER. IN POWER. SINCE 1920. | AUTHORIZED DISTRIBUTOR

Costco Wholesale
Attn: Ron van Zuylen
999 Lake Drive, Suite 200
Issaquah, WA 98027

Power Systems West is pleased to submit the following submittals: Costco TX Stores

BILL OF INCLUDED MATERIALS

Kohler Standby Generator Model Number: 600REOZVB

Generator Configuration:

Engine: Volvo 16.12L 6-Cyl, Turbocharged, EPA Certified, 1800rpm
Fuel Type: Diesel
UL2200 Listed
Output: 600kW/750kVA; 60-Hz
Alternator: Standby 130C Rise
Alternator Frame Size: 5M4032
Volts: 480/277, 3-Ph, 4-W, 0.8-PF
Set Mounted Radiator 50-deg C
Electronic Governor
Heavy Duty Air Cleaner w/restriction indicator
Engine Block Heater: 4,000-W, 240-volt, 1-Ph
Alternator Heater: 500-W, 240-volt

Controller Configuration:

APM603 Paralleling Controller with digital meters and gauges
Engine Run Relay
Controller Common Failure Relay
Dry Contacts; 10SPDT, 10A
RSA III, Remote Annunciator (Loose Accessory)

Electrical System Configuration:

Starting battery, 2/12-V, rack and cables
Battery charger 10-Amp
Battery Charger Temperature Compensation Sensor
Mainline breaker: 1,000-Amp Electronic, 100% Rated, LSI

PORTLAND 6110 N Cutter Circle, Portland, OR 97217 503.224.3623
SEATTLE 2004 48th Ave. Ct. E Fife, WA 98424 253.517.1701
BOISE 4499 Market St. Boise, ID 83705 208.342.6541
SALT LAKE CITY 3738 West 2340 S, Suite E Salt Lake City, UT 84120 801.886.1424
DENVER 3233 Oakland St. Aurora, CO 80010 303.360.7110

Enclosure & Diesel Fuel Configuration:

Sound Attenuated, Aluminum Weather Protected Enclosure (76dBA @ 23')
-Internally Mounted Critical Muffler and Exhaust System
-Load Center includes:
+ Qty-2 3-Way Switches
+ Qty-4 Incandescent Lights
+ Qty-2 Receptacles GFCI
+ Wired Block Heater
+ Wired Generator Heater
+ Wired Battery Charger

Texas Sub-base Diesel Tank Option: UL142 Fuel Tank, 1,000 gallon, 24hr
-Power Armor Coating, Leak alarm, high/low fuel alarms, emergency & normal vent

Additional Items

- Freight to Jobsite is Included
- 1 Set, Operation and Maintenance Manuals (Gen and ATS)
- 5 Year Kohler Comprehensive Warranty
- Start Up, Testing, and Training

Approximate Factory Lead Times:

Generators (18-22 weeks after release)

Project Specific Exceptions and Clarifications

1. No written specs or drawings were provided, customer must verify bill of materials
2. Transfer Switch(es) or any related Switchboards are not included in bill of materials
3. Diesel fuel for testing and final provided by others
4. Permitting, installation, off-loading and placement are not included

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General Exceptions and Clarifications

1. Off-loading and placement at the job site is excluded.
2. All fuel, fuel piping and connections are excluded.
3. No retainage is allowed.
4. Start-up testing and warranty validation includes one trip to jobsite during normal working hours. If equipment is not ready for start-up when we arrive at the jobsite, there may be additional charges for a return trip.
5. Kohler factory recommended field testing provided. NETA ATS testing, or any other 3rd party testing not included unless otherwise noted.
6. Training to be performed at start-up or subject to additional charges.
7. Additional O & M's will be $50.00 net each.
8. All piping, wiring, anchoring, anchor bolts and permits are by others.
9. Equipment is shipped FOB factory, with freight prepaid and allowed to the job site unless otherwise noted.
10. Compliance with National Electrical Code, NFPA, IFC, and state and local fire codes is the responsibility of the installing contractor. Special fuel tank labeling and venting/ filling equipment may be required, but is excluded unless otherwise noted.
11. Breaker coordination studies excluded. Alternate breakers required as a result of a coordination study are the responsibility of others.
12. Local codes may require outdoor generators to have a Service Rated disconnect. We are not providing a Service Rated disconnect unless it is specifically noted in this quotation.
13. TVSS devices for the generator or transfer switch(es) are excluded unless otherwise noted.
14. IBC seismic certification excluded unless otherwise noted.
15. Prices do not include any applicable taxes.
16. All orders are subject to Power Systems West Terms and Conditions.
17. Shipments are subject to manufacturer's lead times and transit times. Power Systems West assumes no responsibility for delays that are beyond our control and will not pay for liquidated damages.

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Power Systems West (PSW) – Terms & Conditions

1. WARRANTIES. To the extent that the Goods may be covered by manufacturers' warranty, PSW hereby assigns all rights & benefits under such to Buyer, if assignable, and undertakes to assist Buyer in the coordination of any claims under such warranties. Seller makes no further warranty of any kind with respect to the Goods. PSW DISCLAIMS ANY AND ALL WARRANTIES. THERE ARE NO EXPRESS WARRANTIES AND THERE ARE NO IMPLIED WARRANTIES INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND THERE ARE NO OTHER IMPLIED OR EXPRESS WARRANTIES OF ANY NATURE WHATSOEVER.

2. LIMITATION OF PSW'S LIABILITY. Other than the remedy set forth in this paragraph, Customer agrees that no damages, direct, consequential, liquidated, incidental, or other damages or remedy of any kind arising by reason of or related to this Equipment whether arising out of contract, warranty, late or non-delivery, negligence, strict liability, or tort shall now or any time in the future be recoverable from PSW or any of its agents. Customer assumes all risks inherent in the possession or operation of the Equipment. Customer's right, now existing or arising at any time in the future, to recover such damages is hereby fully, finally, irrevocably and unconditionally waived, released and discharged. **Notice of any defect in the Work or Equipment shall be made within 24 hours of the act or omission giving rise to the defect.** The sole and exclusive remedy is replacement of the nonconforming goods or refund of that portion of Customer's payment attributable to such goods at PSW's sole option.

3. Payment Terms. Upon credit approval, full payment is due 30 days from invoice date, unless otherwise agreed to by both parties in writing. **There shall be NO retainage**. Payments not made on their due date shall accrue interest at the rate of 18% per annum. A cancellation charge of 20% of the price will be imposed if customer cancels order without prior written consent of PSW. **PSW must receive 100% payment before start-up services will be performed** (failure to complete proper, authorized startup procedures may void any manufacturer warranty). Terms may not be changed except by written agreement of the parties.

4. Shipping and Delivery. All Equipment shall be shipped F.O.B. manufacturer's factory unless otherwise agreed in writing by PSW and Customer. PSW is not responsible for goods lost or damaged in transit. In the event PSW agrees to delay shipment at Customer's request, Customer is responsible for payment of any storage costs. PSW does not agree, will not agree to and is not obligated to provide any specific goods or any delivery dates or times for any goods. All orders are subject to availability to PSW at its then existing locations, sources, suppliers and costs. All delivery dates and times which may be provided, if any, are estimates only and do not establish agreed delivery date(s).

5. Indemnity and Hold harmless. To the fullest extent permitted by law, Customer shall fully and forever indemnify, defend (with counsel reasonably acceptable to PSW) and hold PSW's employees, directors, successors and assigns harmless from any damage, claim, loss, expense and attorney fees (including those prior to any action, in an action and on any appeal) related to the performance or non-performance of Customer's obligations under this Agreement; the ownership, performance or operation of the Equipment; or PSW's liability, if any, under CERCLA, RCRA, or any other federal or state statute related to toxic, hazardous or other dangerous substances.

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Thank you for the opportunity to offer quality Kohler products and our service. For over 75 years, Kohler has been recognized as a leader in the manufacture of standby generator systems. By choosing a Kohler generator provided by Power Systems West, you can be assured you will receive the highest quality standby power system available. Power Systems West has specialized in providing and servicing generator systems in the Northwest for over 50 years. Power Systems West – your best choice for power. If you have any questions, please feel free to call or e-mail.

Kevin Lee
(208) 484-4316 – Cell
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KOHLER®

Spec Sheets

KOHLER®

Model: 600REOZVB

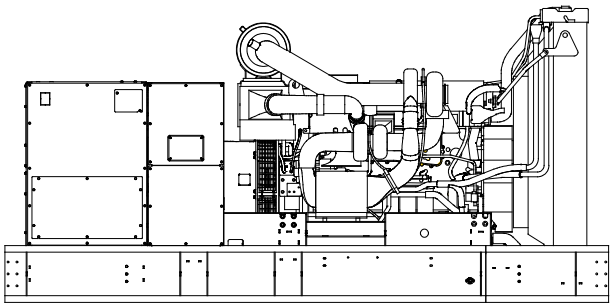
208- 600 V **Diesel**

ISO 9001 KOHLER® NATIONALLY REGISTERED

Tier 2 EPA-Certified for Stationary Emergency Applications

Ratings Range

		60 Hz
Standby:	**kW**	485- 600
	kVA	606- 750
Prime:	**kW**	485- 555
	kVA	606- 694



Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A standard one-year limited warranty covers all generator set systems and components. Two-, five-, and ten-year extended limited warranties are also available.
- Alternator features:
  - The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
  - Kohler designed controllers for one-source system integration and remote communication. See Controllers on page 3.
  - The low coolant level shutdown prevents overheating (standard on radiator models only).
  - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
  - An electronic, isochronous governor delivers precise frequency regulation.
  - Multiple circuit breaker configurations.

Generator Set Ratings

				150°C Rise Standby Rating		130°C Rise Standby Rating		125°C Rise Prime Rating		105°C Rise Prime Rating	
Alternator	**Voltage**	**Ph**	**Hz**	**kW/kVA**	**Amps**	**kW/kVA**	**Amps**	**kW/kVA**	**Amps**	**kW/kVA**	**Amps**
	120/208	3	60	600/750	2082	565/706	1960	550/688	1910	525/656	1821
	127/220	3	60	600/750	1969	590/738	1937	550/688	1806	545/681	1788
5M4030	139/240	3	60	600/750	1805	600/750	1805	550/688	1656	550/688	1656
	240/416	3	60	600/750	1041	565/706	980	550/688	955	525/656	911
	277/480	3	60	600/750	903	600/750	903	550/688	828	550/688	828
	120/208	3	60	600/750	2082	600/750	2082	555/694	1927	555/694	1927
	127/220	3	60	600/750	1969	600/750	1969	555/694	1822	555/694	1822
5M4032	139/240	3	60	600/750	1805	600/750	1805	555/694	1670	555/694	1670
	240/416	3	60	600/750	1041	600/750	1041	555/694	964	555/694	964
	277/480	3	60	600/750	903	600/750	903	555/694	835	555/694	835
5M4164	220/380*	3*	60*	600/750*	1140*	600/750*	1140*	555/694*	1055*	555/694*	1055*
	220/380†	3†	60†	600/750†	1140†	600/750†	1140†	550/688†	1046†	550/688†	1046†
5M4272	347/600	3	60	600/750	722	600/750	722	550/688	663	550/688	663
5M4276	347/600	3	60	600/750	722	600/750	722	555/694	668	555/694	668

* For GM78621-GA1 generator set spec with TWD1643GE engine, IBC only.

† For GM114579-GA1 generator set spec with TWD1644GE engine.

RATINGS: All three-phase units are rated at 0.8 power factor. *Standby Ratings:* The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. *Prime Power Ratings:* At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time and continuous ratings, consult the factory. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Alternator Specifications

Specifications		Alternator
Type		4-Pole, Rotating-Field
Exciter type		Brushless, Permanent-Magnet Pilot Exciter
Leads: quantity, type		10, Reconnectable
Voltage regulator		Solid State, Volts/Hz
Insulation:		NEMA MG1
Material		Class H, Synthetic, Nonhygroscopic
Temperature rise		130°C, 150°C Standby
Bearing: quantity, type		1, Sealed
Coupling		Flexible Disc
Amortisseur windings		Full
Rotor balancing		125%
Voltage regulation, no-load to full-load		Controller Dependent
One-step load acceptance		100% of Rating
Unbalanced load capability		100% of Rated Standby Current
Peak motor starting kVA:		(35% dip for voltages below)
480 V	5M4030 (10 lead)	1775
480 V	5M4032 (10 lead)	2200
380 V	5M4164 (4 lead)	2300
600 V	5M4272 (4 lead)	1750
600 V	5M4276 (4 lead)	2800

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Superior voltage waveform from two-thirds pitch windings and skewed stator.
- Digital solid-state, volts-per-hertz voltage regulator with ±0.25% no-load to full-load regulation.
- Brushless alternator with brushless pilot exciter for excellent load response.

Application Data

Engine

Engine Specifications	TWD1643GE IBC Only	TWD1644GE without IBC
Manufacturer	Volvo	
Engine type	4-Cycle, Turbocharged, Charge Air-Cooled	
Cylinder arrangement	6 Inline	
Displacement, L (cu. in.)	16.12 (984)	
Bore and stroke, mm (in.)	144 x 165 (5.67 x 6.50)	
Compression ratio	16.5:1	16.8:1
Piston speed, m/min. (ft./min.)	594 (1949)	
Main bearings: quantity, type	7, Precision Half-Shell	
Rated rpm	1800	
Max. power at rated rpm, kWm (BHP)	674 (903)	
Cylinder head material	Cast Iron	
Piston: type, material	Steel	
Crankshaft material	Forged Steel	
Valve material	Nimonic	
Governor type	EMS 2.0	EMS 2.3
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	±0.25%	
Frequency	Fixed	
Air cleaner type, all models	Dry	

Exhaust

Exhaust System	TWD1643GE IBC Only	TWD1644GE without IBC
Exhaust manifold type	Dry	
Exhaust flow at rated kW, m^3/min. (cfm)	130 (4594)	114.5 (4044)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	461 (862)	495 (923)
Maximum allowable back pressure, kPa (in. Hg)	10 (2.95)	
Exhaust outlet size at engine hookup, mm (in.)	See ADV drawing	

Engine Electrical

Engine Electrical System	TWD1643GE IBC Only	TWD1644GE without IBC
Battery charging alternator:		
Ground (negative/positive)	Negative	
Volts (DC)	24	
Ampere rating	80	
Starter motor rated voltage (DC)	24V, 7kW	
Battery, recommended cold cranking amps (CCA):		
Quantity, CCA rating each	Two, 925	
Battery voltage (DC)	12	

Fuel

Fuel System	TWD1643GE IBC Only	TWD1644GE without IBC
Fuel supply line, min. ID, mm (in.)	10 (0.38)	
Fuel return line, min. ID, mm (in.)	6 (0.25)	
Max. fuel flow, Lph (gph)	210 (55.5)	185 (48.9)
Max. fuel pump restriction, kPa (in. Hg)	10 (3.0)	
Max. return line restriction, kPA (in. Hg)	20 (5.9)	
Fuel filter: quantity,	2	2
Primary type	10 Micron	30 Micron
Secondary type, w/water separator	5 Micron	5 Microns
Recommended fuel	#2 Diesel	

Lubrication

Lubricating System	TWD1643GE IBC Only	TWD1644GE without IBC
Type	Full Pressure	
Oil pan capacity, L (qt.) §	42.0 (44.4)	
Oil pan capacity with filter, L (qt.) §	48.1 (50.8)	
Oil filter: quantity, type §	3, Cartridge	
Oil cooler	Water-Cooled	

§ Kohler recommends the use of Kohler Genuine oil and filters.

Application Data

Cooling

Radiator System	TWD1643GE IBC Only	TWD1644GE without IBC
Ambient temperature, °C (°F) *	50 (122)	
Engine jacket water capacity, L (gal.)	33 (8.7)	25 (6.6)
Radiator system capacity, including engine, L (gal.)	166 (43.9)	151.1 (39.9)
Engine jacket water flow, Lpm (gpm)	360 (95.4)	
Charge cooler water flow, Lpm (gpm)	150 (39.6)	126 (33)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	245 (13933)	246 (13990)
Heat rejected to charge cooler water at rated kW, dry exhaust, kW (Btu/min.)	216 (12284)	147 (8360)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	965 (38.0)	
Fan, kWm (HP)	30 (41)	34 (46)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H_2O)	0.125 (0.5)	

* Weather and sound enclosures with internal silencer and weather housing with external silencer reduce ambient temperature capability by 5°C (9°F).

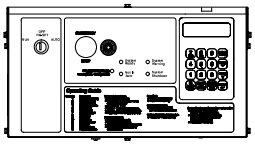
Operation Requirements

Air Requirements	TWD1643GE IBC Only	TWD1644GE without IBC
Radiator-cooled cooling air, m^3/min. (scfm)†	790 (27900)	798 (28200)
Combustion air, m^3/min. (cfm)	55 (1937)	48 (1649)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	29 (1649)	24 (1342)
Alternator, kW (Btu/min.)	45 (2560)	

† Air density = 1.20 kg/m^3 (0.075 lbm/ft^3)

Fuel Consumption	TWD1643GE IBC Only		TWD1644GE without IBC	
Diesel, Lph (gph) at % load	**Standby Rating**			
100%	161.8	(42.7)	157.0	(41.5)
75%	117.8	(31.1)	118.4	(31.3)
50%	79.3	(21.0)	80.1	(21.2)
25%	43.6	(11.5)	45.0	(11.9)
Diesel, Lph (gph) at % load	**Prime Rating**			
100%	146.1	(38.6)	144.2	(38.1)
75%	106.9	(28.2)	108.2	(28.6)
50%	72.7	(19.2)	73.9	(19.5)
25%	40.5	(10.7)	42.6	(11.3)

Controllers



Available option for generator set spec GM78621-GA1 with engine TWD1643GE, IBC only

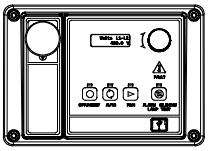
Decision-Maker® 550 Controller

Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities.

- Digital display and keypad provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Controller supports Modbus® protocol
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-46 for additional controller features and accessories.

Controllers (Continued)

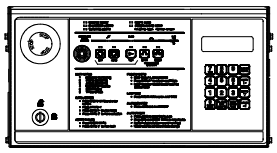


APM402 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus® protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-161 for additional controller features and accessories.

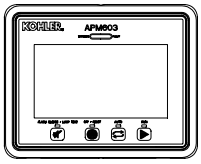


Decision-Maker® 6000 Paralleling Controller

Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities for paralleling multiple generator sets.

- Paralleling capability to control up to 8 generators on an isolated bus with first-on logic, synchronizer, kW and kVAR load sharing, and protective relays
  Note: Parallel with other Decision-Maker® 6000 controllers only
- Digital display and keypad provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Controller supports Modbus® protocol
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-107 for additional controller features and accessories.



Available option for generator set spec GM114579-GA1 with engine TWD1644GE

APM603 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- 7-inch graphic display with touch screen and menu control provides easy local data access
- Measurements are selectable in metric or English units
- Paralleling capability to control up to 8 generators on an isolated bus with first-on logic, synchronizer, kW and kVAR load sharing, and protective relays
  Note: Parallel with other APM603 controllers only
- Generator management to turn paralleled generators off and on as required by load demand
- Load management to connect and disconnect loads as required
- Controller supports Modbus® RTU, Modbus® TCP, SNMP and BACnet®
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- UL-listed overcurrent protective device
- NFPA 110 Level 1 capability

Refer to G6-162 for additional controller features and accessories.

KOHLER®

Alternator Data

TECHNICAL INFORMATION BULLETIN

Alternator Data Sheet

Alternator Model: 5M4032 22-AUG-11

Kilowatt ratings at	1800 RPM			60 Hertz			10 LEADS	Standard 3 phase		
kW (kVA)	3 Phase			0.8 Power Factor				Dripproof or Open Enclosure		
	Class B	Class F						Class H		
Voltage*	80° C ① Continuous	90° C ① Lloyds	95° C ① ABS	105° C ② British Standard	105° C ① Continuous	130° C ① Standby		125° C ② British Standard	125° C ① Continuous	150° C ① Standby
480/240	570 (713)	625 (781)	645 (806)	680 (850)	680 (850)	700 (875)		695 (869)	700 (875)	765 (956)
460/230	595 (744)	645 (806)	655 (819)	700 (875)	700 (875)	730 (913)		715 (894)	730 (913)	785 (981)
440/220	595 (744)	635 (794)	640 (800)	680 (850)	680 (850)	730 (913)		715 (894)	725 (906)	765 (956)
416/208	570 (713)	600 (750)	610 (763)	645 (806)	650 (813)	700 (875)		685 (856)	685 (856)	725 (906)
380/190	525 (656)	555 (694)	560 (700)	595 (744)	595 (744)	595 (744)		595 (744)	595 (744)	595 (744)

① *Rise by resistance method, Mil-Std-705, Method 680.1b.* ② *British Standard Rating per BS 5000*

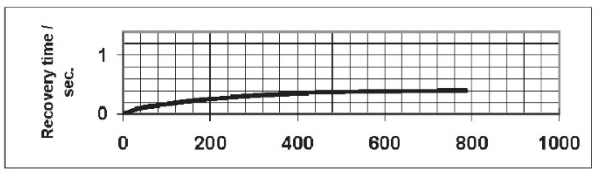
Submittal Data: 480 Volts*, 700 kW, 875 kVA, 0.8 P.F., 1800 RPM, 60 Hz, 3 Phase STD. CONNECTION

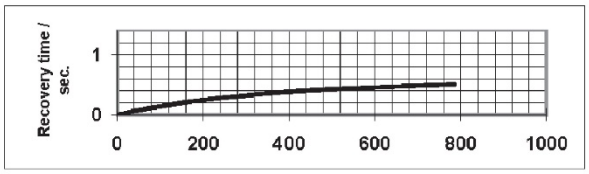
Mil-Std-705B Method	Description	Value
301.1b	Insulation Resistance	>1.5 Meg
302.1a	High Potential Test	
	Main Stator	2000 Volts
	Main Rotor	1500 Volts
	Exciter Stator	1500 Volts
	Exciter Rotor	1500 Volts
	PMG Stator	1500 Volts
401.1a	Stator Resistance, Line to Line	
	High Wye Connection	0.0074 Ohms
	Rotor Resistance	0.472 Ohms
	Exciter Stator	23 Ohms
	Exciter Rotor	0.045 Ohms
	PMG Stator	2.1 Ohms
410.1a	No Load Exciter Field Amps at 240/480 Volts Line to Line	0.65 A DC
420.1a	Short Circuit Ratio	0.489
421.1a	Xd Synchronous Reactance	3.09 pu
		0.814 ohms
422.1a	X2 Negative Sequence React.	0.217 pu
		0.057 ohms
423.1a	X0 Zero Sequence Reactance	0.058 pu
		0.015 ohms
425.1a	X'd Transient Reactance	0.153 pu
		0.04 ohms
426.1a	X"d Subtransient Reactance	0.132 pu
		0.035 ohms
--	Xq Quadrature Synchronous	1.25 pu
		0.329 ohms
427.1a	T'd Transient Short Circuit Time Constant	0.127 sec.
428.1a	T"d Subtransient Short Circuit Time Constant	0.009 sec.
430.1a	T'do Transient Open Circuit Time Constant	1.67 sec.
432.1a	Ta Short Circuit Time Constant of Armature Winding	0.015 sec.

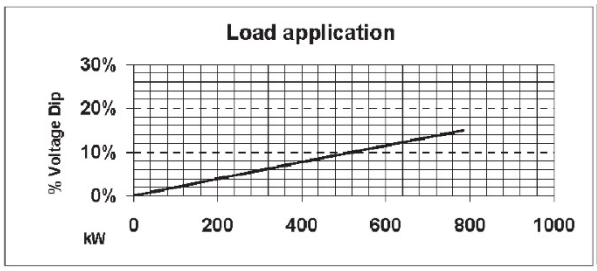
Mil-Std-705B Method	Description	Value
505.3b	Overspeed	2250 RPM
507.1c	Phase Sequence CCW-ODE	ABC
508.1c	Voltage Balance, L-L or L-N	0.20%
601.4a	L-L Harmonic Maximum - Total (Distortion Factor)	5.0%
601.4a	L-L Harmonic Maximum - Single	3.0%
601.1c	Deviation Factor	5.0%
---	TIF (1960 Weightings)	< 50
---	THF (IEC, BS & NEMA Weightings)	< 2 %
652.1a	Shaft Current	< 0.1 ma
---	Main Stator Capacitance to ground	0.03 mfd
	Additional Prototype Mil-Std Methods are Available on Request.	
--	Generator Frame	573
--	Type	MAGNAMAXDVR
--	Insulation	Class H
--	Coupling - Single Bearing	Flexible
--	Amortisseur Windings	Full
--	Excitation	Ext. Voltage Regulated, Brushless
--	Cooling Air Volume	1400 CFM
--	Heat rejection rate	2128 Btu's/min
--	Full load current	1052 amps
--	Minimum Input hp required	988.5
	Efficiency at rated load :	94.9%
--	Full load torque	2883 Lb-ft

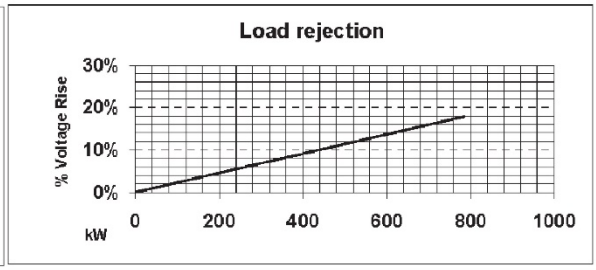
* Voltage refers to wye (star) connection, unless otherwise specified.

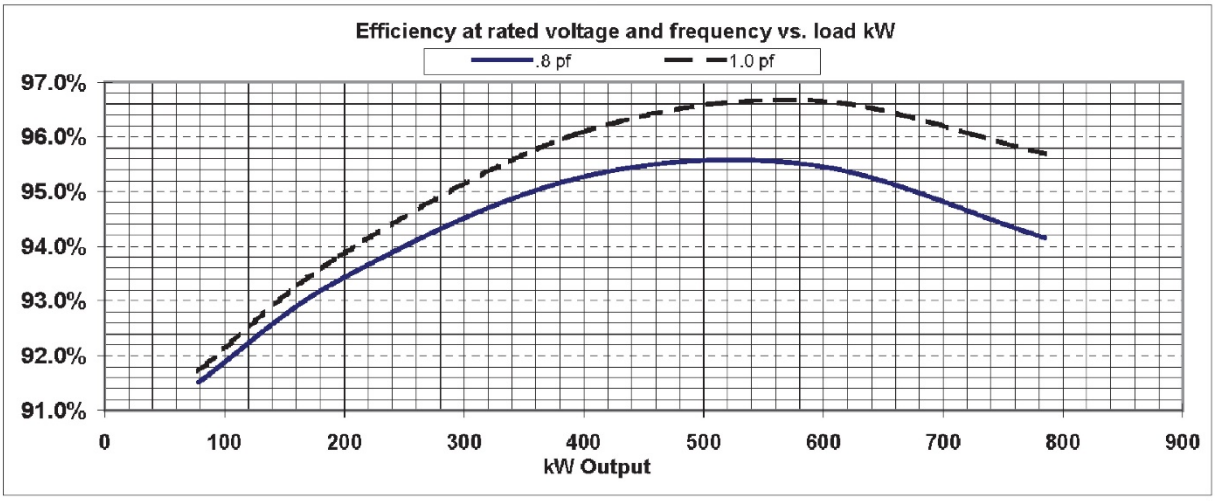
TYPICAL DYNAMIC CHARACTERISTICS

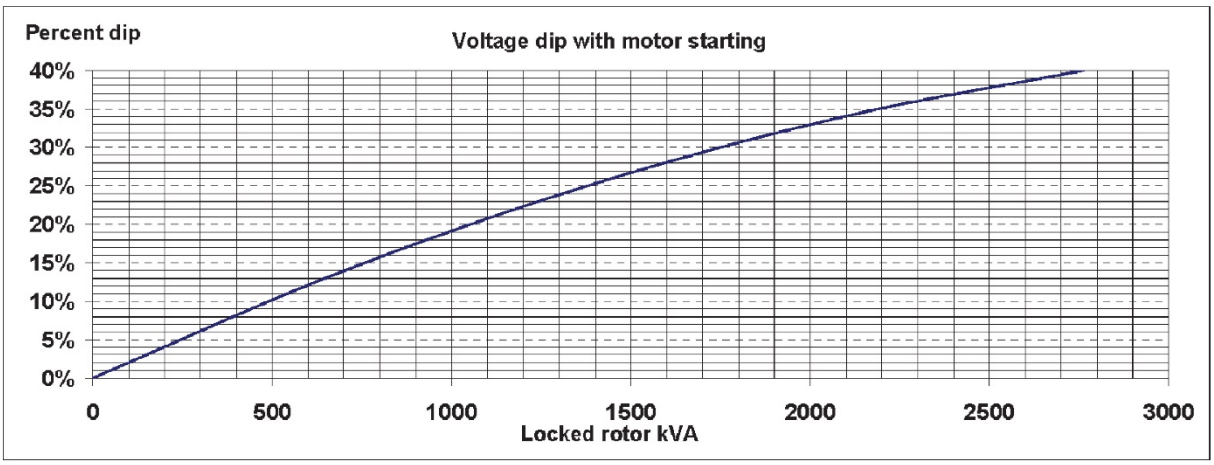








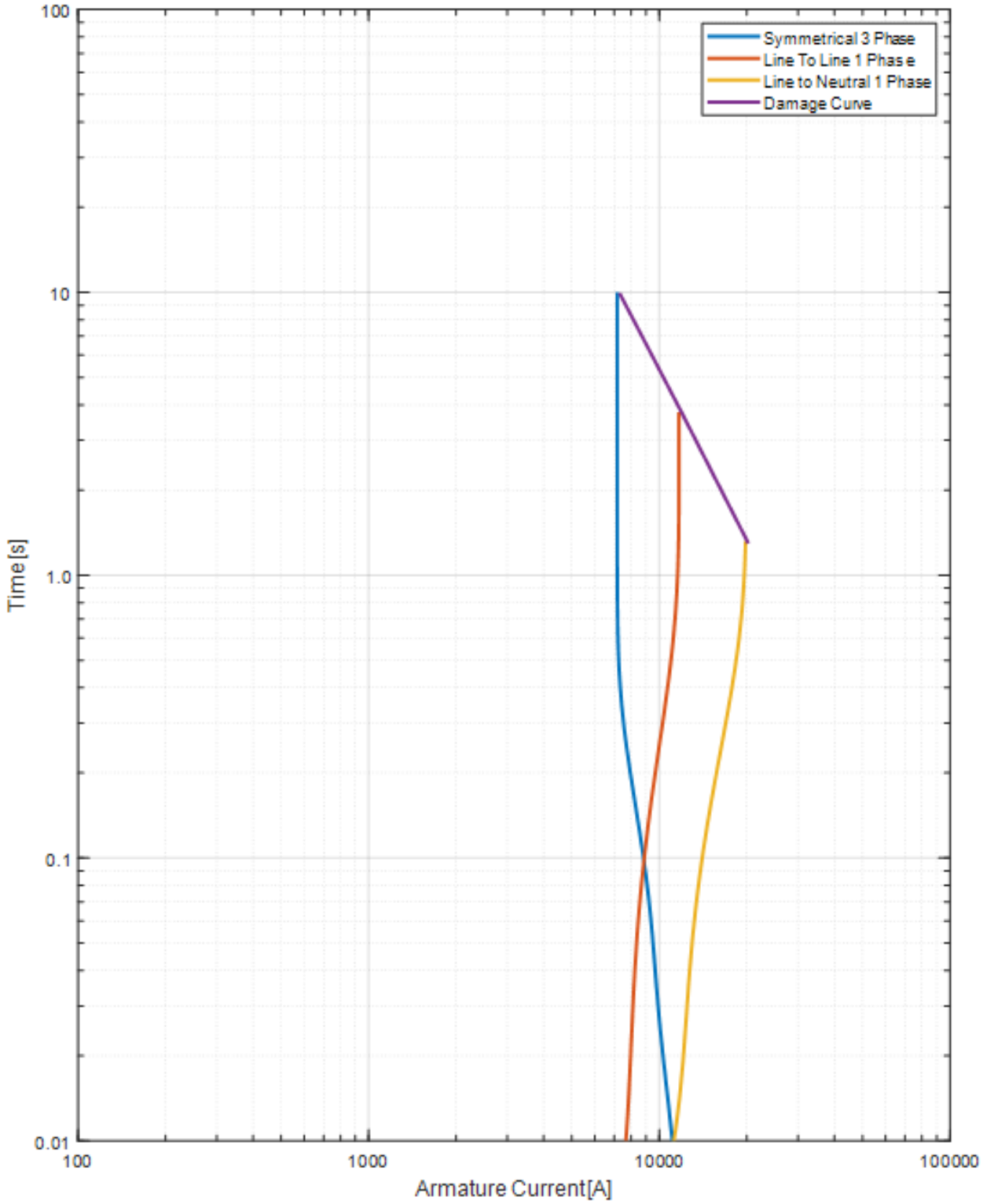




Voltage refers to wye (star) connection, unless otherwise specified..

SHORT CIRCUIT DECREMENT CURVE
60 Hz, Low Wye or Delta Connection

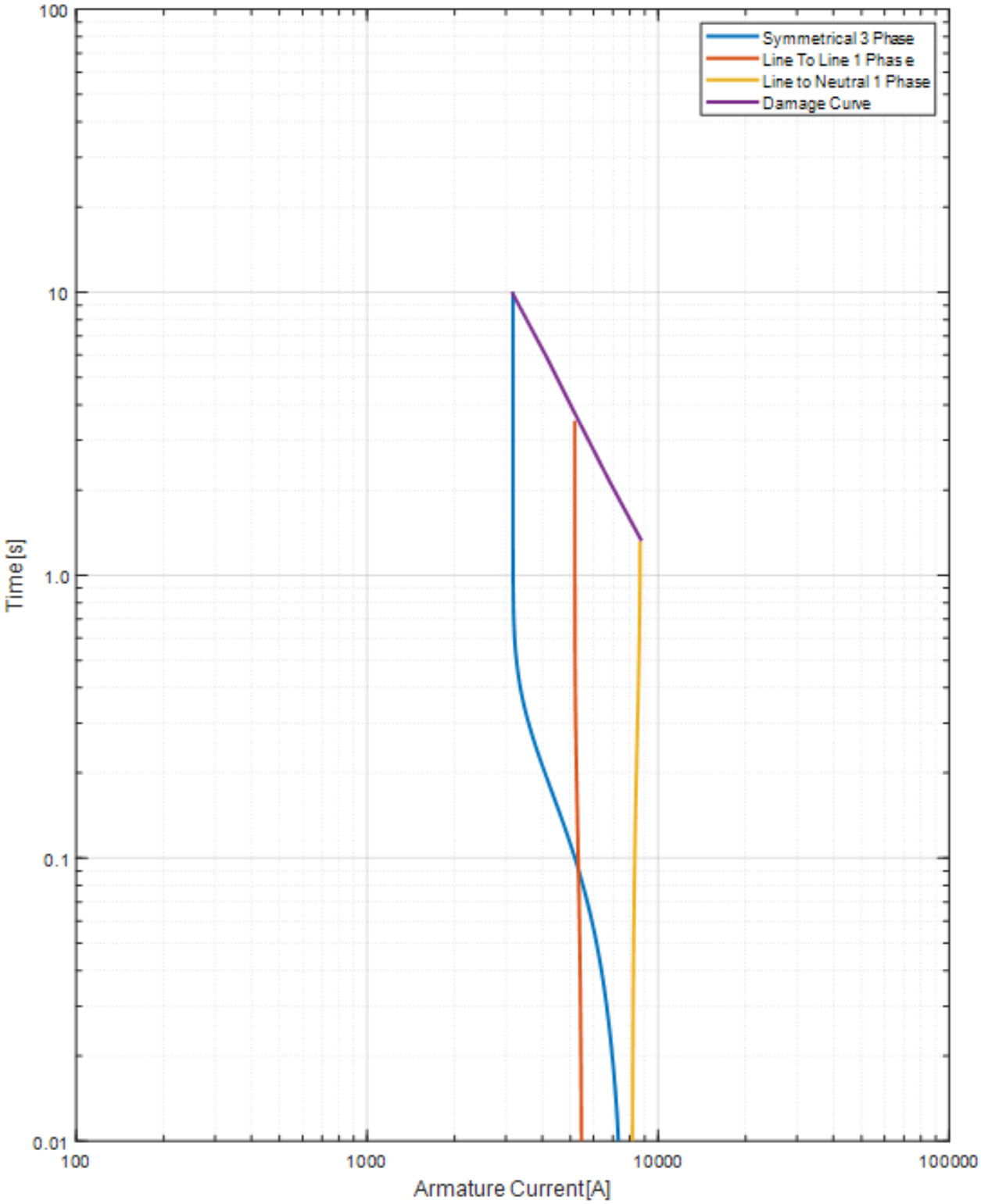
Full Load Current: 2429 Amps **Steady State S.C. Current:** 7287 Amps **Max. 3 ph. Symm. S.C. Current:** 13723 Amps



NOTE: Symmetrical component values are shown, maximum asymmetrical values are 1.732 times the symmetrical values.

SHORT CIRCUIT DECREMENT CURVE
60 Hz, High Wye Connection

Full Load Current: 1052 Amps **Steady State S.C. Current:** 3156 Amps **Max. 3 ph. Symm. S.C. Current:** 7970 Amps



NOTE: Symmetrical component values are shown, maximum asymmetrical values are 1.732 times the symmetrical values.

Generator Set Controller

The APM603 generator set controller provides advanced control, system monitoring, and system diagnostics for a single generator set or paralleling multiple generator sets. The APM603 interfaces the generator set to other power system equipment and network management systems using standard industry network communications. It uses a patented digital voltage regulator and unique software logic to manage alternator thermal overload protection as well as serves as an overcurrent protective relay, features normally requiring additional hardware. The APM603 controller meets NFPA 110, Level 1.

Display, Interface, and Accessibility

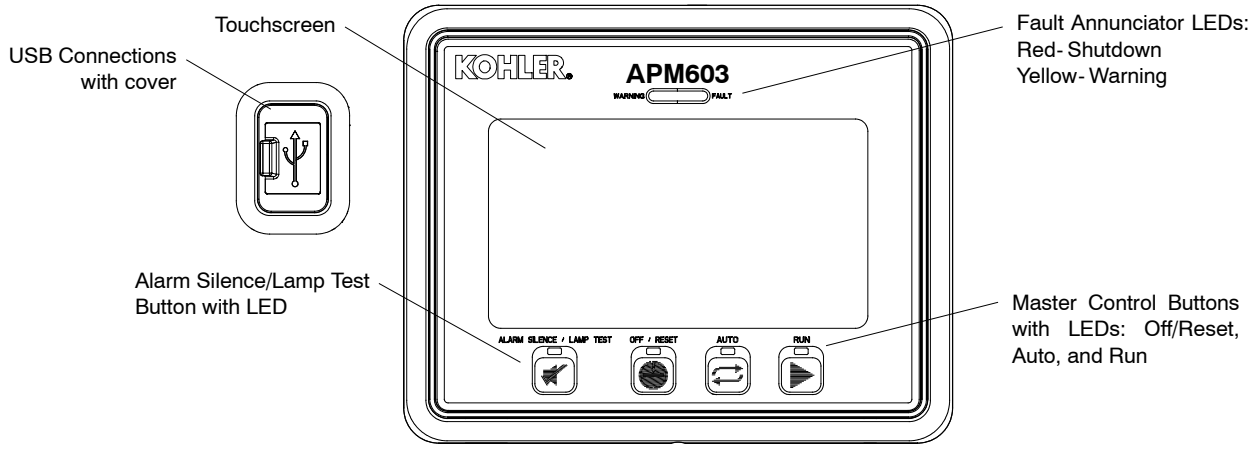
- A 7-inch color TFT touchscreen for easy local access to data.
  - Home screen can be customized to show critical data at a glance.
  - Create a custom favorites list for quick access to important data
- Measurements are selectable in metric or English units.
- Supports Modbus® protocol through serial bus and Ethernet networks, and supports SNMP and BACnet® through Ethernet networks.

Global Support

- Sales, installation, and service support from more than 800 Kohler and SDMO service providers around the world.

On- board Diagnostics

- Immediate visibility of warnings and faults with text description and code display.
  - 15 seconds of critical data are captured around each warning and fault
  - Critical data can be viewed on the display and downloaded
- Store up to 10,000 events locally along with historical data logging of successful starts.
  - Accurate time stamp from real-time clock
  - Event log can be downloaded
- Data logging of customized parameter list for report generation and advanced troubleshooting.
  - Store to external USB drive for easy transfer to another device



Controller Features

AC Output Voltage Regulator Adjustment	Maximum of ±10% of the system voltage
Alarm Silence	For NFPA-110 application or user convenience
Alternator Protection	Generator set overload and short circuit protection
Cyclic Cranking	Provides automatic restart after a failed start attempt with programmable on/off time and number of attempts
ECU Diagnostics	Displays engine ECU fault codes and descriptions for engine troubleshooting
Engine Start Aid	Control for an optional engine starting aid
Environmentally Sealed Membrane Keypad	Three master control buttons with LEDs: Off/Reset, Auto, and Run
Patented High-Speed RMS Digital Voltage Regulator	±0.25% no-load to full-load regulation with three-phase true RMS sensing
Lamp Test	Verifies functionality of the indicator LEDs
Real-time Clock	Includes battery back-up to retain date and time through controller power cycle
Remote Reset	Allows remote fault resets and restarting of the generator set
Remote Monitoring Panel	Compatible with the Kohler® Remote Serial Annunciator
Run Time Hourmeter	Displays generator set run time
Run Relay	Indicates that the generator set is running
Time Delay Engine Cooldown (TDEC)	Time delay before the generator set shuts down
Time Delay Engine Start (TDES)	Time delay before the generator set starts

Communication

USB Port	(1) Mini-USB port for PC connection (1) USB port for storage device
Serial (RS-485) Port	(1) Non-isolated for RSA III (1) Isolated for Modbus devices (1) Isolated for paralleling communication
Ethernet Port	(1) RJ45 for Modbus TCP, SNMP, and BACnet

Controller Specifications

Nominal voltage	12 or 24 VDC protected against reverse battery connection
Power	800 mAmps at 12 VDC 400 mAmps at 24 VDC
Operating Temperature	-40°C to 70°C (-40°F to 158°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	5% to 95% non-condensing
Display Size, W x H	154 x 86 mm (6.0 x 3.4 inches)
Protection Index	IP65 Front

Paralleling Features

- Isochronous control with real and reactive load sharing with other APM603 controller equipped generator sets
  - Supports paralleling up to 8 generators
- Random first-on logic to prevent two or more generator sets from closing to a dead bus and provides the fastest response for a single generator online
- Automatic synchronizer with dead bus closing
- Soft loading and unloading for generator management
- Protective relay functions:
  - Synch check (25C)
  - Over current (51)
  - Over frequency (81O)
  - Over power (32O)
  - Over voltage (59)
  - Reverse power (32R)
  - Reverse reactive power (32RQ)
  - Under frequency (81U)
  - Under voltage (27)
- Generator management to allow the start and stop of generators based on load demand or state of other generators
  - Fuel level
  - Run time
  - Manual order
  - Time of day
  - Efficiency
- Simplified paralleling system view from any generator controller in the system

Overcurrent Protective Device

- Provides protection against line-to-line and line-to-neutral faults
- Uses thermal and instantaneous current limit settings for alternator protection
- Includes a maintenance mode for arc flash reduction per NEC 240.87

Load Management Features

- Programmable outputs included to command the connect and disconnect of loads based on generator or paralleling system state
  - Loads connected based on available capacity
  - Loads disconnected at system startup
  - Loads disconnected based on a maximum kW setting or underfrequency setting
- Supports up to 16 prioritized load steps per system
  - Can be used on a single generator system
  - Can be combined in a paralleling system for a total system load control capability
- Simplified load management system view from any generator controller in the system
- Requires input/output module option

Advanced Programmable I/O

- Configurable inputs and outputs can be programmed for customer specific use
- PLC-like capability for applying logic to customize generator system behavior

Troubleshooting Features

- 15 seconds of key data automatically captured around each warning and shutdown
  - Data can be exported for detailed analysis
  - Data can be viewed on controller for convenient on-site troubleshooting support
- Configurable data logger will allow you to select parameters to monitor
  - Data stored to USB device for flexibility on amount of data stored and ability to export for detailed analysis
  - Data capture controlled by user to allow capturing specific data required

NFPA 110 Requirements

In order to meet NFPA 110, Level 1 requirements, the generator set controller monitors the engine/generator functions/faults shown below.

- Engine functions:
  - Overcrank
  - Low coolant temperature warning
  - High coolant temperature warning
  - High coolant temperature shutdown
  - Low oil pressure shutdown
  - Low oil pressure warning
  - High engine speed
  - Low fuel (level or pressure) *
  - Low coolant level
  - EPS supplying load
  - High battery voltage
  - Low battery voltage
- General functions:
  - Master switch not in auto
  - Battery charger fault *
  - Lamp test
  - Contacts for local and remote common alarm
  - Audible alarm silence button
  - Remote emergency stop *

* Function requires optional input sensors or kits and is engine dependent, see Engine Data.

Standards

The generator set controller has been tested and verified for compliance with the following standards.

- NFPA 99
- NFPA 110, Level 1
- CSA 282-09
- UL 6200
- ASTM B117 (salt spray test)

Controller Functions

The controller displays warning, shutdown, and status messages. **All functions are available as relay outputs.**
Warning causes the yellow fault LED to show and sounds the alarm horn, signaling an impending problem.
Shutdown causes the red fault LED to show, sounds the alarm horn, and stops the generator set.

The controller communicates with the engine ECU and supports a large number of warning and shutdown events that are not listed here. This table highlights the items required for NFPA 110.

Event	Warning	Shutdown
Alternator Thermal Protection †		●
Battery Charger Fault *	▲	
CAN Option Board1 Comm Loss	▲	
Critically Low Fuel Level (diesel) *	▲	
ECU Diagnostic Event	▲	
ECU Mismatch Shutdown †		●
Fuel Leak Alarm (diesel) *	▲	
High Battery Voltage Warning	▲	
High Coolant Temperature Shutdown †		●
High Coolant Temperature Warning	▲	
High Fuel Level Warning (diesel) *	▲	
High Oil Temperature Shutdown †		●
High Oil Temperature Warning	▲	
Local Emergency Stop Shutdown †		●
Loss ECU Comms Shutdown †		●
Loss of Signal Low Coolant Level Voltage	▲	
Low Battery Voltage Warning	▲	
Low Coolant Level Shutdown †		●
Low Coolant Temperature Warning	▲	
Low Fuel Level Shutdown (diesel) * †		●
Low Fuel Level Warning (diesel) *	▲	
Low Fuel Pressure Warning (gas) *	▲	
Low Oil Pressure Shutdown †		●
Low Oil Pressure Warning	▲	
Low RTC (clock) Battery Voltage	▲	
Maintenance Reminder1	▲	
Maintenance Reminder2	▲	
Maintenance Reminder3	▲	
Maximum Power Shutdown †		●
Maximum Power Warning	▲	
Not In Auto Alarm	▲	
Over Crank Shutdown †		●
Over Current Shutdown (L1, L2, L3) †		●
Over Current Warning (L1, L2, L3)	▲	
Over Frequency Shutdown †		●
Over Frequency Warning	▲	
Over Power Shutdown †		●
Over Power Warning	▲	
Over Speed Shutdown †		●
Over Voltage Shutdown (L-L, L-N, each phase) †		●
Over Voltage Warning (L-L, L-N, each phase)	▲	

Event	Warning	Shutdown
Remote Emergency Stop Shutdown †		●
Reverse Power Shutdown †		●
Reverse VAR Shutdown †		●
Under Frequency Shutdown †		●
Under Frequency Warning	▲	
Under Voltage Shutdown (L-L, L-N, each phase) †		●
Under Voltage Warning (L-L, L-N, each phase)	▲	
Weak Cranking Battery	▲	
Status Messages		
Auto Button Pressed		
EPS Supplying Load		
Generator Running		
Generator Started		
Generator Stopped		
GFCI Warning *		
Load Shed Overload		
Load Shed Under Frequency		
Off Button Pressed		
RSA Event Programmable Digital Inputs, 1-8		
Run Button Pressed		

* Function requires optional input sensors or kits
† Items included with common fault shutdown 10

Volvo Engine-Powered Models Inputs and Outputs

Standard Dedicated User Inputs	Input Type
Auxiliary Fault (Shutdown)	Digital Input
Auxiliary Warning	
Battery Charger Fault	
Breaker Closed *	
Breaker Tripped *	
Coolant Temperature	
Emergency Stop, Local	
Emergency Stop, Remote	
Excitation Over Voltage	
Fuel Leak Alarm	
Fuel Level	
Ground Fault Relay	
Key Switch Auto	
Key Switch Run	
Low Fuel Level Switch	
Remote Engine Start	Two-wire input
Speed Bias	Analog Voltage Input, Scalable up to +/- 10 VDC
Voltage Bias	

Standard Dedicated User Outputs	Output Type
Close Breaker *	Relay Driver Output
Common Failure	
Run	
Trip Breaker / Shunt Trip *	
* Only with remote-mounted electrically operated circuit breakers.	

Optional Configurable User Inputs and Outputs	
User Configurable Inputs	2 Analog, 0-5 VDC 4 Dry Contact Digital
User Configurable Relay Outputs	14 NO/NC Relays 1 Common Fault Relay
Note: Programmable I/O is configurable by a Kohler-authorized technician	

PSI/Doosan Engine-Powered Models Inputs and Outputs

Standard Dedicated User Inputs	Input Type
Auxiliary Fault (Shutdown)	Digital Input
Auxiliary Warning	
Battery Charger Fault	
Breaker Closed *	
Breaker Tripped/Open *	
Emergency Stop, Local	
Emergency Stop, Remote	
Excitation Over Voltage	
Ground Fault Relay	
Fuel Type	
Low Fuel Pressure	
Remote Engine Start	Two-wire input
Speed Bias	Analog Voltage Input, Scalable up to +/- 10 VDC
Voltage Bias	

Standard Dedicated User Outputs	Output Type
Close Breaker *	Relay Driver Output
Common Failure	
Common Warning	
Crank	
High Coolant Temperature	
Horn	
Run	
Trip Breaker / Shunt Trip *	
* Only with remote-mounted electrically operated circuit breakers.	

Optional Configurable User Inputs and Outputs	
User Configurable Inputs	2 Analog, 0-5 VDC 4 Dry Contact Digital
User Configurable Relay Outputs	14 NO/NC Relays 1 Common Fault Relay
Note: Programmable I/O is configurable by a Kohler-authorized technician	

Volvo Engine Data

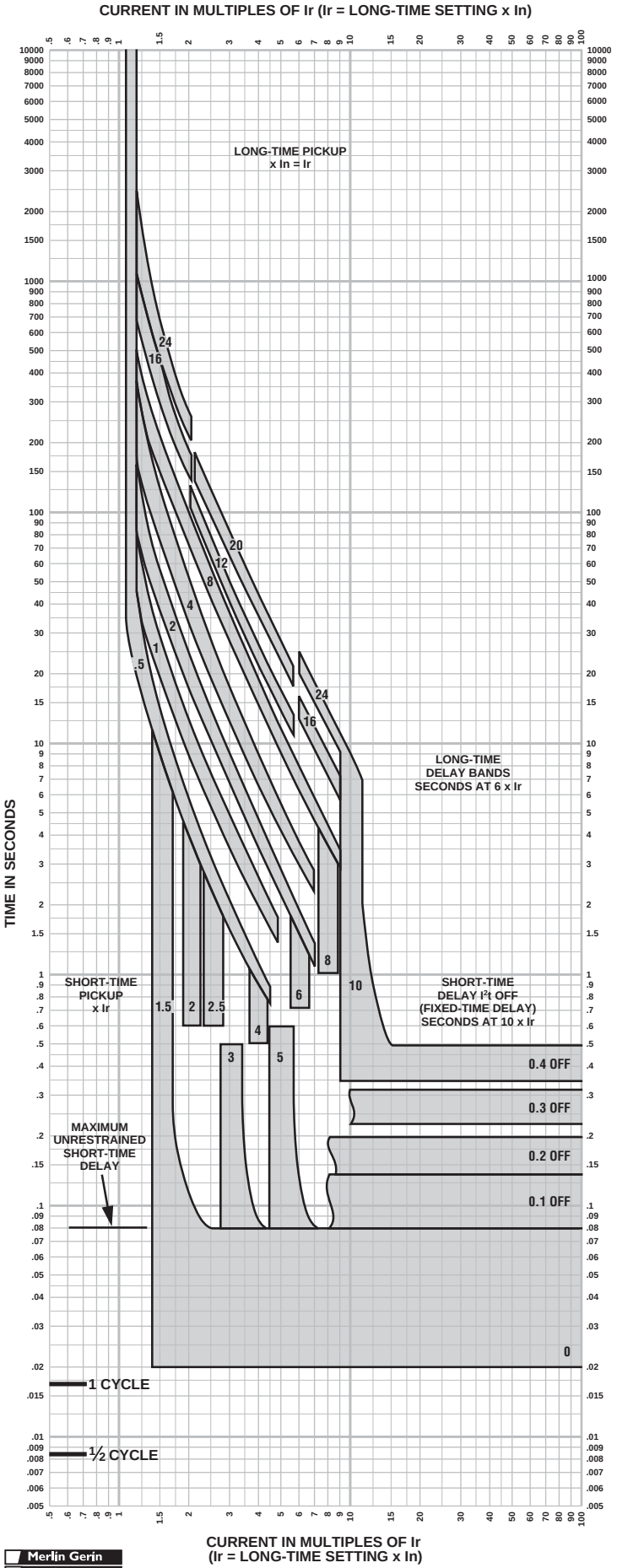
The following Volvo engine data is displayed on the APM603 controller.

Parameter
Air Intake Pressure
Air Intake Temperature
Ambient Temperature
Barometric Pressure
Coolant Temperature
ECU Battery Voltage
ECU Runtime Hours
Engine Speed
Fuel Consumption Rate
Fuel Pressure
Intake Manifold Pressure
Intake Manifold Temperature
Intercooler Temperature
Mechanical Engine Load
Oil Pressure
Oil Temperature

PSI/Doosan Engine Data

The following engine data is displayed on the APM603 controller.

Parameter
Ambient Temperature
Coolant Temperature
ECU Runtime Hours
Engine Speed
Intake Manifold Pressure
Intake Manifold Temperature
Intercooler Temperature
Fuel Pressure
Mechanical Engine Load
Oil Pressure
Oil Temperature



MICROLOGIC® 5.0/6.0 A/P/H TRIP UNIT CHARACTERISTIC TRIP CURVE NO. 613-4

Long-time Pickup and Delay
Short-time Pickup and I^2t OFF Delay

The time-current curve information is to be used for application and coordination purposes only.

Curves apply from -30°C to +60°C ambient temperature.

Notes:

1. There is a thermal-imaging effect that can act to shorten the long-time delay. The thermal-imaging effect comes into play if a current above the long-time delay pickup value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in a shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately 20 minutes is required between overloads to completely reset thermal-imaging.
2. The end of the curve is determined by the interrupting rating of the circuit breaker.
3. With zone-selective interlocking on, short-time delay utilized and no restraining signal, the maximum unrestrained short-time delay time band applies regardless of the setting.
4. Total clearing times shown include the response times of the trip unit, the circuit breaker opening, and the extinction of the current.
5. For a withstand circuit breaker, instantaneous can be turned OFF. See 613-7 for instantaneous trip curve. See 613-10 for instantaneous override values.
6. Overload indicator illuminates at 100%.

Merlin Gerin
Modicon
Square D
Telemecanique
Federal Pioneer
Federal Pacific
Schneider Electric Brands

Schneider Electric

Curve No. 0613TC0004
December 2000
Drawing No. B48095-613-04

POWERPACT® P- and R-Frame Molded Case Circuit Breakers (Standard or 100% rated up to 2500 A)

The most compact and innovative molded case circuit breakers

P-Frame 1200 A

R-Frame

POWERPACT Molded Case Circuit Breakers lead the industry with proven, reliable protection and innovative design. Providing unparalleled performance and control, this generation of P- and R-frame circuit breakers features exclusive MICROLOGIC® Trip Units, which allow for a range of sophisticated applications for metering and monitoring. In addition, units can be interchanged to allow for maximum flexibility and are field-installable for easy upgrades as needed.

The compact P- and R-frame circuit breakers permit smaller footprint and higher density installations using I-LINE® Panelboards and Switchboards. These circuit breakers are available in 100% rated construction up to 2500 A to meet a broad range of commercial and industrial application needs.

Full-Featured Performance

- P-frame – 1200 A available in both standard and 100% ratings with sensor sizes 250–1200 A. Interrupting ratings (AIR) G-35kAIR, J-65kAIR and L-100kAIR at 480 VAC
- R-frame – 2500 A available in both standard and 100% ratings with sensor sizes 600–2500 A. Interrupting ratings (AIR) G-35kAIR, J-65kAIR and L-100kAIR at 480 VAC
- Compact breaker size allows for smaller footprint installations using I-LINE Panelboards and Switchboards. 9" width on P-frame designs and 15" width on R-frame designs provide increased density installations
- Most field-installable accessories are common to all frame sizes for easier stocking and installation
- Selection of four interchangeable MICROLOGIC Trip Units with POWERLOGIC® power metering and monitoring capabilities available in advanced trip units
- Compatible with POWERLOGIC® systems and high amperage power circuit breakers
- Built-in MODBUS® protocol provides an open communications platform and eliminates the need to purchase additional, proprietary network solutions
- Connection options include bus, cable or I-Line for installation flexibility
- Additional options are available for 5-cycle closing, stored energy mechanisms and draw-out mounting of 1200 A breakers

POWERPACT® P- and R-Frame Molded Case Circuit Breakers
(Standard or 100% rated up to 2500 A)

Onboard Intelligence

For “smarter breakers,” a range of MICROLOGIC® Trip Units provides advanced functionality, such as a communications interface, and power metering and monitoring capabilities. With the appropriate MICROLOGIC Trip Unit, you can communicate with breakers, gather power information, monitor events and remotely control breakers based on predetermined conditions, leading to substantial savings in electrical system operating costs.

These interchangeable, microprocessor-controlled, plug-in devices provide the next generation of protection, measurement and control functions, delivering not only greater electrical system safety but also improved system integration and coordination.

MICROLOGIC® Trip Units

Choose the Model that Meets Your Needs

MICROLOGIC 3.0 and 5.0

- Basic circuit protection including long-time, instantaneous and optional short-time adjustments

MICROLOGIC 3.0A, 5.0A and 6.0A

- Long-time, instantaneous and optional short-time adjustments
- Integrated ammeter and phase loading bar graph
- LED trip indicator
- Zone selective interlocking with downstream and upstream breakers
- Optional ground-fault protection
- Optional MODBUS® communications interface

MICROLOGIC 5.0P and 6.0P

- Long-time, instantaneous and optional short-time adjustments
- Advanced relay protection (current imbalance, under/over voltage, etc.)
- Inverse Definite Minimum Time Lag (IdmtL) long-time delay curve shaping for improved coordination
- Basic power metering and monitoring functions
- Standard MODBUS communications interface compatibility with POWERLOGIC® installations
- Standard GF alarm on 5.0P. 6.0P has equipment ground-fault tripping protection

MICROLOGIC 5.0H and 6.0H

- All 5.0P and 6.0P functions
- Enhanced POWERLOGIC power metering and monitoring capabilities
- Basic power quality (harmonic) measurement
- Waveform capture

Contact your Square D sales representative for additional information. Or, visit www.SquareD.com.

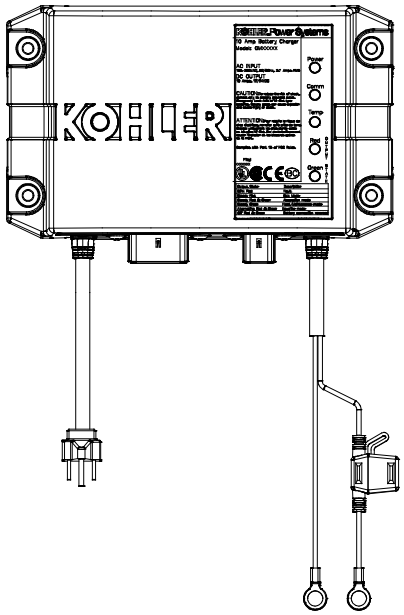
Order Number 0612HO0201

SQUARE D
Schneider Electric

KOHLER

Industrial Generator Set Accessories

12/24 Volt, 10 Amp
Automatic Multi-Stage Battery Charger



The battery charger is a fully-automatic, high efficiency battery charger that charges batteries rapidly and safely. The battery charger is designed for an industrial environment.

The battery charger is designed for operation with an engine cranking battery.

The battery charger is universal voltage input capable, comes with a standard 120 V/60 Hz AC plug, and charges 12 VDC or 24 VDC battery systems.

Five LED lights indicate power, communication status, temperature compensation status, charge curve, and charger status.

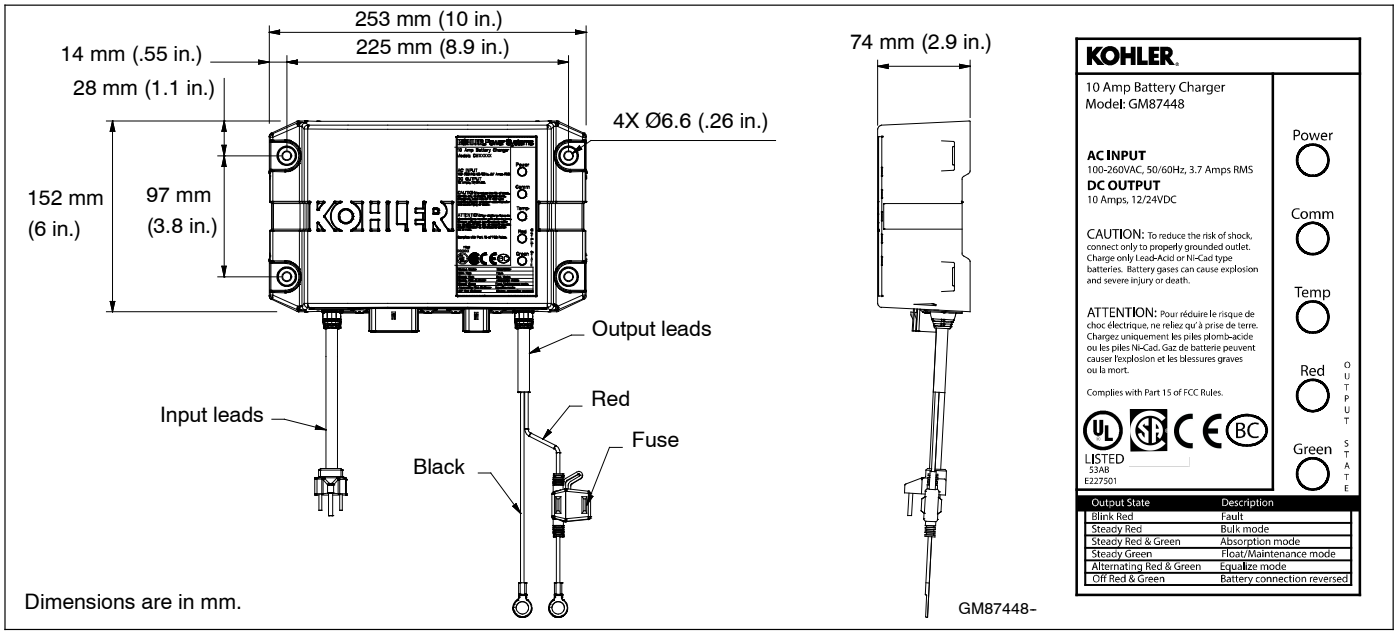
With the optional battery temperature sensor connected, the battery charger can adjust output voltages for optimal charging.

Standard Features

- 12 or 24 VDC output
  - Automatic voltage detection
- Automatic multi-stage charging modes
  - Recovery charge
  - Bulk charge
  - Absorption charge
  - Float charge
  - Equalize charge
- Charges the following type batteries:
  - Flooded lead acid (FLA)
  - AGM
  - Gel cell
  - High performance AGM
  - Nickel-cadmium (NiCad)
- 5 LED status indicators
- Durable potted assembly for waterproofing and vibration resistance
- Reverse-polarity protection
- Short-circuit protection
- Electronically limited output current
- Optional temperature compensation (FLA only)
- User adjustable parameters to support optimal manufacturer recommended charge curve.
- Code compliance:
  - UL 1236 Listed
  - NFPA 110, Level 1 compatible (when used with Kohler controller and connected to engine harness)
  - CSA - C22.2 No. 107.2-01
  - FCC - Title 47, Part 15 Class A
  - CE
  - IBC 2015
  - OSHPD

DC Output		AC Input			Shipping Weight	
Volts (Nominal)	Amps	Volts (Nominal)	Amps	**Overall Dimensions** W x D x H	kgs	lbs
12/24	10	100-260	3.7	253 mm x 152 mm x 74 mm (10.0 in x 6.0 in x 2.9 in)	3.6	7.9

KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
KOHLERPower.com



Specifications

AC Input	100–260 VAC
Frequency Input	50/60 Hz
DC Output	10 Amps @ 12 VDC or 10 Amps @ 24 VDC (On battery voltage regulation ±1%; current is electronically limited
Fuse Protection	15 amps ATC
Battery Types	Flooded Lead Acid (FLA) AGM Gel Cell High Performance AGM Nickel–Cadmium (NiCad)
Monitoring	
LED Indications	Power Communication Temperature compensation Output charger curve and charger status: ○ Red ○ Green
Environmental	
Operating	-20° to 70°C (-4° to 158° F)
Storage	-40° to 85°C (-40° to 185° F)
Relative Humidity	5 to 95% (non-condensing)
Salt Spray Testing	ASTM B117
Corrosion Resistant	From battery gases

Enclosure	
Environmental Resistant	From rain, snow, dust, and dripping water
Battery Connections	
Lead Length	1.8 m (6 ft.) red and black leads
Battery Connections	9.5 mm (3/8 in.) ring terminals
AC Power Connections	
Lead Length	1.8 m (6 ft.)
Storage	Standard US style 3-prong AC plug
Available Options	
Temperature compensation	

DISTRIBUTED BY:

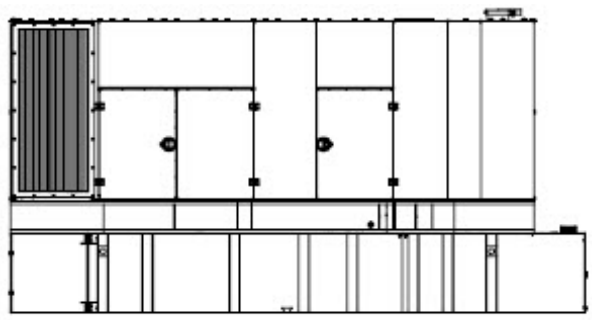
Availability is subject to change without notice. Kohler Co. reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Contact your local Kohler® generator distributor for availability.

Industrial Generator Set Accessories

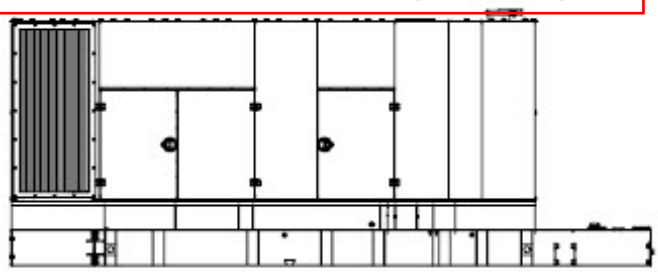
Sound Enclosure with Subbase Fuel Tank Package

KOHLER

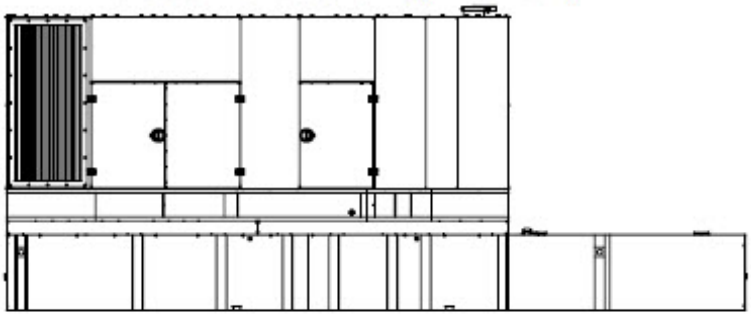
ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED



Enclosure with Standard Tank (12-48 Hour)



Enclosure with State Tank (12-48 Hour)



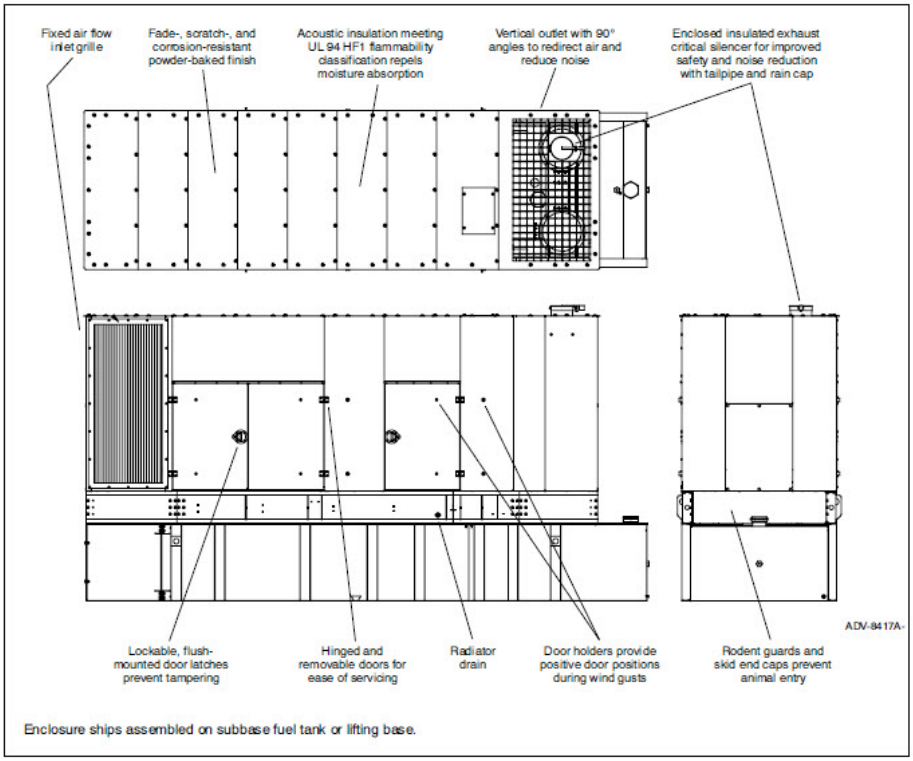
Enclosure with State Tank (72 Hour)

Sound Enclosure Standard Features

- Internal-mounted critical silencer, flexible exhaust connector, and rain cap.
- Skid mounted aluminum construction with hinged and removable doors. Aluminum enclosures recommended for high humidity and/or high salt/coastal regions.
- Fade-, scratch-, and corrosion-resistant Kohler® Power Armor automotive-grade textured finish.
- Enclosure has six large access doors which allow for easy maintenance.
- Lockable, flush-mounted door latches.
- Air inlet louvers reduce rain and snow entry.
- Vertical air outlet with 90 degree angles to redirect air and reduce noise.
- Acoustic insulation that meets UL94 HF1 flammability classification.
- Aluminum sound enclosure is certified to 186 mph (299 kph) wind load rating.

Subbase Fuel Tank Features

- The fuel tank has a Power Armor Plus textured epoxy-based rubberized coating.
- The above-ground rectangular secondary containment tank mounts directly to the generator set, below the generator set skid (subbase).
- Both the inner and outer tanks have emergency relief vents.
- Flexible fuel lines are provided with subbase fuel tank selection.
- The secondary containment tanks construction protects against fuel leaks or ruptures. The inner (primary) tank is sealed inside the outer (secondary) tank. The outer tank contains the fuel if the inner tank leaks or ruptures.



Sound Enclosure Features

- Available in aluminum (3mm [0.125 in.]) formed panel, solid construction. Preassembled package offering corrosion resistant (aluminum), dent resilient structure mounting directly to the lift base or fuel tank.
- Power Armor automotive-grade finish resulting in advanced corrosion and abrasion protection as well as advanced edge coverage and color retention.
- Interchangeable modular panel construction. Allows complete serviceability or replacement without compromising enclosure design.
- Internal critical exhaust silencer. Offers maximum component life, operator safety, and includes rain shield and cap.
- Note: Installing an additional length of exhaust tail pipe may increase backpressure levels. Please refer to the generator set spec sheet for the maximum backpressure value.
- Attenuated design. Acoustic insulation UL 94 HF1 listed for flame resistance.
- Service access. Multi-personnel doors for easy access to generator set control and servicing of the fuel fill, fuel gauge, oil fill, and battery.
- Cooling/Combustion Air Intake. Attenuated models offering weather protective designs using fixed air inlet louvers.
- Cooling Air Discharge. Attenuated models offering 90 degree vertical air outlet. Redirects cooling air up and above enclosures to reduce noise ambient

- Extended operation. Usable tank capacities of up to 72 hours.
- Power Armor Plus textured epoxy-based rubberized coating that creates an ultra-thick barrier between the tank and harsh environmental conditions like humidity, saltwater, and extreme temperatures, and provides advanced corrosion and abrasion protection
- UL listed. Secondary containment generator set base tank meeting UL 142 tank requirements.
- NFPA compliant. Designed to comply with the installation standards of NFPA 30 and NFPA 37.
- Integral external lift lugs. Enables crane with spreader-bar lifting of the complete package (empty tank, mounted generator set, and enclosure) to ensure safety.
- Emergency pressure relief vents. Meets UL requirements; ensures adequate venting of inner and outer tank under extreme pressure and/or emergency conditions.
- Normal vent with cap. Vent is raised above lockable fuel fill.
- Low fuel level switch. Annunciates a 50% low fuel level condition at generator set control.
- Leak detection switch. Annunciates a contained primary tank fuel leak condition at generator set control.
- Electrical stub-up.

Fuel Tank Capacity, L (gal.)	Est. Fuel Supply Hours at 60 Hz with Full Load	Enclosure and Fuel Tank Length, mm (in.)	Enclosure and Fuel Tank Width, mm (in.)	Enclosure and Fuel Tank Weight, kg (lb.)	Enclosure and Fuel Tank Height, mm (in.)	Fuel Tank Height (H), mm (in.)	Sound Pressure Level, dB(A)
3910 (1033)	24	6045 (238)	1883 (74)	7437 (16397)	3309 (130)	737 (29)	76

Note: Data in table is for reference only, refer to the respective ADV drawings for details.
Max. weight includes the generator set (wet) with largest alternator option, enclosure, silencer, and tank (no fuel).

Log average sound pressure level of 8 measured positions around perimeter of the unit at a distance of 7 m (23 ft). Refer to TIB-114 for details.

Accessories

Battery Charger, Mounted.
Mounting, prewiring of DC output and AC input when optional BEP is selected. Battery charger located inside the enclosure and accessible through an access door.

Basic Electrical Package (BEP)
Prewired AC power distribution of all factory-installed features including block heater, two GFCI-protected internal 120-volt service receptacles, internal lighting, and commercial grade wall switch.Load center powered by building source power and protected by a main circuit breaker, rated for 100 amps (single phase) or 125 amps (three phase) with capacity and circuit positions for future expansion.AC power distribution installed in accordance with NEC and all wiring within EMT thin wall conduit. LED AC lights located within UL-listed fixtures.

Block Heater, Junction Box.
Factory-supplied block heater prewired to a junction box providing a convenient location for the customer wiring of the block heater.

KOHLER®

Sound Data

TECHNICAL INFORMATION BULLETIN

Generator Set Sound Data Sheet

			Sound Pressure Data in dB(A)			
Generator Set Model	**Hz**	**Load**	**Raw Exhaust**	**Open Unit, Isolated Exhaust**	**Weather Enclosure**	**Sound Enclosure**
600REOZVB	60	100% Load	122.4	93.8	91.9	76.0
		No Load	107.8	90.9	89.0	73.8

Note: Sound pressure data is the logarithmic average of eight perimeter measurement points at a distance of 7 m (23 ft.), except Raw Exhaust data which is a single measurement point at 1 m (3.3 ft.) from the mouth of a straight pipe exhaust.

600REOZVB **60 Hz**

				Sound Pressure Levels dB(A)								
Load	Distance, m (ft.)	Enclosure	Measurement Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Sound	Right	57.1	66.9	70.6	71.0	66.4	64.5	60.7	55.3	75.8
			Front-Right	59.5	69.9	68.2	67.9	67.5	64.7	58.9	52.8	75.2
			Front	56.6	66.5	69.8	69.8	68.3	64.3	59.9	52.3	75.4
			Front-Left	58.5	66.8	73.0	72.7	69.1	65.9	58.7	55.1	77.6
			Left	58.0	67.4	70.3	71.1	67.3	66.3	59.6	58.5	76.1
			Back-Left	54.1	65.6	72.1	72.3	70.0	67.2	60.1	55.5	77.3
			Back	59.3	64.7	68.5	66.9	64.8	63.3	57.0	48.6	73.3
			Back-Right	56.3	68.3	70.1	68.5	68.4	66.1	58.6	57.5	75.7
			8-pos. log avg.	57.7	67.3	70.6	70.5	68.0	65.5	59.3	55.3	76.0

				Sound Pressure Levels dB(A)								
Load	Distance, m (ft.)	Enclosure	Measurement Position	Right	Front-Right	Front	Front-Left	Left	Back-Left	Back	Back-Right	8-pos. log avg.
100% Load	7 (23)	Weather	Overall Levels	93.1	92.7	84.3	90.9	92.1	91.5	91.1	94.4	91.9

				Sound Pressure Levels dB(A)								
Load	Distance, m (ft.)		Measurement Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Open Unit, Isolated Exhaust	Right	71.3	76.6	87.5	83.7	86.5	87.6	85.0	89.6	95.0
			Front-Right	68.1	72.2	80.2	82.3	86.0	88.0	86.4	90.3	94.6
			Front	61.9	68.5	80.3	75.7	78.9	79.7	77.2	75.5	86.2
			Front-Left	60.1	71.2	80.5	82.3	87.9	88.0	84.0	80.2	92.8
			Left	66.3	73.0	84.4	82.7	87.3	89.8	85.8	81.7	94.0
			Back-Left	65.9	73.6	84.4	83.1	87.2	88.2	84.6	81.9	93.4
			Back	71.7	76.9	88.9	81.4	83.6	85.3	83.5	82.8	93.0
			Back-Right	62.3	75.9	86.4	83.1	88.1	89.5	87.5	91.1	96.3
			8-pos. log avg.	67.7	74.3	85.2	82.3	86.4	87.8	85.0	86.9	93.8

			Sound Pressure Levels dB(A)								
Load	Distance, m (ft.)	Exhaust	Octave Band Center Frequency (Hz)								Overall Level
			63	125	250	500	1000	2000	4000	8000	
100% Load	1 (3.3)	Raw Exhaust (No Silencer)	99.3	106.9	110.7	111.1	113.6	116.4	115.3	115.3	122.4

KOHLER®

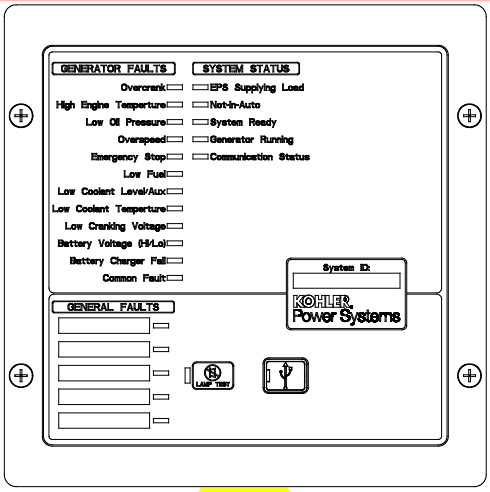
Industrial Generator Set Accessories

Load Center

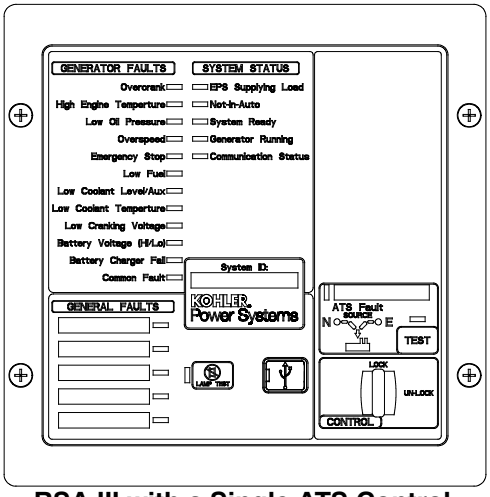
- Part Number - SA27864
- Model - QO816L100RB
- QO Load Center
- Main Lug
- 240V, 100A, 1PH, 8SP

Specifications

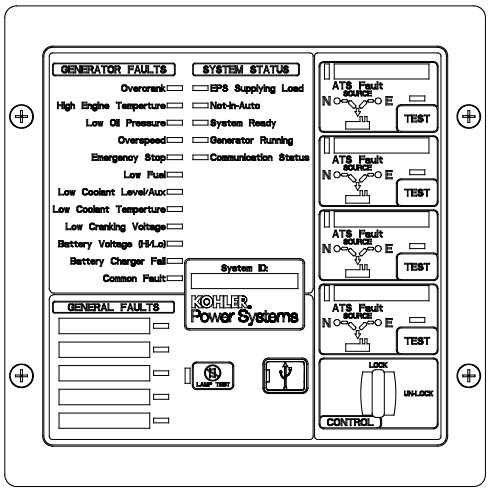
Product	Load Center
Marketing Trade Name	QO
Load Center Type	Main Lugs
Line Rated Current	100 A
Number of Spaces	8
Short Circuit Current Rating	10 kA
Maximum Number of Single Pole Circuits	16
Maximum Number of Tandem Breakers	8
Phase	1 Phase
System Voltage	120/240 VAC
Wire Size	AWG 8...AWG 1 (Aluminum/Copper)
Enclosure Rating	NEMA 3R Outdoor
Cover Type	Surface Cover
Electrical Connection	Lugs
Grounding Bar	Grounding Bar included
Wiring Configuration	3- Wire
Busbar Material	Tin Plated Aluminum Busbar
Enclosure Material	Welded Galvannealed Steel
Cover Finish	Baked Enamel Grey
Box Number	2R
Product Certifications	UL listed
Height	12.64 in (321 mm)
Width	8.9 in (226 mm)
Package Weight (Lbs)	9.8



RSA III



~~RSA III with a Single ATS Control~~



~~RSA III with Four ATS Controls~~

Remote Serial Annunciator III (RSA III) for Kohler® Controllers

- Monitors the generator set equipped with one of the following controllers:

APM402	Decision-Maker® 3000
APM603	Decision-Maker® 3500
APM802	Decision-Maker® 6000
Decision-Maker® 3+	Decision-Maker® 8000
Decision-Maker® 550	KPC 1000

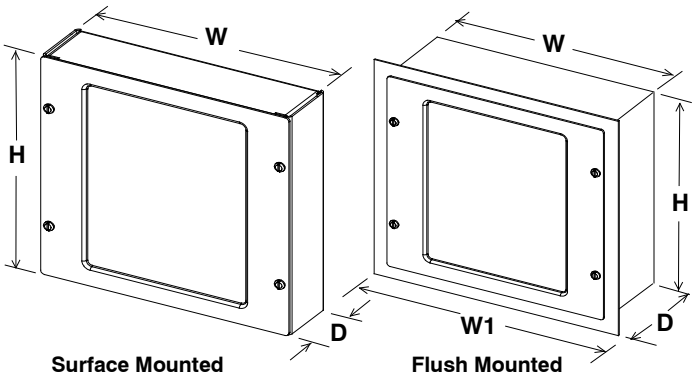
- ~~Allows monitoring of the common alarm, remote testing of the automatic transfer switch, and monitoring of the normal/ emergency source for up to four ATS with any of the following controllers:~~
  - ~~Decision-Maker® MPAC® 750, 1200, and 1500~~
  - ~~MPAC® 1000 and 1500~~
- Configuration via a personal computer (PC) software.
- Writable surfaces (white boxes in illustrations) for user-defined selections.
- Uses Modbus® RTU protocol.
- Controller connections:
  - RS-485 for serial bus network
  - USB port. Connect a personal computer and use Kohler® SiteTech™ software to view events and adjust settings. *
  - 12-/24-volt DC power supply
  - 120/208 VAC power supply (available accessory)
- Meets the National Fire Protection Association Standard NFPA 110, Level 1.

Dimensions

- Dimensions—W x H x D, mm (in.).
  - **Surface Mounted:**
    203 x 203 x 83 (8.0 x 8.0 x 3.3)
  - **Flush Mounted (Inside Wall):**
    203 x 203 x 76 (8.0 x 8.0 x 3.0)
    Flush mounting plate W1: 254 (10.0)

* SiteTech™ software is available to Kohler authorized distributors and dealers.

Modbus® is a registered trademark of Schneider Electric.



Surface Mounted **Flush Mounted**

Fault and Status Conditions	Fault LEDs	Fault Horn	System Ready LED	Generator Running LED	Communication Status LED
Overcrank Shutdown	Red	On	Red	Off	Green
High Engine Temperature Warning *	Yellow	On	Red	Green	Green
High Engine Temperature Shutdown	Red	On	Red	Off	Green
Low Oil Pressure Warning *	Yellow	On	Red	Green	Green
Low Oil Pressure Shutdown	Red	On	Red	Off	Green
Overspeed Shutdown	Red	On	Red	Off	Green
Emergency Stop *	Red	On	Red	Off	Green
Low Coolant Level/Aux. Shutdown	Red	On	Red	Off	Green
Low Coolant Temperature *	Yellow	On	Red	Off	Green
Low Cranking Voltage	Yellow	On	Red	Off	Green
Low Fuel—Level or Pressure *	Yellow	On	Red	Green or Off	Green
Not-In-Auto	Red	On	Red	Green or Off	Green
Common Fault	Red	On	Green	Green or Off	Green
Battery Charger Fault (1) *	Yellow	On	Red	Green or Off	Green
Battery Charger Fault (2) *	Yellow	On	Green	Green or Off	Green
High Battery Voltage *	Yellow	Off	Green	Green or Off	Green
Low Battery Voltage *	Yellow	Off	Green	Green or Off	Green
User Input #1 (Warning)	Yellow	Off	Green	Green or Off	Green
User Input #1 (Shutdown)	Red	On	Green	Off	Green
User Input #2 (Warning)	Yellow	Off	Green	Green or Off	Green
User Input #2 (Shutdown)	Red	On	Green	Off	Green
User Input #3 (Warning) (1) †	Yellow	Off	Green	Green or Off	Green
User Input #3 (Shutdown) (1) †	Red	On	Green	Off	Green
User Input #4 (Warning) (1)	Yellow	Off	Green	Green or Off	Green
User Input #4 (Shutdown) (1)	Red	On	Green	Off	Green
User Input #5 (Warning) (1)	Yellow	Off	Green	Green or Off	Green
User Input #5 (Shutdown) (1)	Red	On	Green	Off	Green
EPS Supplying Load	Yellow	Off	Green	Green	Green
Communications Status (Fault mode)	—	Off	Green or Red	Green or Off	Red
ATS Fault (RSA III with ATS Controls only)	Red	On	Red or Yellow	Green or Off	Green

Green LEDs appear as steady on when activated.
Yellow LEDs slow flash when activated except steady on with EPS supplying load and high battery voltage.
Red LEDs slow flash when activated except fast flash with loss of communication and not-in-auto.

Specifications

- LED indicating lights for status, warning, and/or shutdown.
- Power source with circuit protection: 12- or 24-volt DC
- Power source with120/208 VAC, 50/60 Hz adapter (option)
- Power draw: 200 mA
- Humidity range: 0% to 95% noncondensing
- Operating temperature range: - 20°C to +70°C (- 4°F to +158°F)
- Storage temperature range: - 40°C to +85°C (- 40°F to +185°F)
- Standards:
  - NFPA 110, level 1
  - UL 508 recognized
  - CE directive
  - NFPA 99
  - ENS 61000- 4- 4
  - EN6II-4-4 fast transient immunity
- RS-485 Modbus® isolated port @ 9.6/19.2/38.4/57.6 kbps (default is 19.2 kbps)
- USB device port
- NEMA 1 enclosure

(1) All generator set controllers except Decision-Maker® 3+ controller.
(2) Decision-Maker® 3+ controller only.
* May require optional kit or user-provided device to enable function and LED indication.
† Digital input #3 is factory-set for high battery voltage on the Decision-Maker® 3+ controller.
Modbus® is a registered trademark of Schneider Electric.

ATS Controls (RSA III with ATS controls only)

- ATS position LED (normal or emergency)
- Power source indicator LED (normal or emergency)
- ATS fault LED
- Key-operated lock/unlock switch for Test feature
- Test pushbutton

NFPA Requirements

- NFPA 110 compliant
- Engine functions:
  - High battery voltage warning *
  - High engine temperature shutdown
  - High engine temperature warning *
  - Low battery voltage warning *
  - Low coolant level/aux. shutdown
  - Low coolant temperature warning *
  - Low cranking voltage
  - Low fuel warning (level or pressure) *
  - Low oil pressure shutdown
  - Low oil pressure warning *
  - Overcrank shutdown
  - Overspeed shutdown
- General functions:
  - Audible alarm silence
  - Battery charger fault *
  - Lamp test
  - Master switch not-in-auto

Fault and Status LEDs and Lamp Test Switch

Alarm Horn. Horn sounds giving a minimum 90 dB at 0.1 m (0.3 ft.) audible alarm when a warning or shutdown fault condition exists except on high/low battery voltage or EPS supplying load.

Alarm Silenced. Red LED on lamp test switch lights when alarm horn is deactivated by alarm silence switch.

Alarm Silence Switch. Lamp test switch quiets the alarm during servicing. The horn will reactivate upon additional faults.

ATS Fault. Red LED lights when ATS fails to transfer.

Battery Charger Fail. LED lights if battery charger malfunctions. Requires battery charger with alarm contact.

Battery Voltage Hi/Lo. LED flashes if battery or charging voltage drops below preset level. LED lights steady if battery voltage exceeds preset level.

Common Fault. LED lights when a single or multiple common faults occur.

Communication Status. Green LED lights indicating annunciator communications functional. Red LED indicates communication fault.

EPS Supplying Load. LED lights when the Emergency Power System (EPS) generator set is supplying the load (APM402, APM603, APM802, and Decision-Maker® 550, 3000, 3500, 6000, and 8000 controllers) or when transfer switch is in the emergency position (Decision-Maker® 3+ controller).

Emergency Stop. LED lights and engine stops when emergency stop is made. May require a local emergency stop switch on some Decision-Maker® 3+ controllers.

Generator Running. LED lights when generator set is in operation.

High Engine Temperature. Red LED lights if engine has shut down because of high engine coolant temperature. Yellow LED lights if engine coolant temperature approaches shutdown range. Requires warning sender on some models.

Lamp Test (Switch). Switch tests all the annunciator indicator LEDs and horn.

Low Coolant Level/Aux. LED lights when engine coolant level is below acceptable range on radiator-mounted generator sets only. When used with a Decision-Maker® 3+ controller, the LED indicates low coolant level or an auxiliary fault shutdown. Requires user-supplied low coolant level switch on remote radiator models.

Low Coolant Temperature. LED lights if optional engine block heater malfunctions and/or engine coolant temperature is too low. Requires prealarm sender on some models.

Low Cranking Voltage. LED lights if battery voltage drops below preset level during engine cranking.

Low Fuel (Level or Pressure). LED lights if fuel level in tank approaches empty with diesel models or fuel pressure is low on gas models. Requires customer-supplied switch.

Low Oil Pressure. Red LED lights if generator set shuts down because of insufficient oil pressure. Yellow LED lights if engine oil pressure approaches shutdown range. Requires warning sender on some models.

Not In Auto. LED lights when the generator set controller is not set to automatic mode.

Overcrank. LED lights and cranking stops if engine does not start in either continuous cranking or cyclic cranking modes.

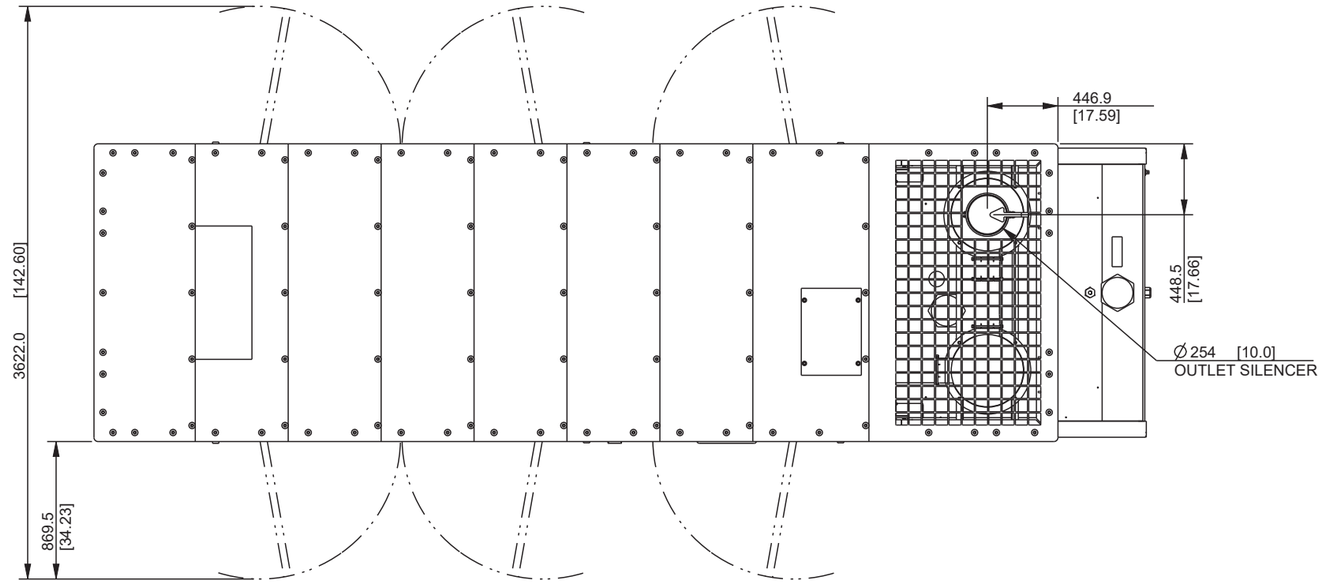
Overspeed. LED lights if generator set shuts down because of overspeed condition.

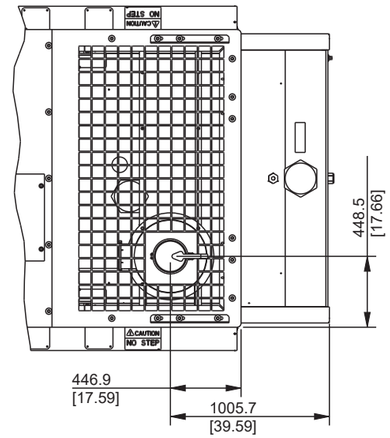
System Ready. Green LED lights when generator set master switch is in AUTO position and the system senses no faults. Red LED indicates system fault.

User-Defined Digital Inputs #1-#5. Monitors five digital auxiliary inputs (can be configured as warnings or shutdowns). User-defined digital inputs are selected via the RSA III master for local or remote (generator set or ATS). The user-defined digital input can be assigned via PC using SiteTech™ setup software.

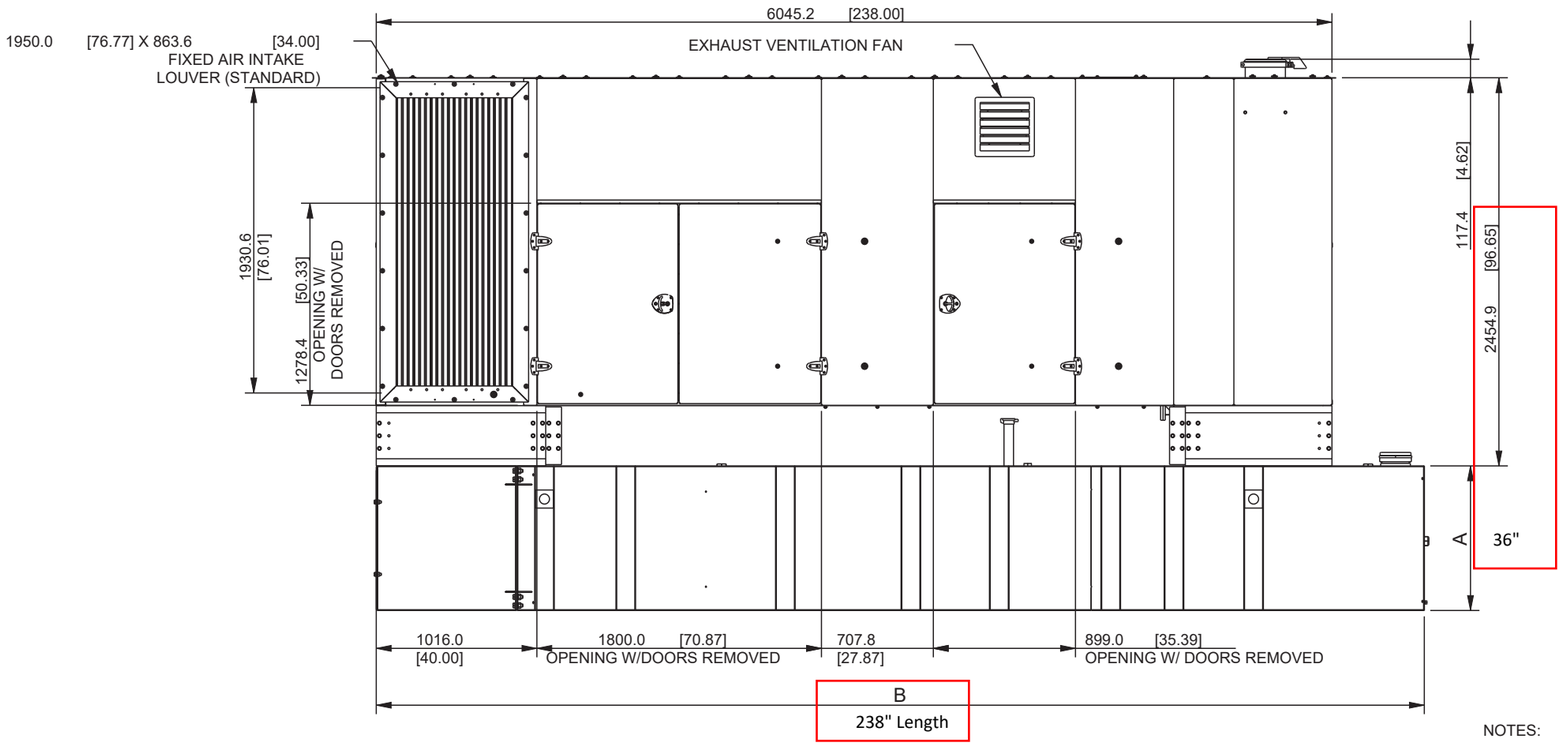
KOHLER®

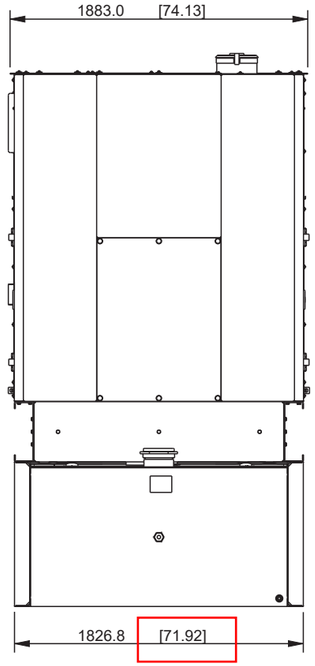
Dimensional Drawings





WEATHER ENCLOSURE





TANK INFORMATION				
LITERS [GALLONS] MIN HOURS	GENSETS	DIM A MM [INCH]	DIM B MM [INCH]	TANK WEIGHT KG [LBS] (NO FUEL)
2049 [541] 12 HOURS	500-600KW	406.4 [16.0]	6045.2 [238.0]	1444 [3183]
3910 [1033] 24 HOURS		736.6 [29.0]		1793 [3952]
5730 [1513] 36 HOURS		914.4 [36.0]	6629.4 [261.0]	2201 [4853]
7645 [2019] 48 HOURS			8026.4 [316.0]	2665 [5876]
2039 [538] 12 HOURS STATE		381.0 [15.0]	6858.0 [270.0]	1591 [3508]
3930 [1038] 24 HOURS STATE		660.4 [26.0]		1893 [4173]
5757 [1520] 36 HOURS STATE		914.4 [36.0]		2177 [4800]
7658 [2023] 48 HOURS STATE			8458.2 [333.0]	2680 [5908]

500-600KW REOZVB/C
STEEL/ALUM ENCL & TANKS
SOUND & WEATHER

NOTES:

FOR PROPER ASSEMBLY METHOD OF HARDWARE, USE G-585 AS A GUIDELINE.

500-600 REOZVB	KG [LBS]
STEEL SOUND L2 ENCLOSURE WEIGHT	1483 [3270]
ALUM SOUND L2 ENCLOSURE WEIGHT	859 [1895]
STEEL WEATHER ENCLOSURE WEIGHT	1326 [2925]
ALUM WEATHER ENCLOSURE WEIGHT	703 [1550]

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	6-27-11	NEW DRAWING [91023-12]	RJS
A	3-19-12	(A-8) SEE SHEETS 5-6 [CT08748]	DJV
B	1-10-13	SHEET 7 ADDED [CT34883]	SDS
C	8/10/17	(D-4) ADD DIM Ø 254.0 SEE SHEETS 2,4,5,6	
		[CT172496]	RMJ
D	11-25-19	(C-5) SA11185 EXHAUST VENT FAN ADDED	
		[CT199135]	SRB

UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ±
X.X ±
X ±
ANGLES ±
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	RJS	6-27-11
CHECKED	RJS	6-27-11
APPROVED	AJD	6-27-11

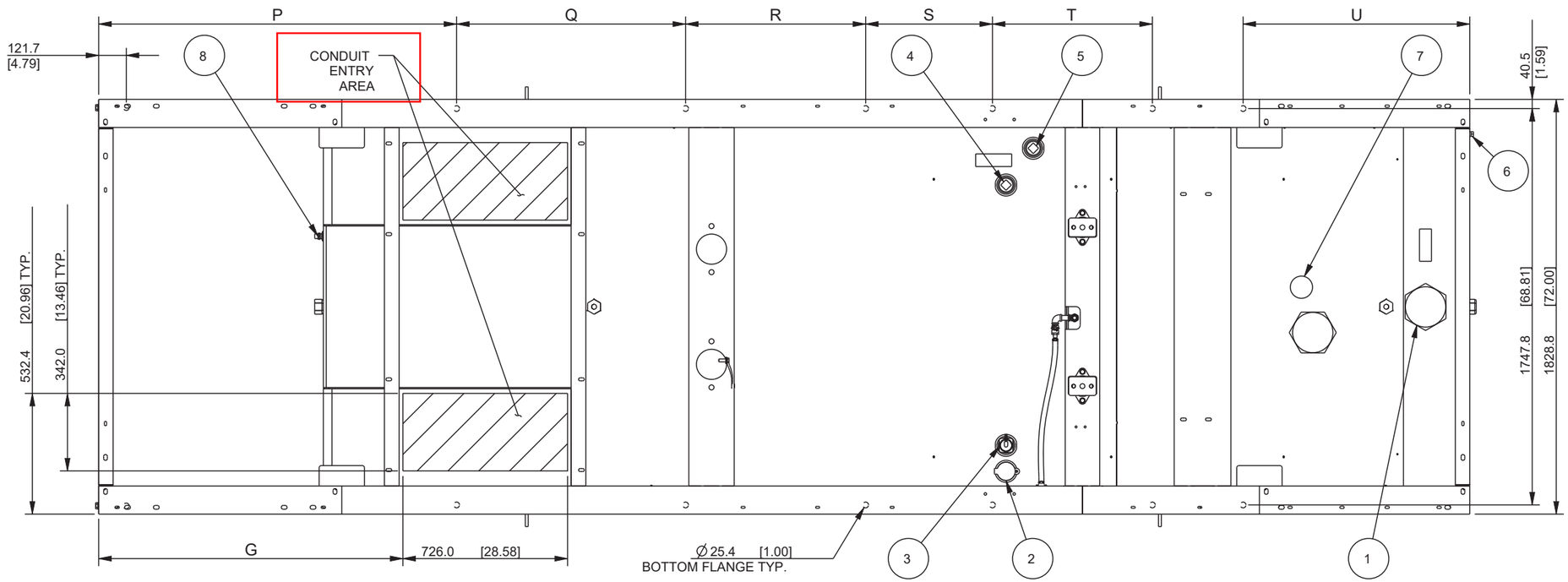
METRIC | PRO-E

TITLE: DIMENSION PRINT, 500-600KW ENCLS & TANKS

SCALE 0.05 | CAD NO. | SHEET 1 of 7

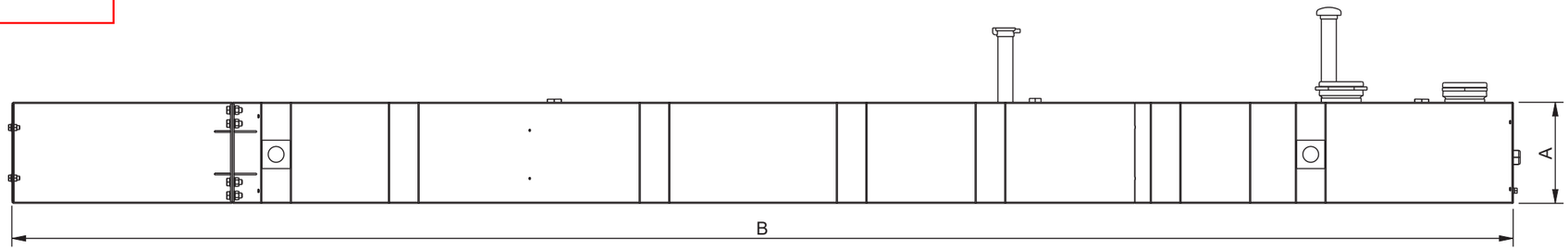
DWG NO. ADV-8417 | D

STANDARD TANK



USE FOR CONDUIT ENTRY

12 HOUR TANK SHOWN



2049 L [541 GAL.] 12 HOUR TANK SHOWN.

8	SWITCH, FUEL IN BASIN
7	VENT, NORMAL
6	DRAIN, (1/2" NPT)
5	RETURN, FUEL
4	SUPPLY, FUEL
3	GAUGE, FUEL LEVEL, W/ SENDER
2	FILL CAP, 2" LOCKABLE W/PIPE RISER
1	CAP, EMERGENCY VENT
ITEM	DESCRIPTION

TANK INFORMATION										JUNCTION BOX G			
										500-550 KW		600 KW	
LITERS [GALLONS] MIN HOURS	A	B	P	Q	R	S	T	U	WEIGHT KG [LBS]	5M4024, 5M4027 5M4028, 5M4030 5M4162, 5M4270 5M4272	5M4032 5M4164	5M4030 5M4272	5M4032 5M4164 5M4276
2049 [541] 12 HOURS	406.4 [16.0]	6045.2 [238.0]	1578.2 [62.1]	1009.5 [39.7]	794.0 [31.3]	559.0 [22.0]	705.2 [27.8]	999.3 [39.3]	1444 [3183]	~~1341.3 [52.8]~~	~~1176.2 [46.3]~~	1174.2 [46.2]	1009.1 [39.7]
3910 [1033] 24 HOURS	736.6 [29.0]								1793 [3952]				
5730 [1513] 36 HOURS	914.4 [36.0]	6629.4 [261.0]						1583.5 [62.3]	2201 [4853]				
7645 [2019] 48 HOURS		8026.4 [316.0]						2980.5 [117.3]	2665 [5876]				

12 - 48 HOUR 500-600KW REOZVB/C
GENSET & STANDARD TANKS WITH
SOUND OR WEATHER ENCLOSURE

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	6-29-11	NEW DRAWING [91023-12]	JB2
A	3-19-12	(A-8) SEE SHEETS 5-6 [CT08748]	DJV
B	1-10-13	SEE SHEET 1 [CT34883]	SDS
C	8-10-17	(B-5) ADD NOTE, SEE SHEET 1,2,5,6 [CT172496]	RMJ
D	11-25-19	SEE SHEET 1 & 3 [CT199135]	SRB

UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ±
X.X ±
X ±
ANGLES ±
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	RJS	6-29-11
CHECKED	RJS	6-29-11
APPROVED	AJD	6-29-11

KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

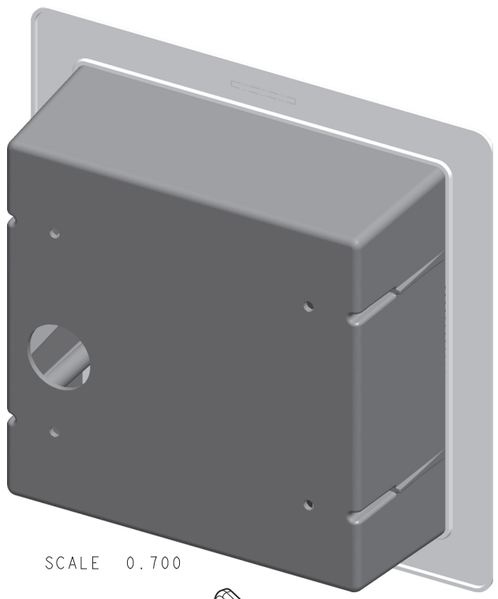
TITLE: DIMENSION PRINT, 500-600KW ENCLS & TANKS

SCALE 0.40 | CAD NO. | SHEET 4 of 7

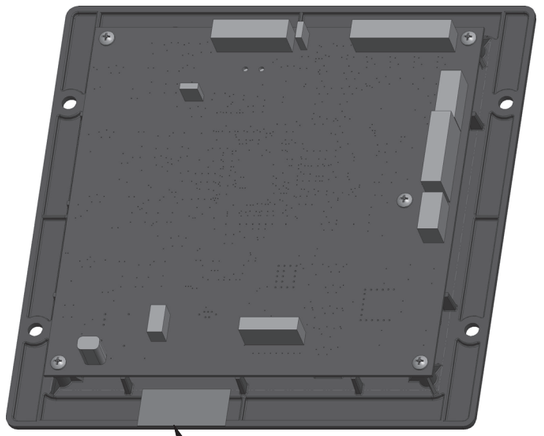
DWG NO. ADV-8417 | D

PART NO.	REV	ITEM 1	ITEM 2	ITEM 3	COMMENTS
GM85123-1	C	GM85127	GM85129	GM86126-1	MULTIPLE ATS
GM85123-2	C	GM85131	GM85129	GM86126-2	SINGLE ATS
GM85123-3	C	GM85132	-	GM86126-3	ANNUNCIATOR ONLY
GM85123-4	C	GM85133	-	GM86126-3	SDMO - ANNUNCIATOR ONLY

SCALE 0.700

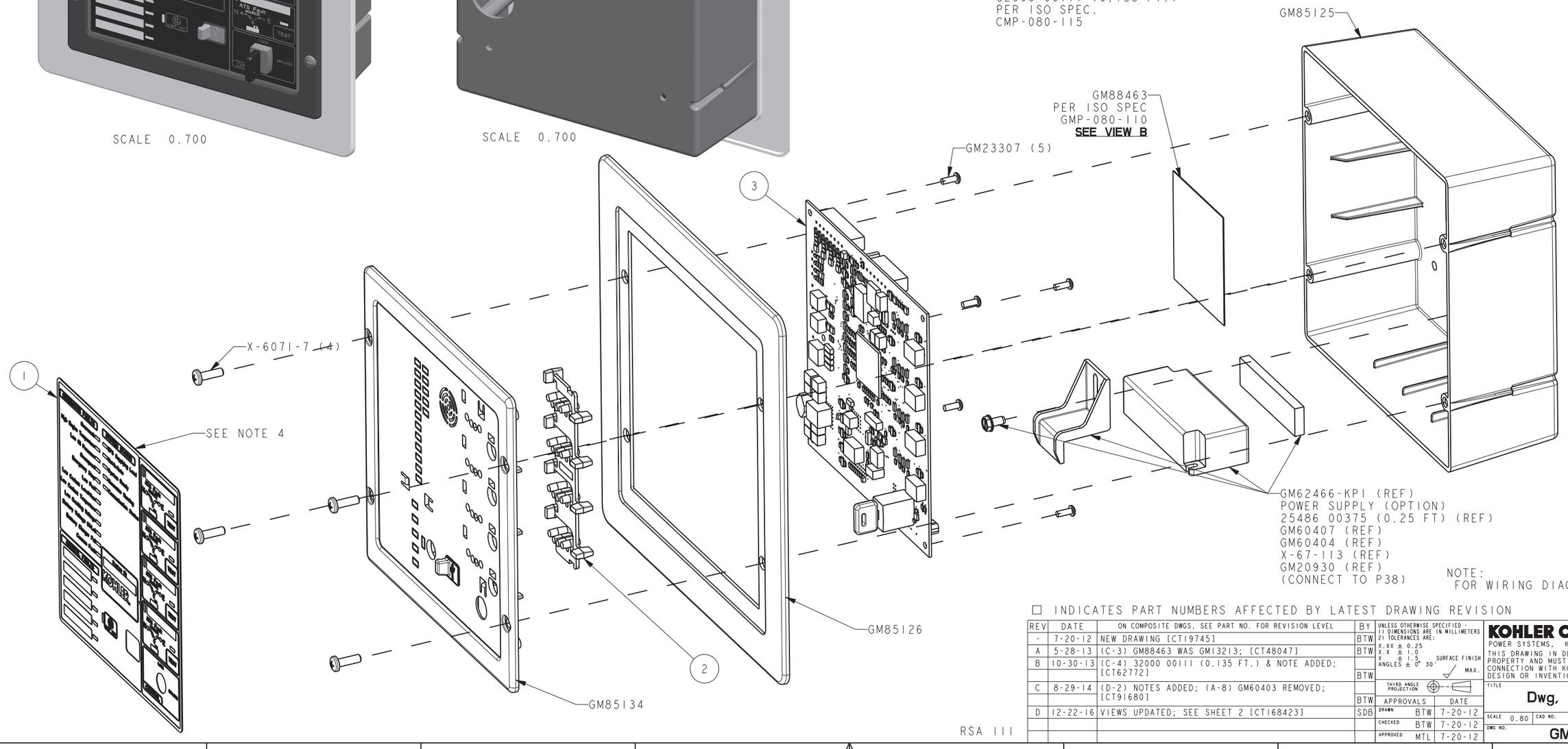


SCALE 0.700



32000 00111 (0.135 FT.)
PER ISO SPEC.
CMP-080-115

NOTES:
1. FUNCTIONALLY TEST ACCORDING TO ISO DOCUMENT ETF-WI-001, PER SPECIFICATION ETF-TD-003.
2. ASSEMBLE PCBA TO BACK OF BEZEL USING FIXTURE JT-0001.
3. TORQUE ALL SCREWS TO 7-10 in lbs.
4. PEEL BACKING OFF FACE PLATE AND APPLY TO BEZEL. APPLY EVEN PRESSURE TO ENTIRE SURFACE TO ENSURE COMPLETE ADHESION.



NOTE:
FOR WIRING DIAGRAM, SEE GM62554.

☐ INDICATES PART NUMBERS AFFECTED BY LATEST DRAWING REVISION

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	7-20-12	NEW DRAWING [CT19745]	BTW
A	5-28-13	(C-3) GM88463 WAS GM13213; [CT48047]	BTW
B	10-30-13	(C-4) 32000 00111 (0.135 FT.) & NOTE ADDED; [CT62772]	BTW
C	8-29-14	(D-2) NOTES ADDED; (A-8) GM60403 REMOVED; [CT91680]	BTW
D	12-22-16	VIEWS UPDATED; SEE SHEET 2 [CT168423]	SDB

UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30'
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	BTW	7-20-12
CHECKED	BTW	7-20-12
APPROVED	MTL	7-20-12

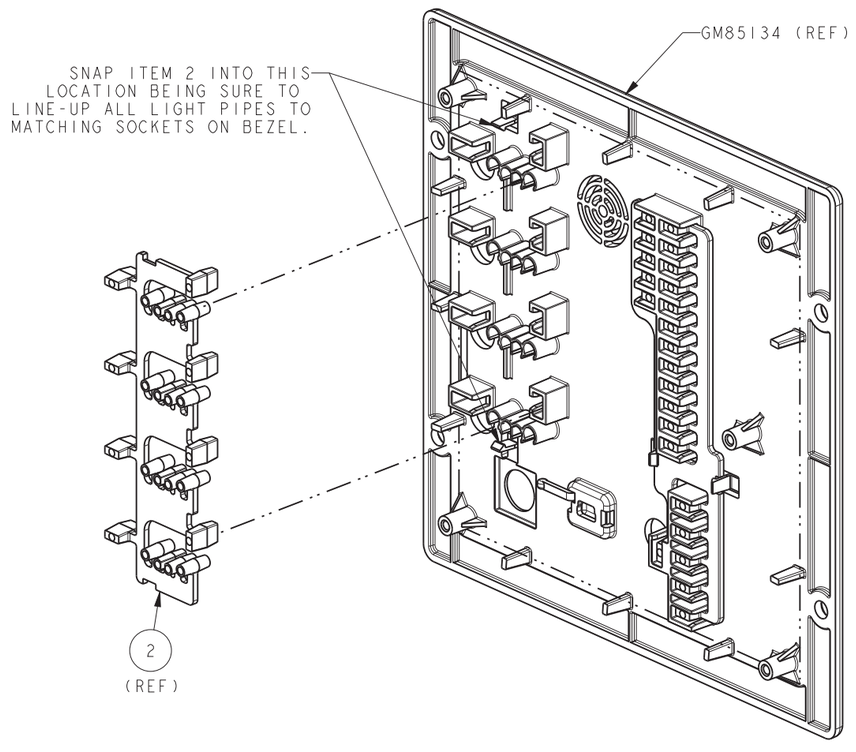
KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: Dwg, RSA III Assy

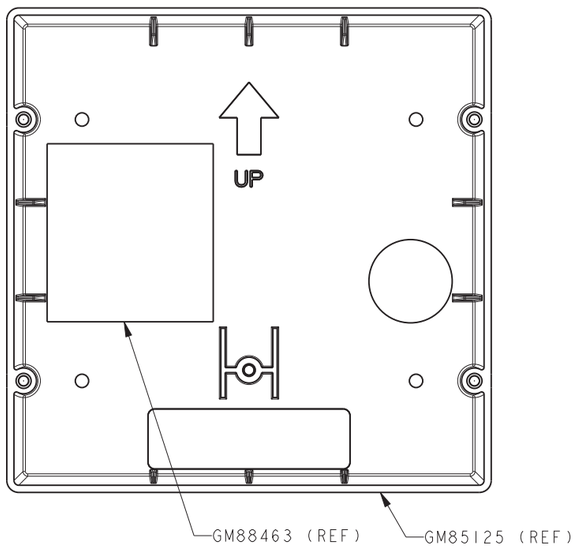
SCALE 0.80 | CAD NO. | SHEET 1 of 2

DWG NO. GM85123 | D

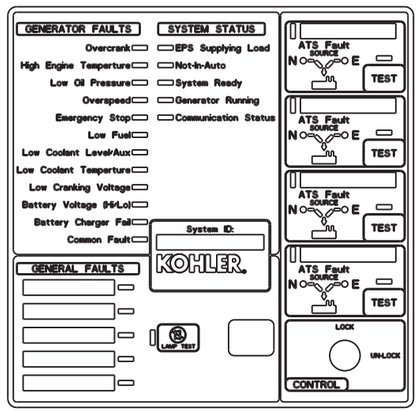
RSA III



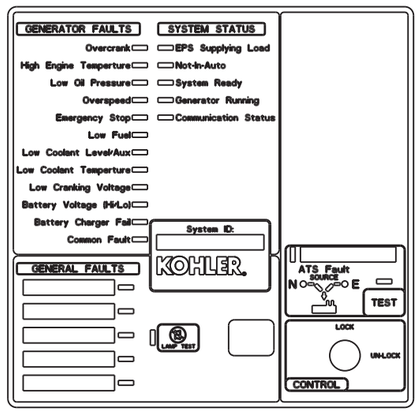
BACK VIEW OF BEZEL
SCALE 1.000



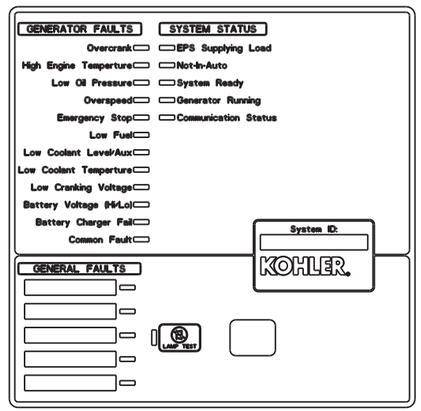
VIEW B
FRONT OF BOX



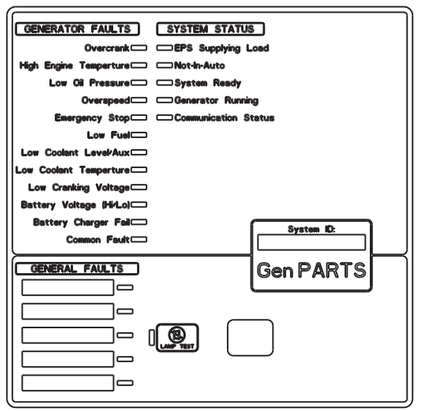
ITEM 1
(P/N: GM85127 REF)



ITEM 1
(P/N: GM85131 REF)



ITEM 1
(P/N: GM85132 REF)



ITEM 1
(P/N: GM85133 REF)

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	7-30-12	NEW DRAWING [CT19745]	BTW
A	5-28-13	(A-8) GM88463 (REF) WAS GM13213 (REF); [CT48047]	BTW
B	10-30-13	SEE SHEET 1 [CT62772]	BTW
C	8-29-14	VIEW A REMOVED; [CT91680]	BTW
D	12-22-16	VIEWS UPDATED; SEE SHEET 1 [CT168423]	SDB

UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30'
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	BTW	7-30-12
CHECKED	BTW	7-30-12
APPROVED	MTL	7-30-12

KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE
Dwg, RSA III Assy

SCALE 0.80 | CAD NO. | SHEET 2 of 2
DWG NO. GM85123 | D

KOHLER®

Wiring Schematics

SB NO.	PART NO.	DESCRIPTION	OPTION	FIELD
1	XXXXXX	BATTERY CABLE POSITIVE	–	–
2	XXXXXX	BATTERY CABLE NEGATIVE	–	–
3	GM114916	HARNESS, APM603, PEDESTAL, VOLVO	–	–
4	GM110260	ENGINE HARNESS	–	–
5	GM105367	COMMON FAILURE RELAY	X	X
6	GM105366	15 RELAY DRY CONTACT	X	X
7	GM105663	RUN/OFF/AUTO KEYSWITCH	X	X
8	GM11501	CURRENT SENSE HARNESS	–	–
9	GM105377	VOLTAGE SENSE HARNESS	–	–
10	GM105845	4D ACTIVATOR/CURRENT/VOLT SENSE	–	–
11	GM105378	SHUNT TRIP RELAY HARNESS	X	X
12	GM105379	GROUND FAULT HARNESS	X	X
13	GM105380	LOCAL MOTORIZED BREAKER HARNESS	X	–
14	GM105382	REMOTE MOTORIZED BREAKER HARNESS	X	X
15	XXXXXX	FUEL LEVEL SENDER HARNESS	–	–
16	XXXXXX	FUEL LEAK ALARM HARNESS	–	–
17	GM114915	WIRING DIAGRAM	–	–

REV	DATE	REVISION	BY	M F
–	7–31–20	NEW DRAWING [CT205670]	SBR	
A	8–17–20	ADDED DRAWING [CT205833]	SBR	
B	9–16–20	SEE SHEET 3 [CT206820]	TEV	
C	2–08–21	(A–5) WAKEUP WAS CRANK, (A–2) 500KW 550KW ADDED		
		[CT209821]	TEV	

LEGEND

BCA – BATTERY CHARGING ALTERNATOR
BTCS – BATTERY TEMP COMPENSATION SENSOR
CLS – COOLANT LEVEL SENDER
CT(#) – CURRENT TRANSFORMER
CTS – COOLANT TEMPERATURE SENDER
DIAG – DIAGNOSTIC LAMP
ECM – ENGINE CONTROL MODULE
ESS – EMERGENCY STOP SWITCH
FLA – FUEL LEAK ALARM
FLS – FUEL LEVEL SENDER
LCT – LOW COOLANT TEMPERATURE SWITCH
P(#) – PLUG
QCON(#) – QUICK CONNECT
SM – STARTER MOTOR
SS – STARTER SOLENOID
STAT – STATOR
SW(#) – SWITCH
TB(#) – TERMINAL BLOCK
W(#) – WIRE WELD

EBG – ENGINE BLOCK GROUND
GND – CONTROLLER BOX GROUND
PGND – PANEL GROUND

GENERATOR ALTERNATOR
SHEET 5

ALTERNATOR
ACTIVATOR
4D
P1
CONNECT AS PER ADV–5875
CT
9
10
J26
P26
J2
P2
CURRENT SENSING
VOLTAGE SENSING
11

OPTIONAL MANUAL BREAKER
SHUNT TRIP OPTIONAL
S

BREAKER BOX

OPTIONAL MOTORIZED BREAKER
M

BREAKER BATTERY
CHARGER

L1
L2
L3
L0
USER POWER
SHEET 7 OR 8

SHUNT TRIP RELAY
OPTIONAL
12
JX1
PX1
P1D
J1D

GFI
OPTIONAL
13
JG1
PG1

CONTROL BOX
SHEET 2
SEE NOTE1

BREAKER MOTOR RELAY'S
TX1
14
15
TX5

PX1
JX1
PB1
JB1
OPTIONAL

LOCAL E–STOP

APM603

RDO CONNECTOR FACTORY USE ONLY
PR3
RDO CONNECTOR FACTORY USE ONLY
PR2
PK1
JK1
8

OPTIONAL
SHEET 2
AUTO/OFF/MANUAL KEY SWITCH
HORN

QCONS
RUN RELAY
OPTIONAL
COMMON FAILURE RELAY
PR1
JR1
6
P15
J15
7
15 RELAY BOARD
OPTIONAL

16
17
FUEL LEVEL SENDER
FUEL LEAK SWITCH
SHEET 6

P1 J1
3
P2
J2
5
WAKEUP, RUN, GP RELAYS
DIAGNOSTIC PORT
CUSTOMER CONNECTION
TB12
(DIN RAIL)

QCONS

VOLVO ENGINE
SHEET 3

ECM
P4 (ON J.D. HARNESS)
ENGINE SENSOR'S
4

BCA

FUSE
RED
1
BLK
2
SS
SM
BATTERY
SHEET 3

BATTERY CHARGER
SHEET 3

ENGINE BLOCK GROUND

NOTES:
1: TX1 ONLY USED FOR REMOTE MOUNTED BREAKERS.

TB12 CONNECTION CHART			
FUNCTION	POS	SIGNAL DESCRIPTION	
REMOTE E–STOP	1	REMOTE EMERGENCY STOP	
	2		
REMOTE START	3	REMOTE START SIGNAL	
	4		
CUSTOMER INTERFACE	5	FUSED BATTERY POWER	
	6	BATT VOLTS WHEN RUNNING	
	7	BATTERY NEGATIVE	
CUSTOMER INTERFACE	8	A (–)	ISOLATED RS–485 #2 (PGEN)
	9	B (+)	
	10	SHIELD	
LOW FUEL	11	LOW FUEL LEVEL SWITCH	
RES IN RETURN	12	LOW FUEL LEVEL SWITCH RETURN	
BAT CHRG FLT	13	BATTERY CHARGER FAULT	
RES IN RETURN	14	BATTERY CHARGER FAULT RETURN	
AUX WARNING	15	AUXILIARY WARNING	
RES IN RETURN	16	AUXILIARY WARNING RETURN	
AUX FAULT	17	AUXILIARY FAULT	
RES IN RETURN	18	AUXILIARY FAULT RETURN	
CUSTOMER INTERFACE	19	A (–)	ISOLATED RS–485 #3 (MODBUS/PGEN)
	20	B (+)	
	21	SHIELD	
CUSTOMER INTERFACE	22	A (–)	NON–ISOLATED RS–485 #4 (MODBUS RSA)
	23	B (+)	
	24	SHIELD	
RUN RELAY	25	COMMON CONTACT	
	26	NORMALLY OPEN CONTACT	
	27	NORMALLY CLOSED CONTACT	
SPEED BIAS	28	SPEED BIAS (+)	
	29	SPEED BIAS (–)	
	30	SHIELD	
VOLTAGE BIAS	31	VOLTAGE BIAS (+)	
	32	VOLTAGE BIAS (–)	
	33	SHIELD	
SPARE	34	SPARE	
SPARE	35	SPARE	
DROOP SELECT	36	SPARE	
		SPARE	
ANALOG THROTTLE CONTROL	37	SPARE	
	38	SPARE	
	39	SPARE	
IDLE MODE	40	SPARE	
	41		
SPARE	42	SPARE	
SPARE	43	SPARE	
SPARE	44	SPARE	

* REMOVE RESISTORS IF PARALLELING

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX± .010 ANGLES± 1/2° .XX ± .030 .X ± .060 FRACTIONS ± SURFACE FINISH 125 MAX.

APPROVALS	DATE
DRAWN SBR	7–29–20
CHECKED DJY	7–29–20
APPROVED JLS	7–29–20

TITLE: DIAGRAM, SCHEMATIC APM603, VOLVO
SCALE N/A SHEET 1–8
PLOTTED DWG. NO. ADV–9221 D

APM603 CONTROLLER
500KW, 550KW, 600KW VOLVO

REV	DATE	REVISION	BY	M F
–	7-31-20	NEW DRAWING [CT205670]	SBR	
A	8-17-20	ADDED DRAWING [CT205833]	SBR	
B	9-16-20	SEE SHEET 3 [CT206820]	TEV	
C	2-08-21	(C-3) WAKEUP WAS CRANK, (A-2) 500KW 550KW ADDED		
		[CT209821]	TEV	

TB12
CUSTOMER CONNECTION
(SEE CHART ON SHEET 1)

RJ45-RJ45
PATCH PANEL
CUSTOMER TO USE
CAT-6A, RJ45
SHIELDED CABLE

** REMOVE JP1
JUMPER, IF REMOTE
EMERGENCY STOP
IS CONNECTED

JP1 **

OPTIONAL
REMOTE
ESTOP

REMOTE
START

SHIELDED
WIRE
RECOMMENDED

SHLD

SELF-GROUNDING
BLOCK

SELF-GROUNDING
BLOCK

SELF-GROUNDING
BLOCK

GROUND
STRAP

PGND PGND

TO JG1
GFI
CONTROL
SHEET 6

PG1
1 PF3E
2 NG
3 GFR
4

+24V F3
W(B)

+24V F1
W(A)

+VBAT F3
W(B)

+VBAT (RUN)
W(L)

70S

F2
10 AMP

70A

ES1B
ES2B
3
4
PF3B
70A
7N
BLK
WHT
UNINS.-S2
LFL
N8
BCF
N7
AXW
N6
AXF
N5
BLK
WHT
UNINS.-S3
BLK
WHT
UNINS.-S4
RRCOM
RRNO
RRNC
BLK
WHT
UNINS.-S8
BLK
WHT
UNINS.-7

TO
SHEET
4

JUNCTION BOX

APM603 CONTROLLER

P2-16 V_BAT1
P2-17 V_BAT2
P2-9 GND
P2-1 CTNEU_P
P2-2 CTNEU_N
P2-8 CT1_N
P2-7 CT1_P
P2-6 CT2_N
P2-5 CT2_P
P2-4 CT3_N
P2-3 CT3_P
P2-15 VOLT_INPUT_1N
P2-23 VOLT_INPUT_1P
P2-14 VOLT_INPUT_2N
P2-22 VOLT_INPUT_2P
P2-13 VOLT_INPUT_3N
P2-21 VOLT_INPUT_3P
P2-12 VOLT_INPUT_4N
P2-20 VOLT_INPUT_4P
P2-11 VOLT_INPUT_5N
P2-19 VOLT_INPUT_5P
P2-10 VOLT_INPUT_6N
P2-18 VOLT_INPUT_6P

P4-27 DIGITAL_IN1 EXCITATION OVER VOLTAGE
P4-26 DIGITAL_IN2 FUEL LEAK ALARM
P4-25 DIGITAL_IN3 REMOTE START
P4-24 DIGITAL_IN4 BREAKER CLOSED
P4-13 DIGITAL_IN5 BREAKER TRIPPED
P4-1 DIGITAL_IN6 GND FAULT RELAY
P4-2 DIGITAL_IN7 KEY SWITCH AUTO
P4-3 DIGITAL_IN8 KEY SWITCH RUN
P4-4 GND_FIN DIGITAL INPUT RETURN
P4-9 RESISTIVE_IN_1 FUEL LEVEL
P4-21 RESISTIVE_IN_2 COOLANT TEMP SENSOR
P4-10 RESISTIVE_IN_3 LOW FUEL LEVEL SW.
P4-22 RESISTIVE_IN_4 BATT CHARGER FAULT
P4-11 RESISTIVE_IN_5 AUXILIARY WARNING
P4-23 RESISTIVE_IN_6 AUXILIARY FAULT
P4-12 RESISTIVE_IN_RETURN

P4-5 +5V_RM1
P4-6 RM1_IN
P4-17 GND_RM1
P4-7 +5V_RM2
P4-8 RM2_IN
P4-19 GND_RM2

P4-34 LED-
P4-35 LED+
P4-14 NO CONNECTION
P4-15 NO CONNECTION
P4-16 NO CONNECTION
P4-18 NO CONNECTION
P4-20 NO CONNECTION
P4-28 NO CONNECTION
P4-29 NO CONNECTION
P4-30 NO CONNECTION
P4-31 HEARTBEAT_COM
HEARTBEAT CONTACTS: 2A AT 30VDC
P4-32 HEARTBEAT_NO
P4-33 NO CONNECTION

P2
P1
P4
P3
P5 (ETHERNET)

I/O BOARD CAN_L P1-1
I/O BOARD CAN_H P1-2
I/O BOARD CAN_GND P1-13
ENGINE-CAN_L P1-27
ENGINE-CAN_H P1-26
PGEN-RS485_A-2 P1-3
PGEN-RS485_B+2 P1-4
PGEN-RS485_GND_2 P1-15
MODBUS-RS485_A-3 P1-5
MODBUS-RS485_B+3 P1-6
MODBUS-485_GND_3 P1-17
RSA-RS485_A-4 P1-34
RSA-RS485_B+4 P1-35
FACTORY-RS485_A-1 P1-23
FACTORY-RS485_B+1 P1-12
ESTOP_SW_LOCAL P P1-29
ESTOP_SW_REMOTE P P1-31
ESTOP_SW_LOCAL N P1-28
ESTOP_SW_REMOTE N P1-30
RUN/FUEL-RDO1 P1-10
CRANK-RDO2 P1-21
HORN-RDO3 P1-9
FAILURE-RDO4 P1-20
RDO5 P1-8
RDO6 P1-19
CLOSE CB-RDO7 P1-7
TRIP CB-RDO8 P1-18
RDO RETURN P1-33
MAG- P1-24
MAG+ P1-25
LCL IN P1-16
LCL RETURN P1-14
NO CONNECTION P1-11
NO CONNECTION P1-22
NO CONNECTION P1-32
GEN_L1 P3-1
GEN_L2 P3-2
GEN_L3 P3-5
GEN_L0 P3-6
BUS_L1 P3-7
BUS_L2 P3-8
BUS_L3 P3-4
BUS_L0 P3-3

GRN
YEL
UNINS.-S5
GRN
YEL
UNINS.-S6
BLK
WHT
UNINS.-S2
BLK
WHT
UNINS.-S3
BLK
WHT
UNINS.-S4

P15
1 YEL
2 GRN
3 UNINS.-S5
4 +24V F3, W(B)
5 PF3D
6 N15R

TO J15
RELAY
OPTIONS
SHEET 4

+24V F1
W(A)
ESTOP
LOCAL
PF1E
ES1A
W(S)
ES1
ES1B
ES2

P24 (RUN)
70N
ES3A
+24V (RUN)
W(L)
P24
70H
PF1R
P23
(WAKEUP)
71N
ES3B
ES3
W(P)
P23
70B
P6

HORN
P9
HRN

F1
15 AMP
P5
PF1A
F3
10 AMP
P4
PF3
W(E)
P

32A J
RD5 N
RD6 P
NRD R
RELAY
DRIVERS
SEE
SHEET 4

J1
64 1
63C 2
P 4 +24V
N18 7
N17 8
35A 19 CTS
70B 23 IGNITION
14N1 31 GND
UNINS.-S6 32
GRN 33
YEL 34
CAN

WJ3 WJ2 WJ1
W(K) W(T) W(I) W(J)

CONNECT TO P1, SHEET 3

N20 W TO SHEET 4
W(T)

E FROM ALTERNATOR SHEET 5

N4D
W(T)

+VBAT F3
W(B)

TO JX1
BREAKER
CONTROL
SHEET 6,
7 OR 8

PX1
PF3X 1
NX 2
CBC 3
CBT 4
CBCR 5
CBTR 6
K

NO CONNECTION
TO PX1

PB1
1 BL1
2 BL2
3 BL3
4 BL0
5
6

A FROM JB1
BUS VOLTAGE
SENSE
SHEET 7 OR 8

RUN/OFF/AUTO
KEY SWITCH OPTIONAL

NAUT
KYA
NRUN
KYR
NKS

JK1
1
2
3

PK1
1 KYA1
2 KYR1
3 NKS1

W(T)

APM603 CONTROLLER
500KW 550KW 600KW VOLVO

UNLESS OTHERWISE SPECIFIED -
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.XXX± .010 ANGLES± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 MAX.
FRACTIONS ±

APPROVALS	DATE
DRAWN SBR	7-29-20
CHECKED DJY	7-29-20
APPROVED JLS	7-29-20

TITLE
DIAGRAM, SCHEMATIC
APM603, VOLVO

SCALE N/A SHEET 2-8

PLOTTED DWG. NO. ADV-9221 D

REV	DATE	REVISION	BY	N F
–	7-31-20	NEW DRAWING [CT205670]	SBR	
A	8-17-20	ADDED DRAWING [CT205833]	SBR	
B	9-16-20	(C-6) FUSE P5 DELETED [CT206820]	TEV	
C	2-08-21	(C-5) P22 DELETED (A-2) 500KW 550KW ADDED [CT209821]	TEV	

ENGINE

OPTIONAL

10 AMP BATTERY CHARGER

CAN_L P50-10 — GRN
CAN_H P50-5 — YEL
CAN_GND P50-9 — WHT

P55-1 SOURCE
P55-1 RETURN
TEMPERATURE COMPENSATION SENSOR (OPTIONAL ACCESSORY)

BTCS

120VAC IN

DC OUT — RED — BLK

10 AMP

RED

INSTALL ON BATTERY (–) POST

BCA
B+ — 10P
(EBG) BCA EXCITATION SUPPLIED BY ENGINE HARNESS

BATTERY A (12 VDC)
BATTERY B (12 VDC)
10N
(EBG) W(D)

SS
SM
(EBG)

(OPTIONAL)
FUEL TANK LEVEL & LEAK ALARMS

QCON7 — FLA
QCON8
QCON5
QCON6
TO FUEL LEVEL SENSOR

P1

TO TB12	1	64
	2	63C
	3	
+24V	4	P
	5	
	6	
	7	N18
	8	N17
TO GLOW PLUG	9	
	10	
	11	
	12	
	13	
	14	
	15	
	16	
	17	
	18	
CTS	19	35A
	20	
	21	
CLS	22	
+24V, (RUN)	23	70B
	24	
START	25	
TO GLOW PLUG RELAY	26	
	27	
	28	
	29	
	30	
GND	31	14N1
CAN	32	WHT
	33	GRN
	34	YEL

TO P1B, SHEET 2

CTS: NOT USED FOR APM603 CONTROLLER

CTS
N
+24V RUN W(K)

W(D)
14N2
(EBG)

3-WIRE TWISTED CABLE

W(Y) YEL
GRN
WHT
W(Z)
W(X)
W(D)
N20

3-WIRE TWISTED CABLE

3-WIRE TWISTED CABLE

ECM COMMUNICATIONS
P4

YEL	1
GRN	2
WHT	3
VP	4
70B2	5
	6
	7
	8

+24V RUN W(K)

P2

	1
	2
	3
VP	4
70C	5
	6
	7
	8
	9

APM603 CONTROLLER
500KW 550KW 600KW VOLVO

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX± .010 ANGLES± 1/2° .XX ± .030 SURFACE FINISH .X ± .060 MAX. FRACTIONS ±

APPROVALS	DATE
DRAWN SBR	7-29-20
CHECKED DJY	7-29-20
APPROVED JLS	7-29-20

TITLE: DIAGRAM, SCHEMATIC APM603, VOLVO

SCALE N/A — SHEET 3-8

PLOTTED — DWG. NO. ADV-9221 — D

REV	DATE	REVISION	BY	M F
–	7–31–20	NEW DRAWING [CT205670]	SBR	
A	8–17–20	ADDED DRAWING [CT205833]	SBR	
B	9–16–20	SEE SHEET 3 [CT206820]	TEV	
C	2–08–21	(A–2) 500KW 550KW ADDED [CT209821]	TEV	

JUNCTION BOX

J15
1 YEL
2 GRN
3 UNINS. (S5)
4
5 P15R
6 N15R

FROM P15 SHEET 2 (D)

(OPTIONAL)
15 RELAY DRY CONTACT KIT
W/ NO & NC CONTACTS

P15R
UNINS. (S5)
YEL
GRN
N15R

RELAYS K1–K14
12VDC, 10A, SPDT
RELAY K15
5VDC, 2A, DPDT

TB5: 42A 42A 42A C NO (+) (–) 2 2 2
CAN
K15
DIGIN RETURNS
P35
TB6
DI1 DI2 DI3 DI4 (DIGITAL INPUT)
GND VN2VP2+5VGND VN1 VP1 +5V
P36 (ANALOG INPUT)

K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K11 K12 K13 K14

TB7 (K1 WIRE SIDE K2) NO C NC
TB8 (K3 WIRE SIDE K4) NO C NC
TB9 (K5 WIRE SIDE K6) NO C NC
TB10 (K7 WIRE SIDE K8) NO C NC
TB11 (K9 WIRE SIDE K10) NO C NC
TB12 (K11 WIRE SIDE K12) NO C NC
TB13 (K13 WIRE SIDE K14) NO C NC

CUSTOMER CONNECTIONS

FROM SHEET 2
J 32A
N RD5
P RD6
R NRD

+24V F3 W(B)
PF3C
32A
1
W(K)

PR1 JR1
32A 1 1 32A
NR1 2 2 NR1
PF3C 3 3 PF3C
4 4

1 RELAY BOARD
C–294301
TB1: K1, 2, 42A
TB2: C, NC, NO

CUSTOMER CONNECTION

COMMON FAULT RELAY
(OPTIONAL)

+24V F3 W(B)
PF3F
RD5
NRD2
2
PR2
RD5 1
NRD2 2
PF3F 3
4

RDO PLUG
(FACTORY USE ONLY)

NRD
W(AE)
NRD3

+24V F3 W(B)
PF3G
RD6
NRD3
3
PR3
RD6 1
NRD3 2
PF3G 3
4

RDO PLUG
(FACTORY USE ONLY)

AUXILIARY RUN RELAY
291309=24VDC
248363=12VDC

+24V (RUN) W(L)
FROM TB12 SHEET 2 (T)
RRNC 1
RRNO 4
RRCOM 7
70K A
N20 B
FROM SHEET 2 (W)

RELAY
1 4 2 5 3 6 7 8 9
A B
2 5 8 3 6 9

APM603 CONTROLLER
500KW 550KW 600KW VOLVO

UNLESS OTHERWISE SPECIFIED –
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2) TOLERANCES ARE:
.XXX± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 MAX.
FRACTIONS ±

APPROVALS		DATE
DRAWN	SBR	7–29–20
CHECKED	DJY	7–29–20
APPROVED	JLS	7–29–20

KOHLER.
KOHLER, WI 53044

TITLE: DIAGRAM, SCHEMATIC APM603, VOLVO
SCALE N/A SHEET 4–8
PLOTTED DWG. NO. ADV–9221 D

ALTERNATOR

REV	DATE	REVISION	BY	M F
–	7–31–20	NEW DRAWING [CT205670]	SBR	
A	8–17–20	ADDED DRAWING [CT205833]	SBR	
B	9–16–20	SEE SHEET 3 [CT206820]	TEV	
C	2–08–21	(A–2) 500KW 550KW ADDED [CT209821]	TEV	

J1D P1D

	J1D	P1D	
A	1	1	A
B	2	2	B
C	3	3	C
NEU	4	4	NEU
	5	5	
	6	6	
	7	7	
	8	8	
I1	9	9	I1
I1R	10	10	I1R
I2	11	11	I2
I2R	12	12	I2R
I3	13	13	I3
I3R	14	14	I3R
	15	15	
	16	16	
	17	17	
	18	18	
	19	19	
EOV	20	20	EOV
3B	21	21	3B
5B	22	22	5B
N4D	23	23	N4D
	24	24	

P2D J2D

	P2D	J2D	
A	1	1	A
B	2	2	B
C	3	3	C
NEU	4	4	NEU

(E) TO CONTROLLER SHEET 2

4D ACTIVATOR BOARD (P1)

- BAT+ P1–8
- BAT GND P1–7
- GND P1–9
- BUS, VOLTAGE VALID+ P1–10
- BUS, VOLTAGE VALID– P1–11
- 3B → LED+ P1–6
- 5B → LED1 P1–1
- EOV → OVER EXCITATION V+ P1–12
- N4D → OVER EXCITATION V– P1–13
- PMG2 → AC1 P1–4
- PMG1 → AC3 P1–3
- AC2 P1–2
- F2 → FN P1–5
- F1 → FP P1–14

P1: 10, 11, 12, 13, 14, 6, 7, 8, 9, 1, 2, 3, 4, 5

70 70 7N TB10

CT BURDEN RESISTOR BOARD

I1 P26–1	I1	
I1R P26–2	I1R	
I2 P26–3	I2	
I2R P26–4	I2R	
I3 P26–5	I3	
I3R P26–6	I3R	

TB11: 70 7N I1 I1R I2 I2R I3 I3R

I1 I1R I2 I2R I3 I3R

WHT BLK WHT BLK WHT BLK

CT1 CT2 CT3

NEU C B A

L0 – L1 – L2 – L3 –

(H) TO BREAKERS SHEET 6

NOTE: CURRENT TRANSFORMER DOT OR "H1" TOWARD GENERATOR.

QCONF1 F1

QCONF2 F2

EXCITER STATOR

EXCITER ROTOR

F2 F1

RECTIFIER MODULE

AC AC AC F– F+

PMG STATOR

PMG ROTOR

QCONPMG PMG1 PMG

QCONPMG PMG2 PMG

CAPACITOR

7 10 8 11 9 12

MAIN FIELD

STAT (12 LEAD)

1 4 2 5 3 6

NOTE: FOR GENERATOR CONNECTIONS SEE SEE ADV–5875 THREE PHASE.

ALTERNATOR SIDE
APM603 CONTROLLER
500KW 550KW 600KW VOLVO

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX ± .010 .XX ± .030 .X ± .060 FRACTIONS ± ANGLES ± 1/2° SURFACE FINISH MAX.

APPROVALS		DATE
DRAWN	SBR	7–29–20
CHECKED	DJY	7–29–20
APPROVED	JLS	7–29–20

KOHLER.
KOHLER, WI 53044

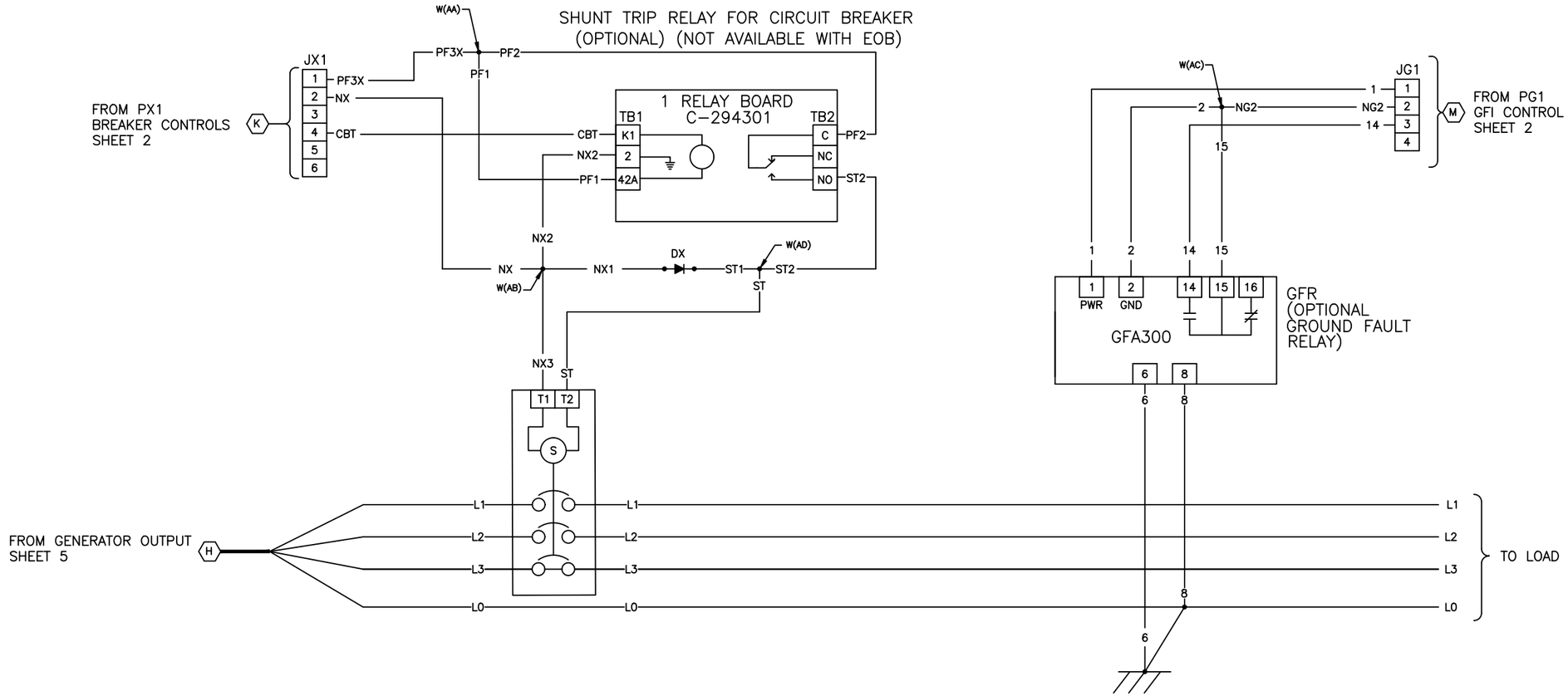
TITLE: DIAGRAM, SCHEMATIC APM603, VOLVO

SCALE N/A | SHEET 5–8

PLOTTED | DWG. NO. ADV–9221 | D

REV	DATE	REVISION	BY	MF
–	7-31-20	NEW DRAWING [CT205670]	SBR	
A	8-17-20	ADDED DRAWING [CT205833]	SBR	
B	9-16-20	SEE SHEET 3 [CT206820]	TEV	
C	2-08-21	(A-2) 500KW 550KW ADDED [CT209821]	TEV	

JUNCTION BOX



SHUNT TRIP OPTION
APM603 CONTROLLER
500KW 550KW 600KW VOLVO

UNLESS OTHERWISE SPECIFIED –
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2) TOLERANCES ARE:
.XXX± .010 ANGLES± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 MAX.
FRACTIONS ±

APPROVALS		DATE
DRAWN	SBR	7-29-20
CHECKED	DJY	7-29-20
APPROVED	JLS	7-29-20

KOHLER.
KOHLER, WI 53044

TITLE: DIAGRAM, SCHEMATIC
APM603, VOLVO

SCALE N/A | SHEET 6-8
PLOTTED | DWG. NO. ADV-9221 | D

REV	DATE	REVISION	BY	M F
–	7–31–20	NEW DRAWING [CT205670]	SBR	
A	8–17–20	ADDED DRAWING [CT205833]	SBR	
B	9–16–20	SEE SHEET 3 [CTxxxxxx]	TEV	
C	2–08–21	(A–2) 500KW 550KW ADDED [CT209821]	TEV	

JUNCTION BOX

FROM PX1
BREAKER CONTROLS
SHEET 2

JX1
1 PF3X
2 NX
3 CBC
4 CBT
5 CBCR
6 CBTR

PF3X — W(F) — PX2
PX1

OPEN BREAKER
GM49747=24VDC
GM49746=12VDC
P31
CBT — 2 3 — PX1
P31
5 / 1 / 4
OB — BV4

CLOSE BREAKER
GM49747=24VDC
GM49746=12VDC
P30
CBC — 2 3 — PX2
P30
CB — 5 / 1 / 4 — BV5

BV4 — W(G) — BV
BV3

BV — F4 10A — BATT A 12V — BATT B 12V — BGND

BREAKER CONTROL BATTERIES
(IF 12V GENERATOR, ADD LOOSE KIT.
IF 24V GENERATOR, USE GENERATOR
BATTERIES.)

BGND CB OB BV3

A1 GND
A2 CLOSE
A4 OPEN
B4 +24V

OVERCURRENT TRIP
81 NX2
82
84 CBTR

AUXILLARY SWITCH
11 NX1
12
14 CBCR

NX
NX2 — W(AH)
NX1

M

FROM GENERATOR OUTPUT
SHEET 5
H
L1
L2
L3
L0

TO LOAD

TO PB1
BUS VOLTAGE SENSE
SHEET 2
A

JB1
1 BL1
2 BL2
3 BL3
4 BL0
5
6

TX5
1 BL1
2 BL2
3 BL3
4 BL0

LOCAL MOTORIZED BREAKER OPTION
APM603 CONTROLLER
500KW 550KW 600KW VOLVO

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 √ MAX.
FRACTIONS ±

APPROVALS		DATE
DRAWN	SBR	7–29–20
CHECKED	DJY	7–29–20
APPROVED	JLS	7–29–20

KOHLER.
KOHLER, WI 53044

TITLE: DIAGRAM, SCHEMATIC
APM603, VOLVO

SCALE N/A | SHEET 7–8
PLOTTED | DWG. NO. ADV–9221 | D

REV	DATE	REVISION	BY	M F
–	7–31–20	NEW DRAWING [CT205670]	SBR	
A	8–17–20	ADDED DRAWING [CT205833]	SBR	
B	9–16–20	SEE SHEET 3 [CTxxxxxx]	TEV	
C	2–08–21	(A–2) 500KW 550KW ADDED [CT209821]	TEV	

JUNCTION BOX

W(F)
PF3X
PX2
PX1

OPEN BREAKER
GM49747=24VDC
GM49746=12VDC

CLOSE BREAKER
GM49747=24VDC
GM49746=12VDC

JX1
1 PF3X
2 NX
3 CBC
4 CBT
5 CBCR
6 CBTR

FROM PX1
BREAKER CONTROLS
SHEET 2
K

P31
CBT
2 3
PX1

P30
CBC
2 3
PX2

P31
5
OB
4 1
BV4

P30
CB
5
4 1
BV5

BV4
W(G)
W(AH)
NX
NX2
NX1

OB BV2 BV3 CB BN1 CBCR CBTR NX2 NX1

TX1
1 2 3 4 5 6 7 8 9

OB BV1 BV CB BN CBTR NX2 CBCR NX1

+24V DC BREAKER
W(BV)
BV
F4
10A
BATT A
12V
BATT B
12V
BN
BREAKER CONTROL
BATTERIES

BN1 CB OB BV1
A1 A2 A4 B4
GND CLOSE OPEN +24V

EOB
(ELECTRICALLY OPERATED BREAKER)

OVERCURRENT
TRIP
81 NX2
82
84 CBTR

AUXILLARY
SWITCH
11 NX1
12
14 CBCR

M

NOTE:
DASHED LINES ARE WIRES/COMPONENTS PROVIDED BY CUSTOMER
WHEN BREAKER IS REMOTE MOUNTED.

FROM GENERATOR OUTPUT
SHEET 5
H
L1
L2
L3
L0

TO LOAD

TX5

JB1
1 BL1
2 BL2
3 BL3
4 BL0
5
6

TO PB1
BUS VOLTAGE SENSE
SHEET 2
A

REMOTE MONITORISED BREAKER OPTION
APM603 CONTROLLER
500KW 550KW 600kW VOLVO

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXDEC± .010 ANGLES± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 √ MAX.
FRACTIONS ±

APPROVALS		DATE
DRAWN	SBR	7–29–20
CHECKED	DJY	7–29–20
APPROVED	JLS	7–29–20

KOHLER.
KOHLER, WI 53044

TITLE
DIAGRAM, SCHEMATIC
APM603, VOLVO

SCALE N/A
SHEET 8–8
PLOTTED
DWG. NO. ADV–9221 D

RS-485 NETWORK CONNECTIONS

REV	DATE	REVISION	BY	M F
–	8-16-19	NEW DRAWING. REPLACES ADV-6990 [CT198499]	TLK	

GENERATOR SET OUTLINE

DC POWER REQUIREMENTS FOR EACH RSA:
12/24 VOLT, 1A DC POWER
IF MULTIPLE RSA'S ARE USED, RESIZE 2 POWER WIRES AS REQUIRED.
0–450 FT. [0–138 m], 22 GA.
450–700 FT. [138–214 m], 20 GA.
700–1125 FT. [214–344 m], 18 GA.
1125–1800 FT. [344–550 m], 16 GA.
1800–2800 FT. [550–856 m], 14 GA.
(SEE NOTE 4)

+ GENERATOR BATTERY 12 OR 24 VDC –

BATTERY CHARGE LEADS
2 WIRES 10 GA. MINIMUM
(NOT REQUIRED ON GENSET MOUNTED BATTERY CHARGERS)

ON 550/6000 CONTROLLER, CONNECT TO P20,
ON APM402 CONTROLLER, CONNECT TO P21,
ON 8000 CONTROLLER, CONNECT TO RS485(2) BLOCK,
ON APM802 CONTROLLER, CONNECT TO TB10,
ON 3500 CONTROLLER, CONNECT TO TB12,
ON APM603 CONTROLLER, CONNECT TO TB10 OR TB12

(SEE SHEET 2 FOR MASTER/SLAVE NOTE)

RS-485 (MODBUS RTU) (SEE NOTE 5)

RSA REMOTE SERIAL ANNUNCIATOR (MASTER)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

(SEE SHEET 2 WHEN USED WITH AN ETHERNET NETWORK)

GENSET CONTROLLER

BATTERY CHARGER W/ FAULT ALARMS

BATTERY CHARGER ALARMS (NON-COMMUNICATION STYLE CHARGER):
550/6000/APM402/8000/APM802/APM603: 2 WIRES 18–20 GA.
(NOT REQUIRED ON GENSET MOUNTED BATTERY CHARGERS)

BATTERY CHARGER ALARMS: (COMMUNICATION STYLE CHARGER):
550/6000/APM402/APM603/3500: FACTORY WIRED CAN COMMUNICATION

ENGINE START WIRES.
2 WIRES 18–20 GA.
CONNECT TO POSITION CONTACTS ON ATS (CLOSED IN EMERGENCY).
WIRE OR'D FOR MULTIPLE ATS INSTALLATION

ATS (AUTOMATIC TRANSFER SW.)

ATS (AUTOMATIC TRANSFER SW.)

ATS (AUTOMATIC TRANSFER SW.)

ATS (AUTOMATIC TRANSFER SW.)

RSA III WITH ATS OPTION:
RS-485 TO ATS REQUIRED
(MODBUS RTU) (SEE NOTE 5)

NOTES:
1. TYPICAL CUSTOMER WIRING SHOWN DASHED.
2. CUSTOMER RESPONSIBLE FOR ADDITIONAL WIRING SHOWN IF COMPONENTS ARE SHIPPED LOOSE (BATTERY CHARGER, DRY-CONTACT BOX, ETC.)
3. IF BATTERY CHARGER IS SHIPPED LOOSE ADDITIONAL WIRES MAY BE REQUIRED FOR PROPER VOLTAGE SENSING. REFERENCE DRAWING ADV-5971 FOR INTERCONNECT.
4. DC VOLTAGE FOR EACH RSA REMOTE ANNUNCIATOR MAY ALSO BE SUPPLIED BY A LOCALLY MOUNTED 12 OR 24 VDC, 200 mA MIN., AC ADAPTER KIT (GM62466-KP1).
5. USE BELDEN #9841 OR EQUIVALENT. MAXIMUM DISTANCE = 4000 FT. [1219 m]

DIMENSIONS IN [ ] ARE METRIC EQUIVALENTS.

REFER TO WIRING DIAGRAM GM62554 (NETWORK COMMUNICATIONS) FOR CONNECTION DETAIL.

INTERCONNECTION DIAGRAM CONTROLLER WITH RSA ANNUNCIATOR

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX± .010 ANGLES± 1/2° .XX ± .030 SURFACE FINISH √ MAX. .X ± .060 FRACTIONS ±

APPROVALS		DATE
DRAWN	TLK	8-16-19
CHECKED	TLK	8-16-19
APPROVED	MD	8-16-19

TITLE: DIAGRAM, RSA INTERCONNECTION

SCALE: / / / SHEET 1–2

PLOTTED DWG. NO. ADV-9169 C

REV	DATE	REVISION	BY	M F
–	8–16–19	NEW DRAWING. REPLACES ADV–6990 [CT198499]	TLK	

ETHERNET NETWORK CONNECTIONS

RSA III:
A MAXIMUM OF 5 SLAVES CAN BE CONNECTED TO A MASTER RSA III, INCLUDING SLAVES CONNECTED THROUGH THE ETHERNET NETWORK. IF ANY RSA II ANNUNCIATORS ARE ON THE SAME NETWORK AS AN RSA III ANNUNCIATOR, THE RSA II ANNUNCIATORS MUST BE CONFIGURED AS SLAVES. RSA1000 CAN'T BE ON THE SAME NETWORK AS RSAIII. UPGRADE TO RSAIII IF REQUIRED.

RSA III MASTER:
AN RSA SLAVE CONNECTED THROUGH THE ETHERNET NETWORK, REQUIRES AN RSA MASTER BE CONNECTED THROUGH THE ETHERNET NETWORK. THE MASTER REQUIRES A MODBUS/ETHERNET CONVERTER DEDICATED EXCLUSIVELY TO IT.

SEE SHEET 1 FOR REQUIRED DC POWER VOLTAGE TO EACH RSA.

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RS–485 (MODBUS RTU) (SEE NOTE 5)

SEE SHEET 1 FOR CONTROLLER CONNECTION POINTS

GENSET CONTROLLER

(SEE SHEET 1 FOR BATTERY CHARGER CONNECTIONS)

MODBUS/ ETHERNET CONVERTER

ETHERNET (MODBUS TCP/IP) CATEGORY 5 OR EQUIVALENT

ON APM802 OR APM603 CONTROLLER, CONNECT TO ETHERNET MODULE

ETHERNET (MODBUS TCP/IP) CATEGORY 5 OR EQUIVALENT

ON MPAC750, MPAC1200, MPAC1500, CONNECT TO P13

RSA III SUPPORTED ATS'S:
MPAC750, MPAC1000, MPAC1200, OR MPAC1500. SUPPORTS ONE OR UP TO FOUR ATS'S.

RSA REMOTE SERIAL ANNUNCIATOR (MASTER)

RS–485 (MODBUS RTU) (SEE NOTE 5)

MODBUS/ ETHERNET CONVERTER

ETHERNET (MODBUS TCP/IP) CATEGORY 5 OR EQUIVALENT

ETHERNET NETWORK (CUSTOMER SUPPLIED)

SEE SHEET 1 FOR REQUIRED DC POWER VOLTAGE TO EACH RSA.

RS–485 (MODBUS RTU) (SEE NOTE 5)

MODBUS/ ETHERNET CONVERTER

ETHERNET (MODBUS TCP/IP) CATEGORY 5 OR EQUIVALENT

RS–485 (MODBUS RTU) (SEE NOTE 5)

ATS (AUTOMATIC TRANSFER SWITCH)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

SEE SHEET 1 FOR REQUIRED DC POWER VOLTAGE TO EACH RSA.

ETHERNET (MODBUS TCP/IP) CATEGORY 5 OR EQUIVALENT

MODBUS/ ETHERNET CONVERTER

RS–485 (MODBUS RTU) (SEE NOTE 5)

ATS (AUTOMATIC TRANSFER SWITCH)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RS–485 (MODBUS RTU) (SEE NOTE 5)

ATS (AUTOMATIC TRANSFER SWITCH)

RSA REMOTE SERIAL ANNUNCIATOR (SLAVE)

RS–485 (MODBUS RTU) (SEE NOTE 5)

ATS (AUTOMATIC TRANSFER SWITCH)

REQUIRED FOR RSA III WITH ATS OPTION ONLY

SEE SHEET 1 FOR REQUIRED DC POWER VOLTAGE TO EACH RSA.

SEE SHEET 1 FOR GENERAL NOTES.

INTERCONNECTION DIAGRAM CONTROLLER WITH RSA ANNUNCIATOR

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX± .010 ANGLES± .XX ± .030 SURFACE FINISH √ MAX. .X ± .060 FRACTIONS ±

APPROVALS		DATE
DRAWN	TLK	8–16–19
CHECKED	TLK	8–16–19
APPROVED	MD	8–16–19

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KOHLER, WI 53044

TITLE: DIAGRAM, RSA INTERCONNECTION

SCALE: / / / SHEET 2–2

PLOTTED

DWG. NO. ADV–9169 C

REV	DATE	REVISION	BY	W F
N	5-30-19	THIS SHEET ADDED; COMPATIBILITY CHART, STANDARD NOTES,		
		AND NETWORKED DEVICES MOVED TO THIS SHEET; ISOLATED/		
		NON-ISOLATED RS-485 IDENTIFIED ON ALL SHEETS [CT197795]	TLK	

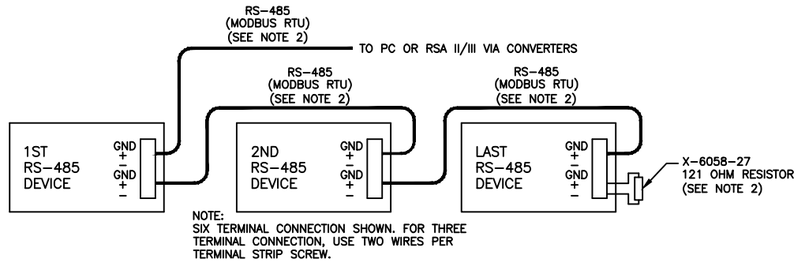
Drawing Sheet Reference	
Sheet	**Description**
1	Networked Devices, General Notes, This Sheet
2	Converters, Ethernet Network, PC, Data Interface System
3	16-Light (DEC3+), 550 (DEC550), KPC 1000 Legacy Genset Controllers
4	DEC3000 / APM402 Genset Controller
5	DEC6000 Genset Controller
6	APM603 Genset Controller for John Deere 80-500 Kw, Standard PGEN Network
7	This Sheet Reserved for Future Features
8	APM603 Genset Controller for KD Series, Standard PGEN Network
9	This Sheet Reserved for Future Features
10	APM802 Genset Controller
11	DEC8000 Genset Controller
12	DEC3500 Genset Controller
13	Series 1000 (MPAC1000), 340 (M340/M340+), Power Monitor Legacy ATS (Automatic Transfer Switch Controllers)
14	MPAC1500, MPAC-DM 750/1200/1500 ATS (Automatic Transfer Switch Controllers)
15	Legacy RSAII (Remote Serial Annunciator)
16	RSAIII (Remote Serial Annunciator)

Controller/Annunciator Compatibility Chart

	Monitor III	SiteTech	RSA2	RSA3
550 Genset	X	X	X	X
16-Light Genset	X		X	X
DEC 3000 / APM402 Genset	X	X	X	X
KPC 1000 Genset			X	X
6000 Genset	X	X	X	X
8000 Genset				4
APM802				X
APM603		X		X
DEC-3500 Genset		X		X
MPAC 1500	X		X	X
MPAC-DM 750, 1200, 1500		X	X	X
Series 1000 ATS	X		X	X
340 ATS	X			
340 Power Monitor	X			

"X" Designates supported devices. "4" Designates RS-485 Only.

DETAIL A (EXAMPLE OF)
NETWORKED RS-485 DEVICES



NOTE:
SIX TERMINAL CONNECTION SHOWN. FOR THREE TERMINAL CONNECTION, USE TWO WIRES PER TERMINAL STRIP SCREW.

NOTES:

1.) MAXIMUM CABLE LENGTH FOR RS-232 IS 50 FEET. USE RS-485 IF LONGER THAN 50 FEET IS REQ'D.

2.) CUSTOMER SUPPLIED WIRE. USE BELDEN #9841 OR EQUIVALENT CABLE. USE A MAXIMUM CABLE LENGTH OF 1219 METERS (4000 FT.) FROM THE RS-485 CONVERTER TO THE LAST RS-485 DEVICE IN THE NETWORK. THE "LAST DEVICE" IS THE DEVICE FURTHEST FROM THE CONTROLLER. CONNECT "+" TO "+", "-" TO "-". CONNECT THE CABLE SHIELD TO "GND" AT ONE END OF CABLE ONLY, LEAVE OTHER END DISCONNECTED. IF OPERATING OVER 19.2 K BAUD RATE AND WIRE LENGTH > 305 METERS (1000 FT.), CONNECT 121 OHM TERMINATING RESISTOR (X-6058-27) TO "+" AND "-" ON THE LAST DEVICE ON THE NETWORK. IF ONLY ONE DEVICE IS USED, IT IS THE LAST DEVICE. THE TERMINATING RESISTOR IS SELECTABLE INSIDE THE MODBUS/ETHERNET CONVERTER AND REMOTE SERIAL ANNUNCIATOR2 (RSA2) VIA P34. PLACE THE P34 JUMPER ON THE "IN" PINS IF THE MODBUS/ETHERNET CONVERTER, RSA2, OR RSA3 IS THE LAST DEVICE IN THE NETWORK. IF NOT THE LAST DEVICE, PLACE THE P34 JUMPER ON THE "OUT" PINS.

3.) THE 550 & 6000 CONTROLLER CAN BE USED AS A RS-232/RS-485 CONVERTER. CONNECT THE 9-PIN SERIAL PORT ON THE PC TO P18 ON THE 550 OR 6000 CONTROLLER AS SHOWN. THEN CONNECT P20 ON THE 550 OR 6000 CONTROLLER TO THE OTHER RS-485 DEVICES IN THE NETWORK.

4.) EACH MODBUS/ETHERNET CONVERTER CAN COMMUNICATE WITH UP TO 4 ETHERNET NETWORK DEVICES SIMULTANEOUSLY. IF A MODBUS/ETHERNET CONVERTER IS ATTACHED TO A SLAVE REMOTE SERIAL ANNUNCIATOR, A MODBUS/ETHERNET CONVERTER CONNECTED TO A MASTER REMOTE SERIAL ANNUNCIATOR IS REQUIRED. SEE NOTE 2 FOR P34 (TERMINATING RESISTOR) SETTING.

5.) ONLY ONE MASTER IS ALLOWED PER RS-485 NETWORK. ANY COMBINATION OF MASTERS IS ALLOWED IF COMMUNICATING VIA MODBUS/ETHERNET CONVERTERS.

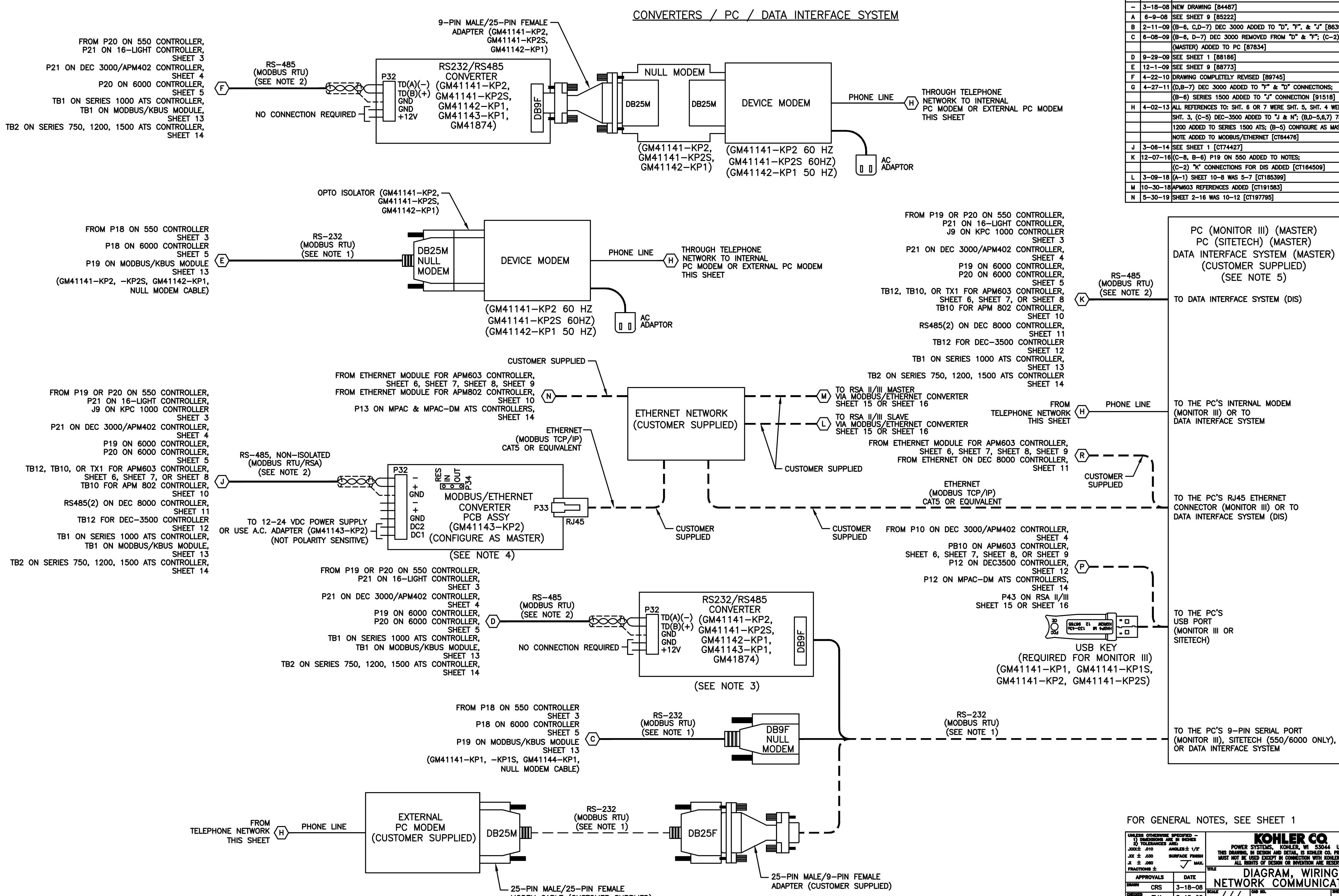
UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 ✓ MAX.
FRACTIONS ±

APPROVALS	DATE
DRAWN TLK	5-30-19
CHECKED TLK	5-30-19
APPROVED MD	5-30-19

TITLE: DIAGRAM, WIRING
NETWORK COMMUNICATIONS

SCALE: / / / | SIZE | DWG NO. | SHEET 1-16
PLOTTED | DWG. NO. GM62554 | D

REV	DATE	REVISION	BY	MF
–	3-18-08	NEW DRAWING [84487]	CRS	
A	6-9-08	SEE SHEET 9 [85222]	SEM	
B	2-11-09	(B-6, C,D-7) DEC 3000 ADDED TO "D", "F", & "J" [86392]	TLK	
C	6-08-09	(B-6, D-7) DEC 3000 REMOVED FROM "D" & "F"; (C-2)		
		(MASTER) ADDED TO PC [87834]	TLK	
D	9-29-09	SEE SHEET 1 [88186]	TLK	
E	12-1-09	SEE SHEET 9 [88773]	TLK	
F	4-22-10	DRAWING COMPLETELY REVISED [89745]	TLK	
G	4-27-11	(D,B-7) DEC 3000 ADDED TO "F" & "D" CONNECTIONS;		
		(B-6) SERIES 1500 ADDED TO "J" CONNECTION [91518]	TLK	
H	4-02-13	ALL REFERENCES TO: SHT. 6 OR 7 WERE SHT. 5, SHT. 4 WERE		
		SHT. 3, (C-5) DEC-3500 ADDED TO "J & N"; (B,D-5,6,7) 750 &		
		1200 ADDED TO SERIES 1500 ATS; (B-5) CONFIGURE AS MASTER		
		NOTE ADDED TO MODBUS/ETHERNET [CT64476]	TLK	
J	3-06-14	SEE SHEET 1 [CT74427]	TLK	
K	12-07-16	(C-8, B-6) P19 ON 550 ADDED TO NOTES;		
		(C-2) "K' CONNECTIONS FOR DIS ADDED [CT164509]	TLK	
L	3-09-18	(A-1) SHEET 10-8 WAS 5-7 [CT185399]	TLK	
M	10-30-18	APM603 REFERENCES ADDED [CT191583]	TLK	
N	5-30-19	SHEET 2-16 WAS 10-12 [CT197795]	TLK	



CONVERTERS / PC / DATA INTERFACE SYSTEM
FROM P20 ON 550 CONTROLLER, P21 ON 16-LIGHT CONTROLLER, SHEET 3
P21 ON DEC 3000/APM402 CONTROLLER, SHEET 4
P20 ON 6000 CONTROLLER, SHEET 5
TB1 ON SERIES 1000 ATS CONTROLLER, TB1 ON MODBUS/KBUS MODULE, SHEET 13
TB2 ON SERIES 750, 1200, 1500 ATS CONTROLLER, SHEET 14
RS-485 (MODBUS RTU) (SEE NOTE 2)
NO CONNECTION REQUIRED
P32 TD(A)(-) TD(B)(+) GND GND +12V
RS232/RS485 CONVERTER (GM41141-KP2, GM41141-KP2S, GM41142-KP1, GM41143-KP1, GM41874)
DB9F
9-PIN MALE/25-PIN FEMALE ADAPTER (GM41141-KP2, GM41141-KP2S, GM41142-KP1)
NULL MODEM
DB25M
DB25M
DEVICE MODEM
(GM41141-KP2, GM41141-KP2S, GM41142-KP1)
(GM41141-KP2 60 HZ GM41141-KP2S 60HZ) (GM41142-KP1 50 HZ)
PHONE LINE
THROUGH TELEPHONE NETWORK TO INTERNAL PC MODEM OR EXTERNAL PC MODEM THIS SHEET
AC ADAPTOR
OPTO ISOLATOR (GM41141-KP2, GM41141-KP2S, GM41142-KP1)
FROM P18 ON 550 CONTROLLER SHEET 3
P18 ON 6000 CONTROLLER SHEET 5
P19 ON MODBUS/KBUS MODULE SHEET 13
(GM41141-KP2, -KP2S, GM41142-KP1, NULL MODEM CABLE)
RS-232 (MODBUS RTU) (SEE NOTE 1)
DB25M NULL MODEM
DEVICE MODEM
(GM41141-KP2 60 HZ GM41141-KP2S 60HZ) (GM41142-KP1 50 HZ)
PHONE LINE
THROUGH TELEPHONE NETWORK TO INTERNAL PC MODEM OR EXTERNAL PC MODEM THIS SHEET
AC ADAPTOR
FROM P19 OR P20 ON 550 CONTROLLER, P21 ON 16-LIGHT CONTROLLER, J9 ON KPC 1000 CONTROLLER SHEET 3
P21 ON DEC 3000/APM402 CONTROLLER, SHEET 4
P19 ON 6000 CONTROLLER, P20 ON 6000 CONTROLLER, SHEET 5
TB12, TB10, OR TX1 FOR APM603 CONTROLLER, SHEET 6, SHEET 7, OR SHEET 8
TB10 FOR APM 802 CONTROLLER, SHEET 10
RS485(2) ON DEC 8000 CONTROLLER, SHEET 11
TB12 FOR DEC-3500 CONTROLLER SHEET 12
TB1 ON SERIES 1000 ATS CONTROLLER, SHEET 13
TB2 ON SERIES 750, 1200, 1500 ATS CONTROLLER SHEET 14
RS-485 (MODBUS RTU) (SEE NOTE 2)
PC (MONITOR III) (MASTER) PC (SITETECH) (MASTER) DATA INTERFACE SYSTEM (MASTER) (CUSTOMER SUPPLIED) (SEE NOTE 5)
TO DATA INTERFACE SYSTEM (DIS)
CUSTOMER SUPPLIED
FROM ETHERNET MODULE FOR APM603 CONTROLLER, SHEET 6, SHEET 7, SHEET 8, SHEET 9
FROM ETHERNET MODULE FOR APM802 CONTROLLER, SHEET 10
P13 ON MPAC & MPAC-DM ATS CONTROLLERS, SHEET 14
ETHERNET NETWORK (CUSTOMER SUPPLIED)
TO RSA II/III MASTER VIA MODBUS/ETHERNET CONVERTER SHEET 15 OR SHEET 16
TO RSA II/III SLAVE VIA MODBUS/ETHERNET CONVERTER SHEET 15 OR SHEET 16
CUSTOMER SUPPLIED
FROM TELEPHONE NETWORK THIS SHEET
PHONE LINE
TO THE PC'S INTERNAL MODEM (MONITOR III) OR TO DATA INTERFACE SYSTEM
FROM P19 OR P20 ON 550 CONTROLLER, P21 ON 16-LIGHT CONTROLLER, J9 ON KPC 1000 CONTROLLER SHEET 3
P21 ON DEC 3000/APM402 CONTROLLER, SHEET 4
P19 ON 6000 CONTROLLER, P20 ON 6000 CONTROLLER, SHEET 5
TB12, TB10, OR TX1 FOR APM603 CONTROLLER, SHEET 6, SHEET 7, OR SHEET 8
TB10 FOR APM 802 CONTROLLER, SHEET 10
RS485(2) ON DEC 8000 CONTROLLER, SHEET 11
TB12 FOR DEC-3500 CONTROLLER SHEET 12
TB1 ON SERIES 1000 ATS CONTROLLER, TB1 ON MODBUS/KBUS MODULE, SHEET 13
TB2 ON SERIES 750, 1200, 1500 ATS CONTROLLER, SHEET 14
ETHERNET (MODBUS TCP/IP) CAT5 OR EQUIVALENT
RS-485, NON-ISOLATED (MODBUS RTU/RSA) (SEE NOTE 2)
P32 - + GND - + GND DC2 DC1
RES IN OUT P34
MODBUS/ETHERNET CONVERTER PCB ASSY (GM41143-KP2) (CONFIGURE AS MASTER)
P33
RJ45
TO 12-24 VDC POWER SUPPLY OR USE A.C. ADAPTER (GM41143-KP2) (NOT POLARITY SENSITIVE)
(SEE NOTE 4)
CUSTOMER SUPPLIED
CUSTOMER SUPPLIED
FROM ETHERNET MODULE FOR APM603 CONTROLLER, SHEET 6, SHEET 7, SHEET 8, SHEET 9
FROM ETHERNET ON DEC 8000 CONTROLLER, SHEET 11
CUSTOMER SUPPLIED
ETHERNET (MODBUS TCP/IP) CAT5 OR EQUIVALENT
TO THE PC'S RJ45 ETHERNET CONNECTOR (MONITOR III) OR TO DATA INTERFACE SYSTEM (DIS)
FROM P10 ON DEC 3000/APM402 CONTROLLER, SHEET 4
PB10 ON APM603 CONTROLLER, SHEET 6, SHEET 7, SHEET 8, OR SHEET 9
P12 ON DEC3500 CONTROLLER, SHEET 12
P12 ON MPAC-DM ATS CONTROLLERS, SHEET 14
P43 ON RSA II/III SHEET 15 OR SHEET 16
USB KEY (REQUIRED FOR MONITOR III) (GM41141-KP1, GM41141-KP1S, GM41141-KP2, GM41141-KP2S)
TO THE PC'S USB PORT (MONITOR III OR SITETECH)
FROM P19 OR P20 ON 550 CONTROLLER, P21 ON 16-LIGHT CONTROLLER, SHEET 3
P21 ON DEC 3000/APM402 CONTROLLER, SHEET 4
P19 ON 6000 CONTROLLER, P20 ON 6000 CONTROLLER, SHEET 5
TB1 ON SERIES 1000 ATS CONTROLLER, TB1 ON MODBUS/KBUS MODULE, SHEET 13
TB2 ON SERIES 750, 1200, 1500 ATS CONTROLLER, SHEET 14
RS-485 (MODBUS RTU) (SEE NOTE 2)
NO CONNECTION REQUIRED
P32 TD(A)(-) TD(B)(+) GND GND +12V
RS232/RS485 CONVERTER (GM41141-KP2, GM41141-KP2S, GM41142-KP1, GM41143-KP1, GM41874)
DB9F
(SEE NOTE 3)
FROM P18 ON 550 CONTROLLER SHEET 3
P18 ON 6000 CONTROLLER SHEET 5
P19 ON MODBUS/KBUS MODULE SHEET 13
(GM41141-KP1, -KP1S, GM41144-KP1, NULL MODEM CABLE)
RS-232 (MODBUS RTU) (SEE NOTE 1)
DB9F NULL MODEM
RS-232 (MODBUS RTU) (SEE NOTE 1)
TO THE PC'S 9-PIN SERIAL PORT (MONITOR III), SITETECH (550/6000 ONLY), OR DATA INTERFACE SYSTEM
FROM TELEPHONE NETWORK THIS SHEET
PHONE LINE
EXTERNAL PC MODEM (CUSTOMER SUPPLIED)
DB25M
RS-232 (MODBUS RTU) (SEE NOTE 1)
DB25F
25-PIN MALE/25-PIN FEMALE MODEM CABLE (CUSTOMER SUPPLIED)
25-PIN MALE/9-PIN FEMALE ADAPTER (CUSTOMER SUPPLIED)

FOR GENERAL NOTES, SEE SHEET 1

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX ± .010 ANGLES ± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 MAX.
FRACTIONS ±

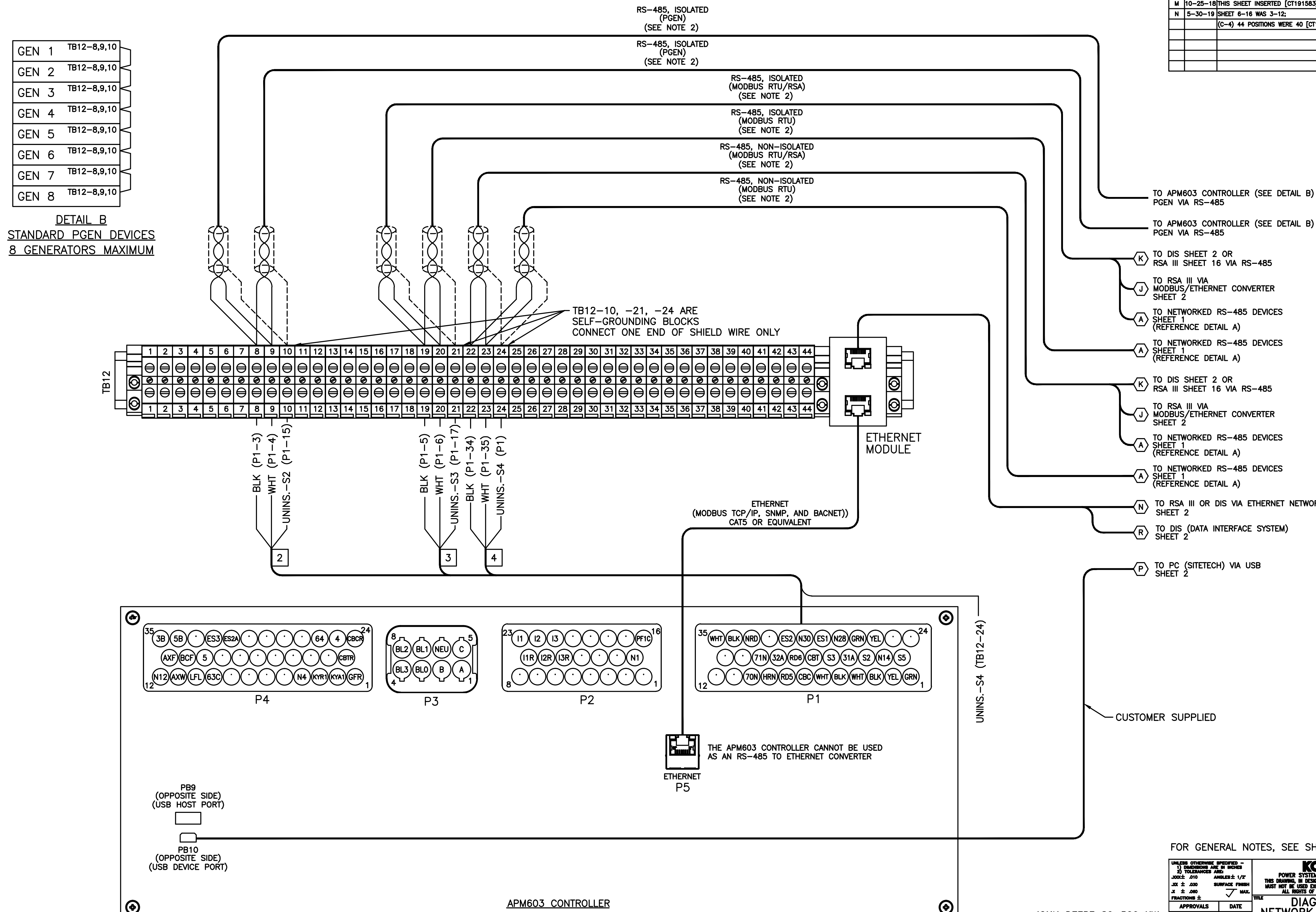
APPROVALS		DATE
DRAWN	CRS	3-18-08
CHECKED	TLK	3-18-08
APPROVED	TLK	3-18-08

KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: DIAGRAM, WIRING NETWORK COMMUNICATIONS

SCALE / / / | CAD NO. | SHEET 2-16
PLOTTED | DWG. NO. GM62554 | D

REV	DATE	REVISION	BY	MF
M	10-25-18	THIS SHEET INSERTED [CT191583]	TLK	
N	5-30-19	SHEET 6-16 WAS 3-12;		
		(C-4) 44 POSITIONS WERE 40 [CT197795]	TLK	



GEN 1 TB12-8,9,10
GEN 2 TB12-8,9,10
GEN 3 TB12-8,9,10
GEN 4 TB12-8,9,10
GEN 5 TB12-8,9,10
GEN 6 TB12-8,9,10
GEN 7 TB12-8,9,10
GEN 8 TB12-8,9,10
DETAIL B
STANDARD PGEN DEVICES
8 GENERATORS MAXIMUM
RS-485, ISOLATED (PGEN) (SEE NOTE 2)
RS-485, ISOLATED (PGEN) (SEE NOTE 2)
RS-485, ISOLATED (MODBUS RTU/RSA) (SEE NOTE 2)
RS-485, ISOLATED (MODBUS RTU) (SEE NOTE 2)
RS-485, NON-ISOLATED (MODBUS RTU/RSA) (SEE NOTE 2)
RS-485, NON-ISOLATED (MODBUS RTU) (SEE NOTE 2)
TO APM603 CONTROLLER (SEE DETAIL B) PGEN VIA RS-485
TO APM603 CONTROLLER (SEE DETAIL B) PGEN VIA RS-485
K TO DIS SHEET 2 OR RSA III SHEET 16 VIA RS-485
J TO RSA III VIA MODBUS/ETHERNET CONVERTER SHEET 2
A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)
A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)
K TO DIS SHEET 2 OR RSA III SHEET 16 VIA RS-485
J TO RSA III VIA MODBUS/ETHERNET CONVERTER SHEET 2
A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)
A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)
N TO RSA III OR DIS VIA ETHERNET NETWORK SHEET 2
R TO DIS (DATA INTERFACE SYSTEM) SHEET 2
P TO PC (SITETECH) VIA USB SHEET 2
TB12-10, -21, -24 ARE SELF-GROUNDING BLOCKS
CONNECT ONE END OF SHIELD WIRE ONLY
TB12
ETHERNET MODULE
BLK (P1-3)
WHT (P1-4)
UNINS.-S2 (P1-15)
BLK (P1-5)
WHT (P1-6)
UNINS.-S3 (P1-17)
BLK (P1-34)
WHT (P1-35)
UNINS.-S4 (P1)
ETHERNET (MODBUS TCP/IP, SNMP, AND BACNET)) CAT5 OR EQUIVALENT
UNINS.-S4 (TB12-24)
CUSTOMER SUPPLIED
P4
P3
P2
P1
THE APM603 CONTROLLER CANNOT BE USED AS AN RS-485 TO ETHERNET CONVERTER
ETHERNET
P5
PB9 (OPPOSITE SIDE) (USB HOST PORT)
PB10 (OPPOSITE SIDE) (USB DEVICE PORT)
APM603 CONTROLLER

FOR GENERAL NOTES, SEE SHEET 1

JOHN DEERE 80-500 KW
STANDARD PGEN NETWORK

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX ± .010, .XX ± .030, .X ± .060, FRACTIONS ±, ANGLES ± 1/2°, SURFACE FINISH MAX.	**KOHLER CO.** POWER SYSTEMS, KOHLER, WI 53044 U.S.A.
APPROVALS / DATE	TITLE: DIAGRAM, WIRING NETWORK COMMUNICATIONS
DRAWN CRS 3-18-08	SCALE / / / — CAD NO. — SHEET 6-16
CHECKED TLK 3-18-08	PLOTTED — DWG. NO. GM62554 — D
APPROVED TLK 3-18-08	

REV	DATE	REVISION	BY	W F
M	10-25-18	THIS SHEET INSERTED [CT191583]	TLK	
N	5-30-19	SHEET 8-16 WAS 5-12 [CT197795]	TLK	

GEN 1 TX1-10,11,12
GEN 2 TX1-10,11,12
GEN 3 TX1-10,11,12
GEN 4 TX1-10,11,12
GEN 5 TX1-10,11,12
GEN 6 TX1-10,11,12
GEN 7 TX1-10,11,12
GEN 8 TX1-10,11,12

DETAIL D
STANDARD PGEN DEVICES
8 GENERATORS MAXIMUM

RS-485, NON-ISOLATED (MODBUS RTU/RSA) (SEE NOTE 2)
- K TO DIS SHEET 2 OR RSA III SHEET 16 VIA RS-485
- J TO RSA III VIA MODBUS/ETHERNET CONVERTER SHEET 2
- A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)

RS-485, NON-ISOLATED (MODBUS RTU) (SEE NOTE 2)
- A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)

RS-485, ISOLATED (PGEN) (SEE NOTE 2) — TO APM603 CONTROLLER (SEE DETAIL D) PGEN VIA RS-485

RS-485, ISOLATED (PGEN) (SEE NOTE 2) — TO APM603 CONTROLLER (SEE DETAIL D) PGEN VIA RS-485

RS-485, ISOLATED (MODBUS RTU/RSA) (SEE NOTE 2)
- K TO DIS SHEET 2 OR RSA III SHEET 16 VIA RS-485
- J TO RSA III VIA MODBUS/ETHERNET CONVERTER SHEET 2
- A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)

RS-485, ISOLATED (MODBUS RTU) (SEE NOTE 2)
- A TO NETWORKED RS-485 DEVICES SHEET 1 (REFERENCE DETAIL A)

ETHERNET MODULE

TB10 TX1

WHT (P1-35)
BLK (P1-34)
UNINS.-S4 (P1) — 4

BLK (P1-3)
WHT (P1-4)
UNINS.-S2 (P1-15) — 2
BLK (P1-5)
WHT (P1-6)
UNINS.-S3 (P1-17) — 3

UNINS.-S4 (TB10-5)

P4: 35 3B 5B ES3 ES2A · · · · 64 4 CBCB 24 / AXF BCF 5 · · · · · · · CBTR / 12 N12 AXW LFL 63C · · · · N4 KYR1 KYA1 GFR 1
P3: 8 BL2 BL1 NEU C 5 / 4 BL3 BL0 B A 1
P2: 23 I1 I2 I3 · · · · · PF1C 16 / I1R I2R I3R · · · · · N1 / 8 · · · · · · · 1
P1: 35 WHT BLK NRD · ES2 N30 ES1 N28 GRN YEL · · 24 / · · 71N 32A RD6 CBT S3 31A S2 N14 S5 / 12 · · 70N HRN RD5 CBC WHT BLK WHT BLK YEL GRN 1

ETHERNET P5

THE APM603 CONTROLLER CANNOT BE USED AS AN RS-485 TO ETHERNET CONVERTER

ETHERNET (MODBUS TCP/IP, SNMP, AND BACNET)) CAT5 OR EQUIVALENT
- N TO RSA III OR DIS VIA ETHERNET NETWORK SHEET 2
- R TO DIS (DATA INTERFACE SYSTEM) SHEET 2

- P TO PC (SITETECH) VIA USB SHEET 2

CUSTOMER SUPPLIED

PB9 (OPPOSITE SIDE) (USB HOST PORT)
PB10 (OPPOSITE SIDE) (USB DEVICE PORT)

APM603 CONTROLLER

FOR GENERAL NOTES, SEE SHEET 1

KD SERIES
STANDARD PGEN NETWORK

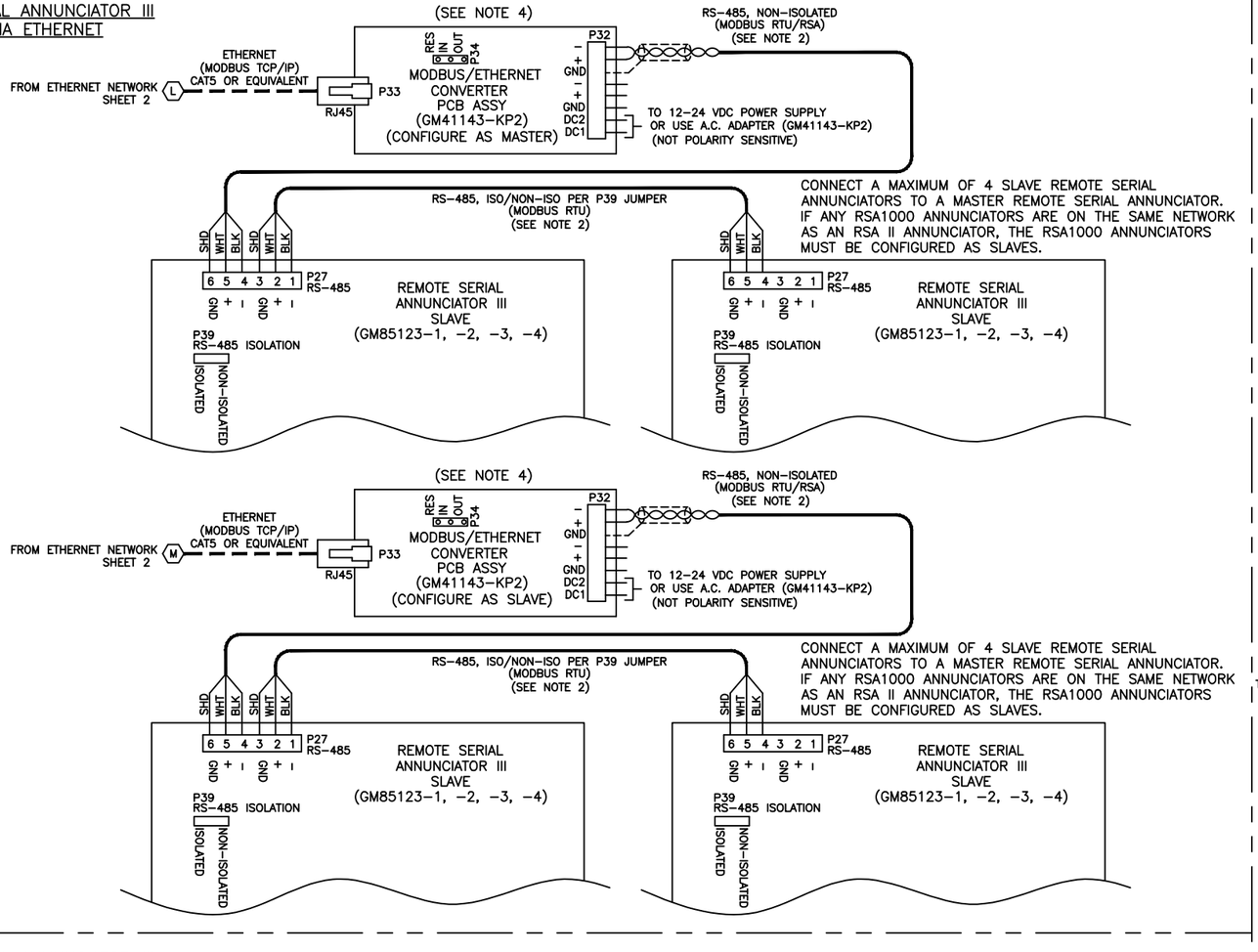
UNLESS OTHERWISE SPECIFIED — 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX± .010 ANGLES± 1/2° .XX ± .030 SURFACE FINISH .X ± .090 FRACTIONS ± MAX.

APPROVALS	DATE
DRAWN CRS	3-18-08
CHECKED TLK	3-18-08
APPROVED TLK	3-18-08

TITLE: DIAGRAM, WIRING NETWORK COMMUNICATIONS
SCALE: /// DSE NO. SHEET 8-16
PLOTTED DWG. NO. GM62554 D

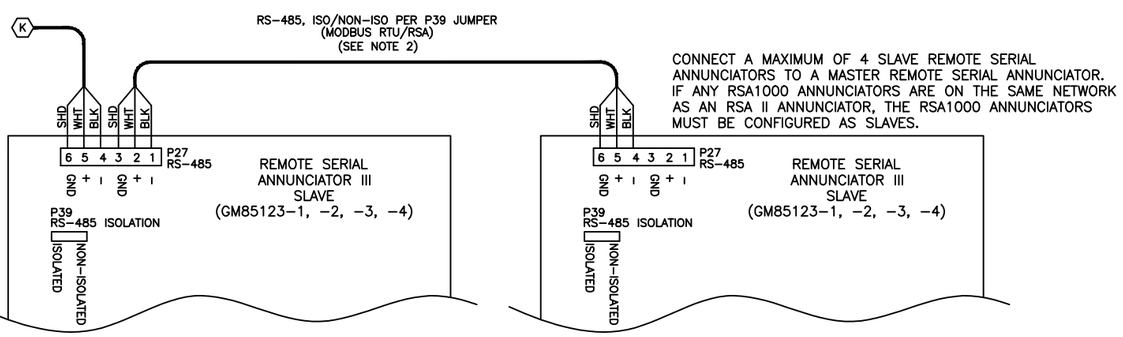
REV	DATE	REVISION	BY	CHK'D
H	11-20-13	THIS SHEET ADDED [CT64476]	TLK	
J	3-06-14	SEE SHEET 1 [CT74427]	TLK	
K	12-07-16	(A-7) P19 ON 550 ADDED TO NOTE [CT164509]	TLK	
L	3-09-18	(A-1) SHEET 12-8 WAS 7-7 [CT185399]	TLK	
M	10-30-18	(A-8) APM603 REFERENCE ADDED [CT191583]	TLK	
N	5-30-19	SHEET 16-16 WAS 12-12 [CT197795]	TLK	

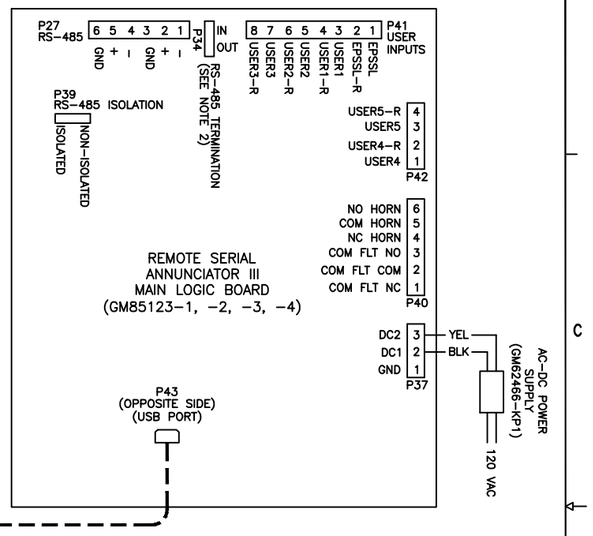
REMOTE SERIAL ANNUNCIATOR III CONNECTED VIA ETHERNET



REMOTE SERIAL ANNUNCIATOR III DIRECT CONNECTED

FROM P19 OR P20 ON 550 CONTROLLER, P21 ON 16-LIGHT CONTROLLER, J9 ON KPC 1000 CONTROLLER SHEET 3
P21 ON DEC 3000/APM402 CONTROLLER, SHEET 4
P19 ON 6000 CONTROLLER, P20 ON 6000 CONTROLLER, SHEET 5
TB12, TB10, OR TX1 FOR APM603 CONTROLLER, SHEET 6, SHEET 7, SHEET 8, OR SHEET 9
TB10 FOR APM 802 CONTROLLER, SHEET 10
RS485(2) ON DEC 8000 CONTROLLER, SHEET 11
FROM TB12 FOR DEC-3500 CONTROLLER SHEET 12
TB1 ON SERIES 1000 ATS CONTROLLER, SHEET 13
TB2 ON SERIES 750, 1200, 1500 ATS CONTROLLER SHEET 14





P41 INPUT CONNECTIONS

P41-8 USER INPUT 3 RETURN
P41-7 USER INPUT 3
P41-6 USER INPUT 2 RETURN
P41-5 USER INPUT 2
P41-4 USER INPUT 1 RETURN
P41-3 USER INPUT 1
P41-2 LOCAL ATS EMERGENCY ON INPUT RETURN
P41-1 LOCAL ATS EMERGENCY ON INPUT
(16-LIGHT ONLY) (SUPPLIED VIA MODBUS ON 550/6000/3000/APM402/3500 GENSET CONTROLLER AND SERIES 1000/750/1200/1500 ATS CONTROLLERS)

P42 INPUT CONNECTIONS

P41-4 USER INPUT 5 RETURN
P41-3 USER INPUT 5
P41-2 USER INPUT 4 RETURN
P41-1 USER INPUT 4

P40 OUTPUT CONNECTIONS

P40-6 HORN RELAY NORMALLY OPEN
P40-5 HORN RELAY COMMON
P40-4 HORN RELAY NORMALLY CLOSED
P40-3 COMMON FAULT RELAY NORMALLY OPEN
P40-2 COMMON FAULT RELAY COMMON
P40-1 COMMON FAULT RELAY NORMALLY CLOSED

P37 PWR/CAN CONNECTIONS

P37-3 12/24 VDC BATTERY INPUT2 (NOT POLARITY SENSITIVE)
P37-2 12/24 VDC BATTERY INPUT1 (NOT POLARITY SENSITIVE)
P37-1 GROUND

P37/P40/P41 WIRE SIZE REQUIREMENTS

700 FT. – 20 AWG.
1125 FT. – 18 AWG
1800 FT. – 16 AWG
2800 FT. – 14 AWG

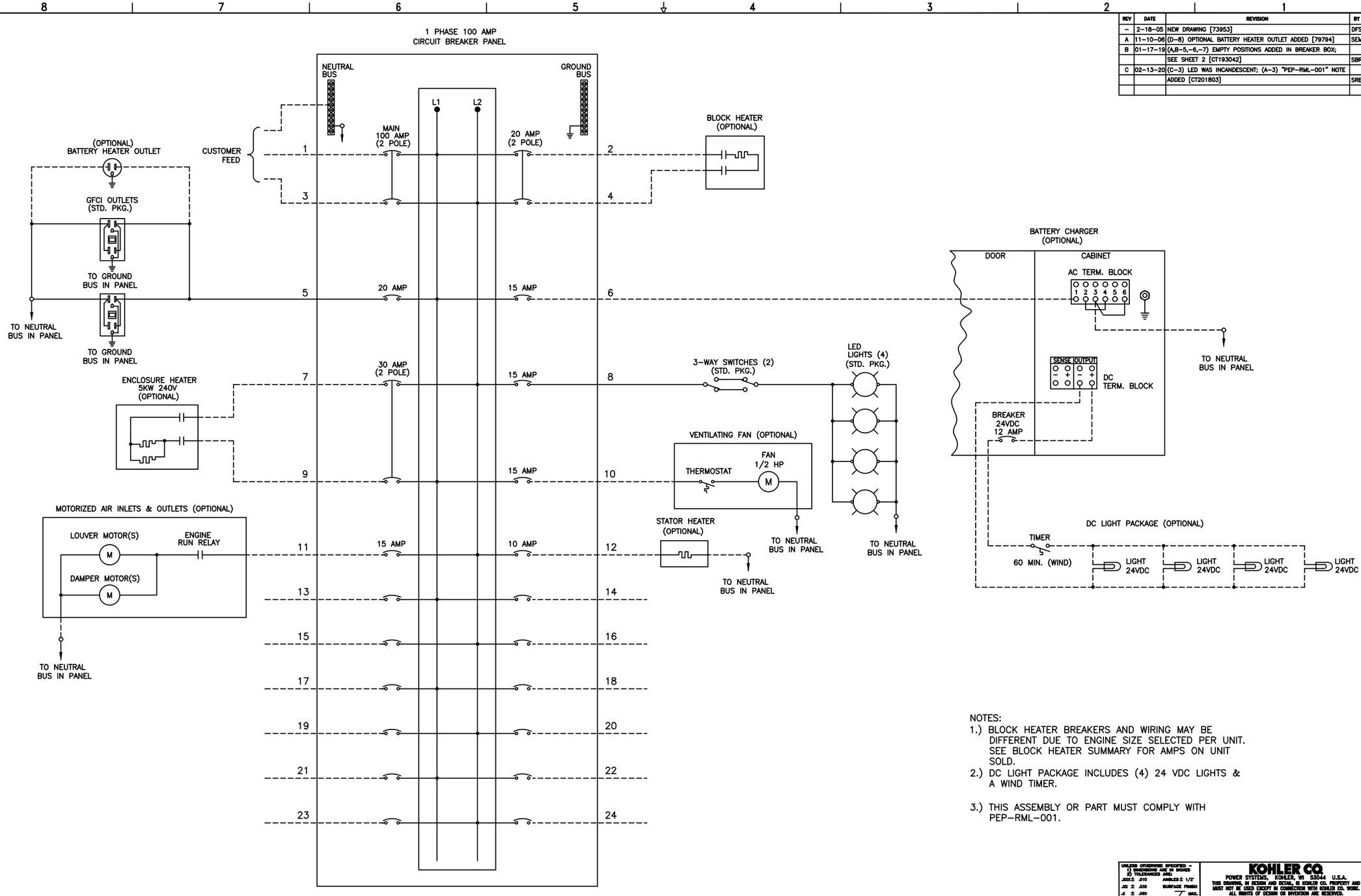
FOR GENERAL NOTES, SEE SHEET 1

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: XXX.X ± .010 XX ± .030 X ± .060 FRACTIONS ± ANGLES ± 1/2° SURFACE FINISH ✓ MAX.

APPROVALS	DATE
DRAWN TLK	11-20-13
CHECKED TLK	11-20-13
APPROVED EDA	11-20-13

TITLE: DIAGRAM, WIRING NETWORK COMMUNICATIONS
SCALE: / / / CAD NO. SHEET 16-16
PLOTTED DWG. NO. GM62554 D

REV	DATE	REVISION	BY	M T
–	2-18-05	NEW DRAWING [73953]	DFS	
A	11-10-06	(D-8) OPTIONAL BATTERY HEATER OUTLET ADDED [79794]	SEM	
B	01-17-19	(A,B-5,-6,-7) EMPTY POSITIONS ADDED IN BREAKER BOX;		
		SEE SHEET 2 [CT193042]	SBR	
C	02-13-20	(C-3) LED WAS INCANDESCENT; (A-3) "PEP-RML-001" NOTE		
		ADDED [CT201803]	SRB	



NOTES:
1.) BLOCK HEATER BREAKERS AND WIRING MAY BE DIFFERENT DUE TO ENGINE SIZE SELECTED PER UNIT. SEE BLOCK HEATER SUMMARY FOR AMPS ON UNIT SOLD.
2.) DC LIGHT PACKAGE INCLUDES (4) 24 VDC LIGHTS & A WIND TIMER.

3.) THIS ASSEMBLY OR PART MUST COMPLY WITH PEP-RML-001.

TPIK HOUSING
ELECTRICAL ACCESSORIES
1 PHASE

UNLESS OTHERWISE SPECIFIED – 1) DIMENSIONS ARE IN INCHES 2) TOLERANCES ARE: .XXX± .010 ANGLES± 1/2° .XX ± .030 SURFACE FINISH .# ± .060 ✓ MAX. FRACTIONS ±

APPROVALS	DATE
DRAWN DFS	2-18-05
CHECKED TLK	2-21-05
APPROVED EB	2-21-05

TITLE: DIAGRAM, SCHEMATIC
TPIK ELECTRICAL PANEL

SCALE: / / / | CAD NO. ADV7035A.DWG | SHEET 1-2
PLOTTED | DWG. NO. ADV-7035 | D

KOHLER®

Miscellaneous

OVERVIEW:
THE AUTOMATIC MULTI-LEVEL FLOAT/ EQUALIZE CHARGER SPECIFIED BELOW IS INTENDED TO CHARGE ENGINE STARTING BATTERIES EITHER INDEPENDENT OR IN CONJUNCTION WITH AN ENGINE DRIVEN CHARGING SYSTEM.

BATTERY TYPES TO BE CHARGED:
LEAD ACID
AGM
GEL CELL
HIGH PERFORMANCE AGM
FLOODED
NICKEL CADMIUM (NiCd)

INPUT AC:
INPUT VOLTAGE: 90-265V SINGLE PHASE
INPUT FREQUENCY: 47-63 Hz

INPUT LEAD:
APPROXIMATELY 1.8M (72") (REF) TYPE SJTOW -40°C TO 105°C UL RATED WIRE AND INSULATION.
TERMINATED IN PRE-MOLDED UL RATED 3 PRONG NEMA 5-15 MALE AC PLUG.

DC OUTPUT:
10A @ 12V
10A @ 24V
VOLTAGE REGULATION: +/-1% (VOLTAGE AT EACH STAGE IS TOPOLOGY DEPENDENT)

OUTPUT LEAD:
APPROX. 1.8M (72") (REF) TYPE SJTOOW -40°C TO 105°C UL RATED WIRE WITH RED AND BLACK WIRE INSULATION. TERMINATED IN 9.5 mm (REF) RING STYLE TERMINALS.

FUSES:
THE FUSE MUST BE LOCATED APPROXIMATELY 6" FROM RING TERMINAL ON RED OUTPUT LEAD.
20A ATC

ENVIRONMENTAL:
STORAGE TEMPERATURE RANGE: -40 TO +85°C (-40 TO +185°F)
OPERATING TEMPERATURE RANGE: -20 TO +70°C (-4 TO +158°F)
HUMIDITY: 5 TO 95% (NON-CONDENSING)
SALT SPRAY TESTING - ASTM B117
CORROSIN RESISTANT FROM GASSING OF BATTERIES

REVERSE POLARITY PROTECTION:
THE CHARGER SHALL SUSTAIN NO DAMAGE WHEN INCORRECTLY CONNECTED TO THE BATTERY IN REVERSE ORIENTATION.

MOUNTING:
4 NON-THREADED THROUGH HOLES FOR M6 FASTENERS TO PASS THOUGH

ENCLOSURE:
SHALL PROTECT THE CHARGER COMPONENTS FROM RAIN, SNOW, DUST AND DRIPPING WATER AND UNINTENTIONAL INPACTS. ALL INTERNAL COMPONENTS PROTECTED FROM WATER DROPLETS.

INDICATORS:
POWER: INDICATES THE ACCEPTABILITY OF AC INPUT TO THE CHARGER
COMMUNICATION: INDICATES THE STATE OF THE COMMUNICATION SYSTEM
TEMPERATURE COMPENSATION: INDICATES THE STATE OF THE TEMPERATUARE COMPENSATION SUBSYSTEM WHEN INSTALLED
VOLTAGE OUTPUT: INDICATES THE STATE OF THE BATTERY AND CERTAIN FAULT CONDITIONS.

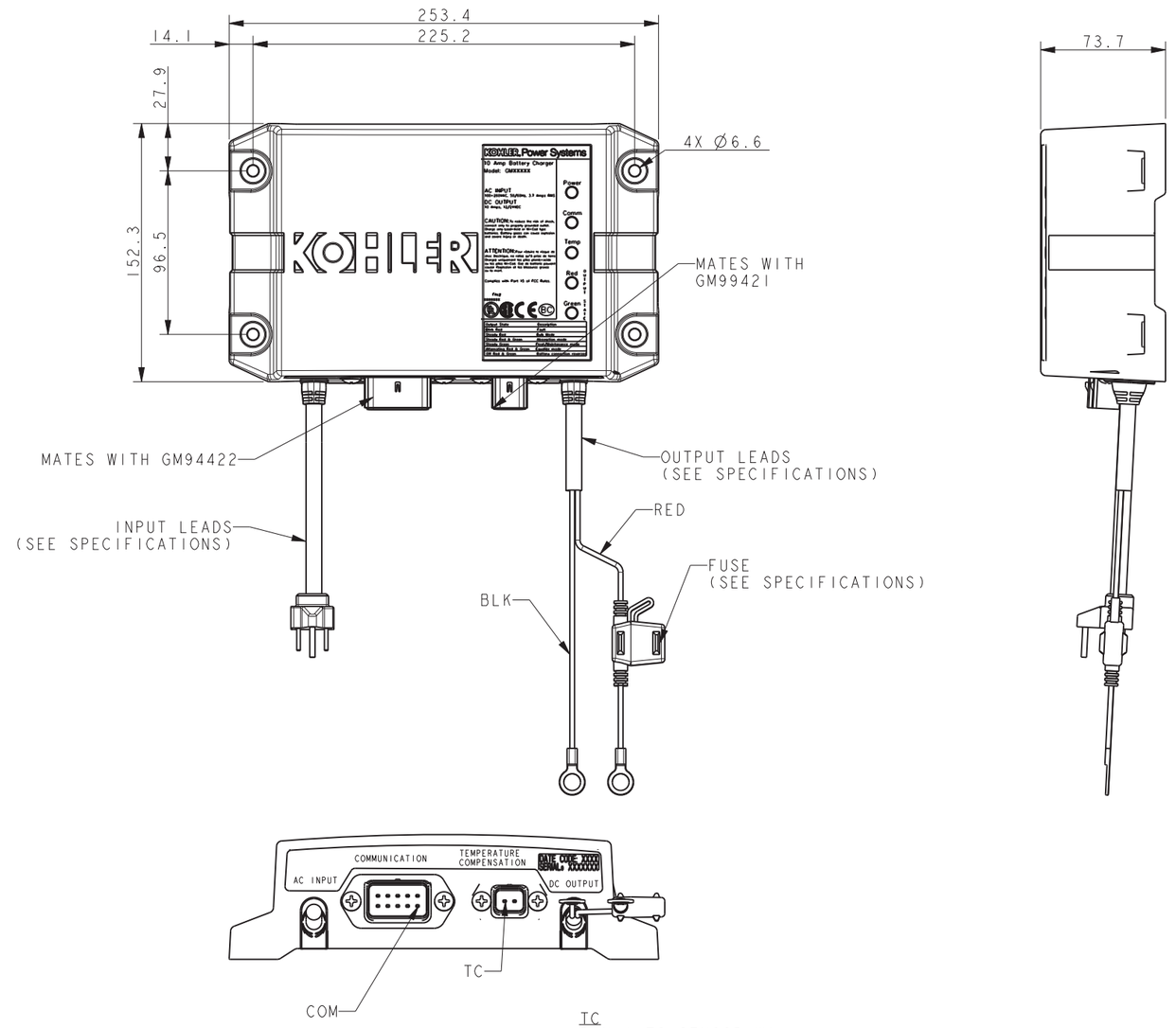
DOCUMENTATION:
THERE SHALL BE AN INSTALLATION / OPERATIONAL MANUAL SUPPLIED WITH EACH CHARGER.
PER KOHLER SUPPLIED ARTWORK.

CERTIFICATIONS (US AND CANADA):
UL1236
CSA - C22.2 NO 107.2-01
FCC- TITLE 47, PART 15 CLASS A
CE
EN 61000-6-2
CEC AND DOE
NFPA-110 LEVEL1 (WHEN SUPPORTED WITH APPLICABLE KOHLER CONTROLLER)
IBC

PRODUCT LABELING:
THE LABEL ATTACHED TO THE CHARGER SHALL HAVE THE FOLLOWING INFORMATION:
UL LISTING
KOHLER PART NUMBER
DESCRIPTION OF ALL INDICATOR
OUTPUT CURRENT AND VOLTAGE
INPUT VOLTAGE AND FREQUENCY

PACKAGING LABEL:
THE PACKAGING LABEL SHALL CONTAIN THE FOLLOWING INFORMATION:
KOHLER P/N
DESCRIPTION - BATTERY CHARGER
MFG. MODEL NO.
MFG. PART NUMBER
DATE CODE

WARRANTY:
2 YEAR FROM DATE OF PURCHASE FROM MANUFACTURE.



COM
PIN 1 N/C
2 ID SEL 1
3 ID SEL 2
4 N/C
5 CAN-H
6 N/C
7 ID SEL 1 RTN
8 ID SEL 2 RTN
9 CAN-GND
10 CAN-L

TC
PIN 1 TC SENSOR W1
2 TC SENSOR W2

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	9-22-14	NEW DRAWING [CT91634]	SAM
A	5-9-17	(C-4,2) MATING NOTE ADDED (A-2, 4) PIN CONNECTIONS ADDED [CT174256]	SAM

UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30'
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	SAM	9-22-14
CHECKED	SAM	9-22-14
APPROVED	AGT	9-22-14

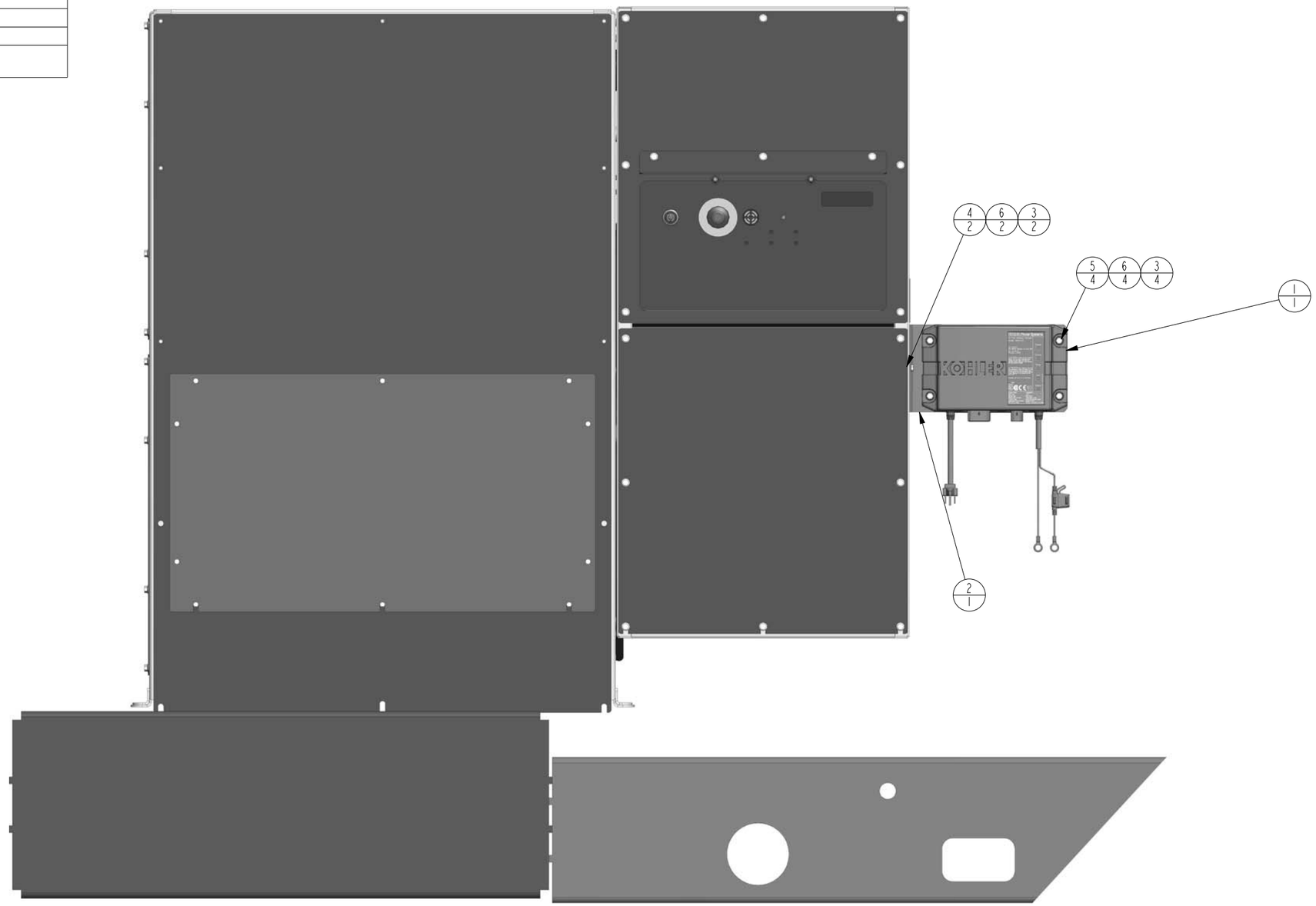
KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE
CHARGER, BATTERY 10 AMP

SCALE 0.50 | CAD NO. | SHEET 1 of 1
DWG NO. GM87448 | D

ITEM	PART NO	QTY	DESCRIPTION
1	GM87448	1	CHARGER, BATTERY
2	GM95113	1	BRACKET, 10 AMP BATTERY CHARGER
3	M125A-06-80	6	WASHER, PLAIN 6.4 ID X 12.0 OD
4	M933-06016-60	2	SCREW, HEX CAP
5	M933-06030-60	4	SCREW, HEX CAP
6	M934-06-60	6	NUT, HEX 6MM

THIS IS AN AUTOMATED TABLE. ALL UPDATES MUST BE MADE IN THE ASSEMBLY.



NOTE: FOR PROPER ASSEMBLY METHOD OF HARDWARE, USE G-585 AS A GUIDELINE.

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	10-28-14	NEW DRAWING [CT97299]	SAM

UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30'
SURFACE FINISH MAX.

THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	SAM	10-28-14
CHECKED	SAM	10-28-14
APPROVED	AGT	10-28-14

KOHLER CO. METRIC | PRO-E

POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

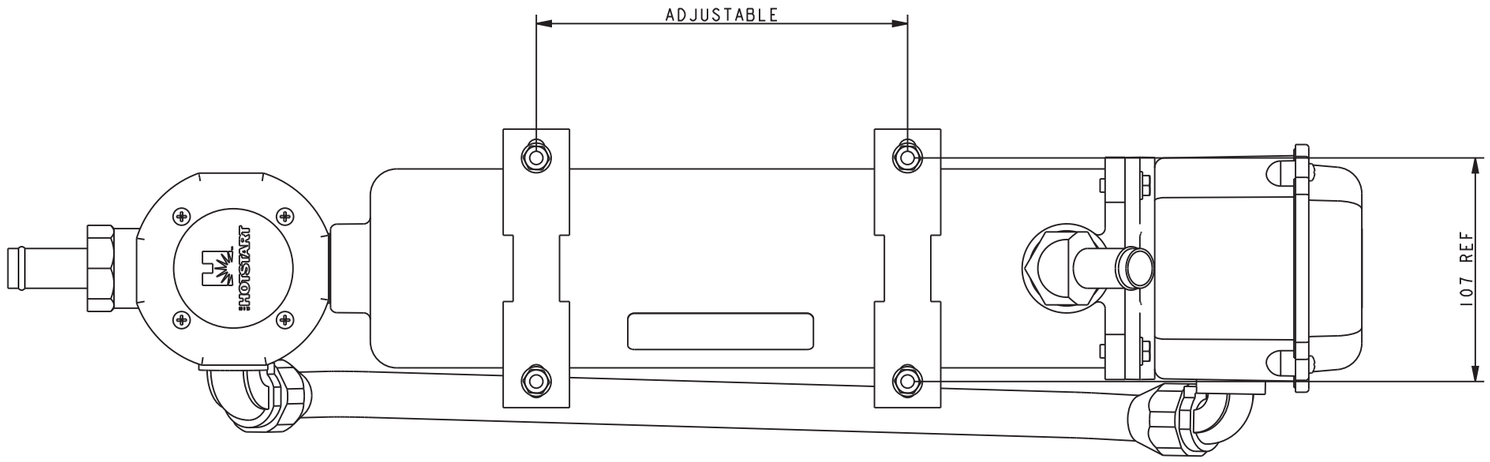
TITLE
DWG, ASSY BATTERY CHARGER

SCALE 0.25 | CAD NO. | SHEET 1 of 1

DWG NO. **GM95114** | **D**

GM95114-KAI
750-1000KW MITS

PART NO	REV	WATTS	VOLTS	AMPS	TEMP RANGE	REPLACEMENT ELEMENT
GM79182	-	4000	208	19.2	27/38° C [80/100° F]	GM29480
GM79183	-		240	14.4		GM29481
GM79184	-		480	8.3		GM29482



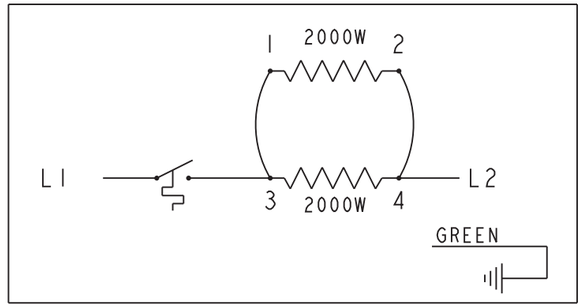


DIAGRAM ``A''
(208VAC SINGLE PHASE - PARALLEL)

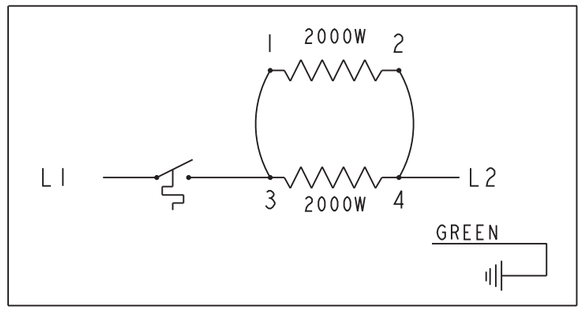


DIAGRAM ``B''
(240VAC SINGLE PHASE - PARALLEL)

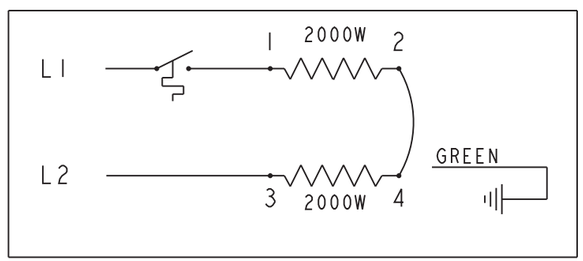


DIAGRAM ``C''
(480VAC SINGLE PHASE - SERIES)

NOTES:
1. BYPASS VALVE IS LOCATED INTERNALLY
2. MOUNTING HDW (U-BOLTS) ARE SHIPPED LOOSE

REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
-	1-5-11	NEW DRAWING [90801-1]	SAM

UNLESS OTHERWISE SPECIFIED -
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ± 0.25
X.X ± 1.0
X ± 1.5
ANGLES ± 0° 30'
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	SAM	1-5-11
CHECKED	JMS	1-5-11
APPROVED	WRD	1-5-11

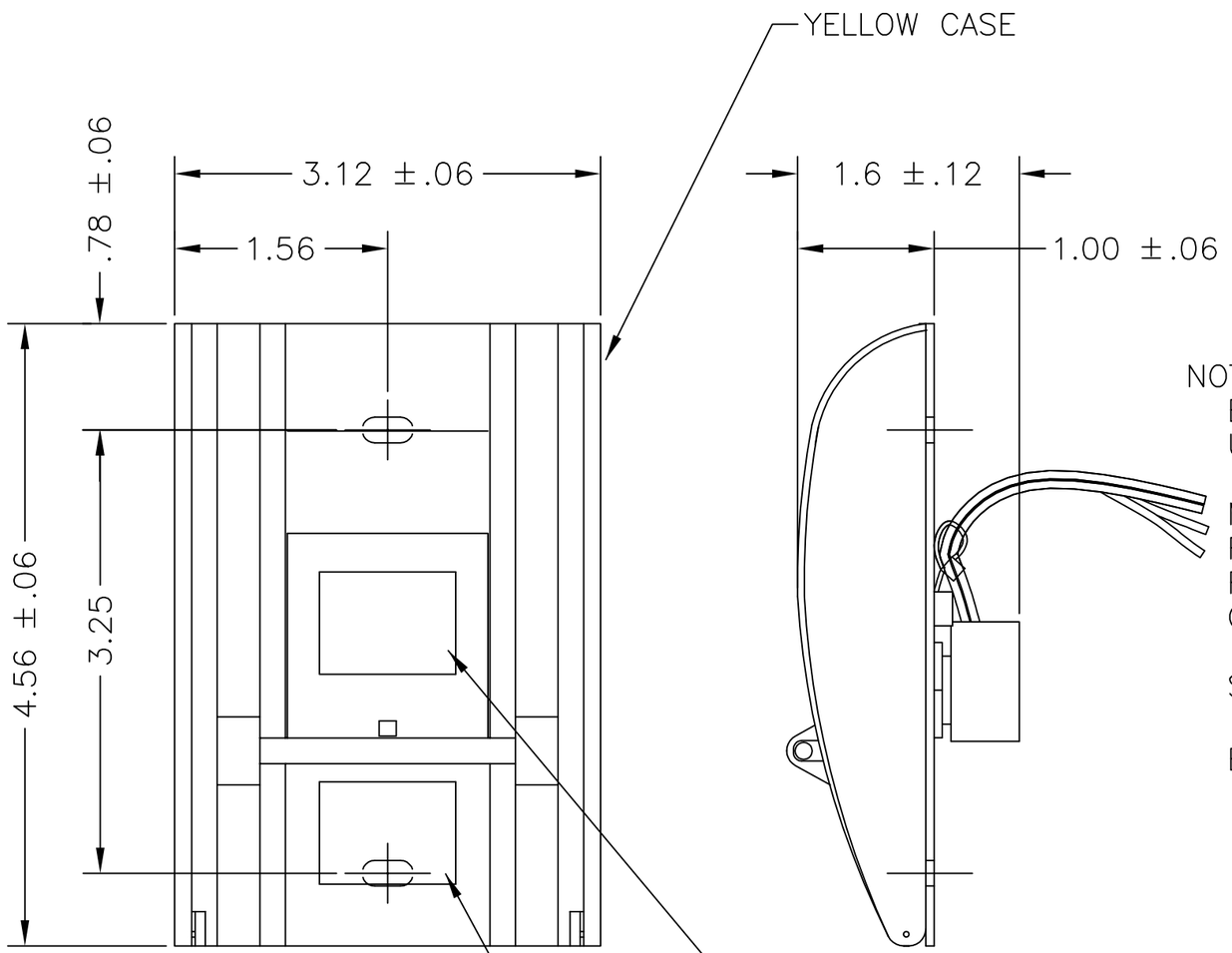
KOHLER CO. METRIC PRO-E
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE
HEATER, BLOCK WEATHER PROOF

SCALE 0.70 | CAD NO. | SHEET 1 of 1
DWG NO. GM79182 | D

PART NO.	DESCRIPTION
222655	REPLACEMENT GLASS ROD

REV	DATE	REVISION	BY	M F
A	9-1-93	(B-2) SWITCHING NORMALLY CLOSED WAS SWITCHING		
		NORMALLY OPEN (CAN BE CONVERTED TO N.C.)	SJV	X
B	3-7-94	GENERIC TITLEBLOCK ADDED	PWH	



NOTE:
BREAKGLASS TYPE FOR CLOSED CIRCUIT OPERATION UP TO 48 VOLTS.

MOUNTING INSTRUCTIONS:
FOR WALL MOUNTING USE #6 ROUND HEAD WOOD SCREWS. FOR MOUNTING ON GEM BOX OR SINGLE GANG PLASTER COVER, USE MACHINE SCREWS IN ENVELOPE.

SWITCHING NORMALLY CLOSED.

EXTRA PIECE OF GLASS TO BE SUPPLIED WITH SWITCH.

MATERIAL: METAL (STEEL)

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN INCHES
2) TOLERANCES ARE:
.XXX± .010 ANGLES± 1/2°
.XX ± .030 SURFACE FINISH
.X ± .060 √ MAX.
FRACTIONS ±

APPROVALS	DATE
DRAWN KDW	8-12-92
CHECKED EB	9-9-92
APPROVED RLD	9-9-92

KOHLER CO.
POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: SWITCH, EMERGENCY STOP

SCALE	CAD NO.	SHEET
FULL	A222654.dwg	1-1
PLOTTED	DWG. NO. A-222654	B G

KOHLER®

Warranty

Stationary Standby and Prime Power Industrial Generator Set One-Year or Two Thousand (2000)-Hour Limited Warranty

Your Kohler product has been manufactured and inspected with care by experienced craftsmen. If you are the original end user, Kohler Co. warrants, for the period indicated below, each product to be free from defects in materials and workmanship. In the event of a defect in materials or workmanship, Kohler Co. will repair, replace, or make appropriate adjustment at Kohler Co.'s option if the product, upon Kohler Co.'s inspection, is found to be properly installed, maintained, and operated in accordance with Kohler Co.'s instruction manuals. A Kohler distributor, dealer, or authorized service representative must perform startup.

Kohler Product	**Warranty Coverage**
Stationary Standby Generator Set & Accessories	One (1) year from registered startup or two thousand (2000) hours (whichever occurs first). In any event, the warranty period will expire not later than thirty (30) months from the date of shipment from Kohler Co.'s factory.
Stationary Prime Power Generator Set & Accessories	One (1) year from registered startup or two thousand (2000) hours (whichever occurs first). In any event, the warranty period will expire not later than thirty (30) months from the date of shipment from Kohler Co.'s factory.

The following will **not** be covered by the warranty:

1. Normal wear, routine tuneups, tuneup parts, adjustments, and periodic service.
2. Damage, including but not limited to damage caused by accidents, improper installation or handling, faulty repairs not performed by an authorized Kohler service representative, improper storage, or acts of God.
3. Damage caused by operation at speeds, or with fuel, loads, conditions, modifications or installation contrary to published specifications.
4. Damage caused by negligent maintenance such as:
   a. Failure to provide the specified type and sufficient quantity of lubricating oil.
   b. Failure to keep the air intake and cooling fin areas clean.
   c. Failure to service the air cleaner.
   d. Failure to provide sufficient coolant and/or cooling air.
   e. Failure to perform scheduled maintenance as prescribed in supplied manuals.
   f. Failure to regularly exercise the generator set under load (stationary applications only).
5. Original installation charges and startup costs.
6. Starting batteries and the following related expenses:
   a. Labor charges related to battery service.
   b. Travel expenses related to battery service.
7. Additional expenses for repairs performed after normal business hours, i.e. overtime or holiday labor rates.
8. Rental of equipment during the performance of warranty repairs.
9. Removal and replacement of non-Kohler-supplied options and equipment.
10. Non-Kohler replacement parts. Replacement of a failed Kohler part with a non-Kohler part voids the warranty on that part.
11. Radiators replaced rather than repaired.
12. Fuel injection pumps not repaired by an authorized Kohler service representative.
13. Non-Kohler-authorized repair shop labor without prior approval from Kohler Co. Warranty Department.
14. Engine fluids such as fuel, oil, or coolant/antifreeze.
15. Shop supplies such as adhesives, cleaning solvents, and rags.
16. Expenses incurred investigating performance complaints unless the problem is caused by defective Kohler materials or workmanship.
17. Maintenance items such as fuses, lamps, filters, spark plugs, loose or leaking clamps, and adjustments.
18. Travel time and mileage exceeding 300 miles round trip.

To obtain warranty service, call 1-800-544-2444 for your nearest authorized Kohler service representative or write Kohler Co., Service Department, MS072, Kohler, WI 53044 USA.

KOHLER CO. SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, AND/OR CONSEQUENTIAL DAMAGES OF ANY KIND including, but not limited to, incidental and/or consequential labor costs, installation charges, telephone charges, or transportation charges in connection with the replacement or repair of defective parts.

This is our exclusive written warranty. We make no other express warranty nor is anyone authorized to make any on our behalf.

ANY IMPLIED OR STATUTORY WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS EXPRESSLY LIMITED TO THE DURATION OF THIS WARRANTY. Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental and/or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

KOHLER®

KOHLER CO., Kohler, Wisconsin 53044
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales/service outlet in the US and Canada, phone 1-800-544-2444
KOHLERPower.com

TP-5374 12/15f

Stationary Standby Industrial Generator Set Extended Five-Year or Three Thousand (3000)-Hour Comprehensive Limited Warranty

Your Kohler product has been manufactured and inspected with care by experienced craftsmen. If you are the original end user, Kohler Co. warrants, for the period indicated below, each product to be free from defects in materials and workmanship. In the event of a defect in materials or workmanship, Kohler Co. will repair, replace, or make appropriate adjustment at Kohler Co.'s option if the product, upon Kohler Co.'s inspection, is found to be properly installed, maintained, and operated in accordance with Kohler Co.'s instruction manuals. A Kohler distributor, dealer, or authorized service representative must perform startup.

Kohler Product	**Warranty Coverage**
Stationary Standby Generator Set & Accessories	Five (5) years from registered startup or three thousand (3000) hours (whichever occurs first).

This warranty is effective only upon Kohler Co.'s receipt of an extended warranty registration form and warranty fee within one year of registered startup. The comprehensive limited warranty start date is determined by the standard limited warranty requirements and runs concurrent with the standard limited warranty during the first year. To receive extended comprehensive limited warranty coverage, the provisions of the standard limited warranty registration must be met.

The following will **not** be covered by the warranty:

1. Normal wear, routine tuneups, tuneup parts, adjustments, and periodic service.
2. Damage, including but not limited to damage caused by accidents, improper installation or handling, faulty repairs not performed by an authorized Kohler service representative, improper storage, or acts of God.
3. Damage caused by operation at speeds, or with fuel, loads, conditions, modifications or installation contrary to published specifications.
4. Damage caused by negligent maintenance such as:
   a. Failure to provide the specified type and sufficient quantity of lubricating oil.
   b. Failure to keep the air intake and cooling fin areas clean.
   c. Failure to service the air cleaner.
   d. Failure to provide sufficient coolant and/or cooling air.
   e. Failure to perform scheduled maintenance as prescribed in supplied manuals.
   f. Failure to regularly exercise the generator set under load (stationary applications only).
5. Original installation charges and startup costs.
6. Starting batteries and the following related expenses:
   a. Labor charges related to battery service.
   b. Travel expenses related to battery service.
7. Engine coolant heaters, heater controls, and circulating pumps after the first year of the warranty period.
8. Additional expenses for repairs performed after normal business hours, i.e. overtime or holiday labor rates.
9. Rental of equipment during the performance of warranty repairs.
10. Removal and replacement of non-Kohler-supplied options and equipment.
11. Non-Kohler replacement parts. Replacement of a failed Kohler part with a non-Kohler part voids the warranty on that part.
12. Radiators replaced rather than repaired.
13. Fuel injection pumps not repaired by an authorized Kohler service representative.
14. Non-Kohler-authorized repair shop labor without prior approval from Kohler Co. Warranty Department.
15. Engine fluids such as fuel, oil, or coolant/antifreeze.
16. Shop supplies such as adhesives, cleaning solvents, and rags.
17. Expenses incurred investigating performance complaints unless the problem is caused by defective Kohler materials or workmanship.
18. Maintenance items such as fuses, lamps, filters, spark plugs, loose or leaking clamps, and adjustments.
19. Travel time and mileage exceeding 300 miles round trip.

To obtain warranty service, call 1-800-544-2444 for your nearest authorized Kohler service representative or write Kohler Co., Service Department, MS072, Kohler, WI 53044 USA.

KOHLER CO. SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, AND/OR CONSEQUENTIAL DAMAGES OF ANY KIND including, but not limited to, incidental and/or consequential labor costs, installation charges, telephone charges, or transportation charges in connection with the replacement or repair of defective parts.

This is our exclusive written warranty. We make no other express warranty nor is anyone authorized to make any on our behalf.

ANY IMPLIED OR STATUTORY WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS EXPRESSLY LIMITED TO THE DURATION OF THIS WARRANTY. Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental and/or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

KOHLER®

KOHLER CO., Kohler, Wisconsin 53044
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales/service outlet in the US and Canada, phone 1-800-544-2444
KOHLERPower.com

TP-5561 8/16f

KOHLER®

Emissions Data

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2021 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **AB Volvo Penta**
(U.S. Manufacturer or Importer)

Certificate Number: MVPXL16.1ACW-009

Effective Date: 09/17/2020

Expiration Date: 12/31/2021

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 09/17/2020

Revision Date: N/A

Model Year: 2021
Manufacturer Type: Original Engine Manufacturer
Engine Family: MVPXL16.1ACW

Mobile/Stationary Indicator: Stationary
Emissions Power Category: 560<kW<=2237
Fuel Type: Diesel
After Treatment Devices: No After Treatment Devices Installed
Non-after Treatment Devices: Electronic Control

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

KOHLER®

Certification

Certificate of Registration

nqa global assurance

This is to certify that the Quality Management System of:

Kohler Power Systems

N7650 Lakeshore Road
Sheboygan WI 53083
United States of America

Central function listed above. See appendix for additional locations

applicable to:

Design, manufacture, and distributor support for electrical generators, alternators, fuel tanks, automatic transfer switches and switchgear

has been assessed and approved by
National Quality Assurance, U.S.A., against the provisions of:

ISO 9001:2015

Certificate Number:	16852
EAC Code:	19, 17
Certified Since:	February 28, 1995
Valid Until:	November 6, 2021
Reissued:	November 7, 2018
Cycle Issued:	November 7, 2018

For and on behalf of NQA, USA

ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

G15-152 11/18

Certificate of Registration

nqa global assurance

Appendix to Certificate Number: 16852

Includes Facilities Located at:

Kohler Power Systems Certificate Number 16852 N7650 Lakeshore Road Sheboygan WI 53083 United States of America	Design, manufacture, and distributor support for electrical generators, automatic transfer switches and switchgear
Kohler Power Systems Certificate Number 16852 300 N Dekora Woods Blvd. Saukville WI 53080 United States of America	Manufacturer of fuel tanks, skids, fabricated components and generators
Muth Warehouse Certificate Number 16852 2821 Muth Court Sheboygan WI 53083 United States of America	The distribution of generator sets
KWIP Warehouse Certificate Number 16852 4327 County EE Sheboygan WI 53081 United States of America	Receiving, sequencing and warehousing of generator components

Certified Since: February 28, 1995

Valid Until: November 6, 2021

Reissued: November 7, 2018

Cycle Issued: November 7, 2018

160 SW 12TH AVE SUITE 106, DEERFIELD BEACH, FL 33442
(954) 354-0660 | ENGINEERINGEXPRESS.COM

Technical Evaluation Report

DIVISION: 48 10 00–ELECTRICAL POWER GENERATION EQUIPMENT

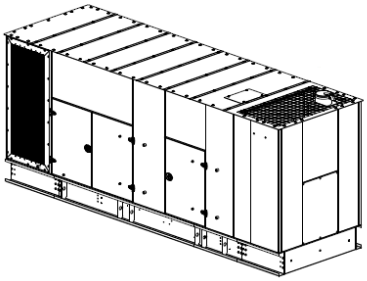
THIS DOCUMENT CONTAINS (4) PAGES: THE FIRST PAGE MUST BEAR AN ORIGINAL SIGNATURE & SEAL OF THE CERTIFYING PE TO BE VALID FOR USE

(Issued April 5, 2019 Subject to Renew January 1, 2021) or next code cycle

EVALUATION SUBJECT: **500-600REOZVB Sound Aluminum Enclosure**

TER-18-6258.2

REPORT HOLDER:
KOHLER POWER SYSTEMS
7650 LAKESHORE ROAD
SHEBOYGAN, WI 53083 USA
(920) 457-4441 | KOHLERPOWER.COM



SCOPE OF EVALUATION (compliance with the following codes):

THIS IS A STRUCTURAL (WIND) PERFORMANCE EVALUATION ONLY. NO ELECTRICAL OR TEMPERATURE PERFORMANCE RATINGS OR CERTIFICATIONS ARE OFFERED OR IMPLIED HEREIN.

This Product Evaluation Report is being issued in accordance with the requirements of the **Florida Building Code Sixth Edition (2017)** per FBC Section 104.11.1, FMC 301.15, FBC Building Ch. 16, ASCE-7-10, and FBC Residential M1202.1, FS 471.025. The product noted on this report has been tested and/or evaluated as summarized herein.
IN ACCORDANCE WITH THESE CODES EACH OF THESE REPORTS MUST BEAR THE ORIGINAL SIGNATURE & RAISED SEAL OF THE EVALUATING ENGINEER.

SUBSTANTIATING DATA:
• **Product Evaluation Documents**
Substantiating documentation has been submitted to provide this TER and is summarized in the sections below.
• **Structural Engineering Calculations**
Structural engineering calculations have been prepared which evaluate the product based on comparative and/or rational analysis to qualify the following design criteria:

- Maximum allowable unit enclosure wind pressure integrity
- Maximum allowable uplift, sliding, & overturning moment for ground.

Calculation summary is included in this TER and appears below. NOTE: No 33% increase in allowable stress has been used in the design of this product.

INSTALLATION:
The product(s) listed above shall be installed in strict compliance with this TER & manufacturer-provided enclosure model specifications.
The product components shall be of the material specified in the manufacturer-provided product specifications. All screws, bolts and rivet must be installed in accordance with the applicable provisions & anchor manufacturer's published installation instructions.

LIMITATIONS & CONDITIONS OF USE:
Use of this product shall be in strict accordance with this TER as noted herein. The supporting host structure shall be designed to resist all superimposed loads as determined by others on a site-specific basis as may be required by the Authority Having Jurisdiction. No evaluation is offered for the host supporting structure by use of this document; Adjustment factors noted herein, and the applicable codes must be considered, where applicable. All supporting components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times. This evaluation does not offer any evaluation to meet large missile impact debris requirements if requires.
Yearly inspections, during equipment maintenance or after named storm, all screws, cabinet components, and anchor bolts are to be verified. All damaged cabinet components, loosen, corroded, broken screws or anchor bolts shall be replaced to ensure structural integrity for hurricane wind forces.

NOTE: THE GRAPHICAL DEPICTIONS IN THIS REPORT ARE FOR ILLUSTRATIVE PURPOSES ONLY AND MAY DIFFER IN APPEARANCE.

FINISH:
Baked enamel.

UNIT CASING MATERIAL:
1/8" Al 5052-H32 top panel. 1/8" Al 5052-H32 for side panels and 1/4" steel ASTM A36 for bottom skids, secured with 3/16" rivets grade 51, M6 bolts class 5.8, and M8-M16 bolts class 8.8 (see dimensional drawing for specific locations).

OPTIONS:
This evaluation is valid for KOHLER 500-600REOZVB Sound Aluminum Enclosure model dimensions shown on the final page of this report.
This evaluation includes standard product only. Contact Factory for Engineering Special (ES) orders. Any structural changes outside of the factory would void this certificate.

STRUCTURAL PERFORMANCE:
Models referenced herein are subject to the following design limitations:
ASCE-710 Exposure Category D
Risk Category III / IV
HVHZ Rated* (& NON-HVHZ)
Only for ground installations
Flat terrain only

Maximum Wind Speed:
$V_{(Ultimate)}$ = 186 MPH

ABOUT THIS DOCUMENT:
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ECALC.IO/186258

ORIGINAL SIGNATURE AND RAISED SEAL
OR DIGITAL SEAL REQUIRED TO BE VALID PER CODE:

P.E. SEAL REQUIRED

April 5, 2019

Frank L. Bennardo, P.E., SECB
ENGINEERING EXPRESS®
FL PE #0046549 FLCA #9885

☐ Signed by If Checked:
TROY BISHOP, PE
FL PE #76131

NOTICE: IF THIS PAGE DOES NOT CONTAIN AN ORIGINAL SIGNATURE & ENGINEER SEAL:
IF THERE IS A DIGITAL SIGNATURE ON PAGE 1, THIS DOCUMENT IS PART OF A DIGITALLY SIGNED FILE, SHALL REMAIN IN DIGITAL FORMAT & **PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED**. IF THERE IS NO DIGITAL SIGNATURE ON PAGE 1 **OR THIS PAGE DOES NOT CONTAIN AN ENGINEER'S ORIGINAL SIGNATURE & SEAL, THIS DOCUMENT IS A COPY/DRAFT.**

The FBC 6th Edition (2017) defines APPROVED SOURCE (Section 202) as: "An independent person, firm or corporation, approved by the building official, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses." Engineering Express® professionals meet the competency requirements as defined in the FBC and can seal their work. Engineering Express® is regularly engaged in conducting and providing engineering evaluations of single-element and full-scale building systems tests.

*MIAMI DADE AND BROWARD COUNTY

SECTION 2 SUMMARY

Engineering Express has reviewed the design requirements per the Florida Building Code Sixth Edition (2017) and ASCE 7-10 for the structural integrity of the above referenced Kohler aluminum housing unit with steel skid to withstand a $V_{ULTIMATE}$ wind speed=186 MPH, Exposure "D" Risk Category III/ IV. Our analysis includes the unit framing and housing only and requires that a permanent near-grade (non-rooftop) attachment to a concrete, metal, or wood host structure as certified/verified by others. Steel skid tie-down anchor locations shall conform to those illustrated on sheet 3 of this TER. Additionally, the unit shall not be installed in a location susceptible to channeling effects from upwind obstacles. It shall be the installer's responsibility to ensure that the criteria for the unit housing integrity, as listed above, is applicable for use at the location of installation and the mounting method meets or exceeds the requirements of the local code and it is approved by the appropriate local authority before installation.

This certification is intended to certify the structural capacity and integrity of the structural framing members, wall and roof sheet metal skins, generator skid and internal structural connections only for the sound aluminum enclosure aforementioned. Design of the generator itself, mechanical designs, energy/electrical criteria, generator slab support, anchorage and tie-down method accompanying components and all non-structural items shall be verified by others and outside the scope of this certification. Upon analysis of the aluminum housing unit vs. the critical ultimate design loads illustrated below, this engineer has concluded that the aluminum housing enclosure provides adequate resistance to the specified ultimate design loads.

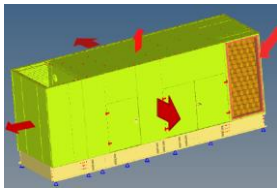
Structural Engineering Calculations

Structural engineering calculations have been prepared which evaluate the aluminum unit housing based on rational analysis using Finite Element Analysis to qualify the following design criteria:

1. Maximum ultimate design pressure as a result of the aforementioned design criteria:

Load Case 1

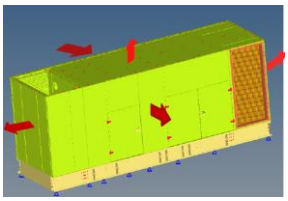
(Wind parallel to long side)



		Pressure, psf (x 10^{-3} MPa)				
Load Case	Wind Direction	Rear Wall	Front Wall	Left Wall	Right Wall	Roof
1		61.26 (2.933)	-48.85 (-2.339)	-48.85 (-2.339)	-47.30 (-2.265)	-96.92 (-4.641)

Load Case 2

(Wind perpendicular to long side)

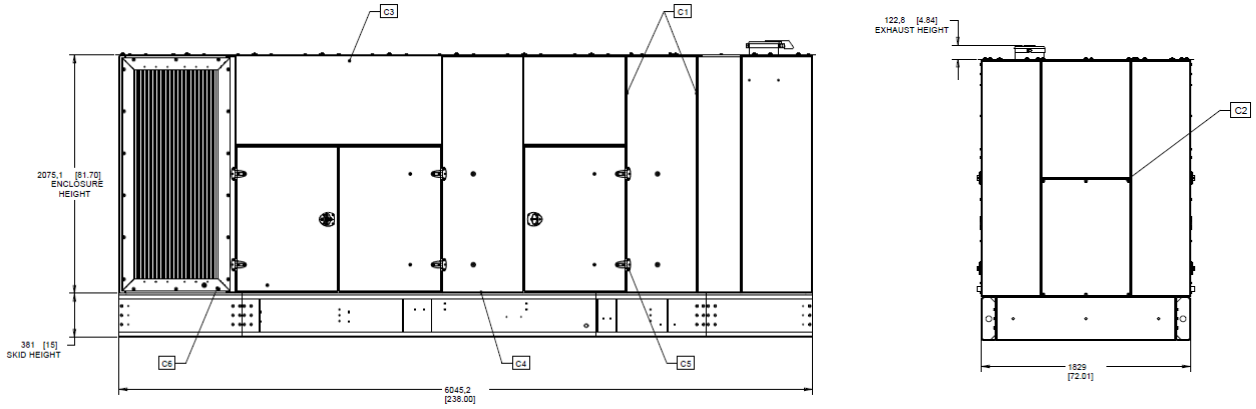


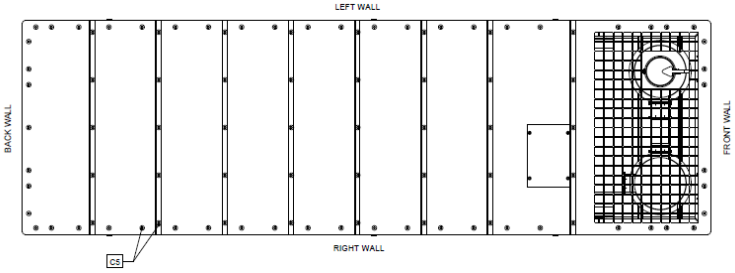
		Pressure, psf (x 10^{-3} MPa)				
Load Case	Wind Direction	Rear Wall	Front Wall	Left Wall	Right Wall	Roof
2		-48.85 (-2.339)	-48.85 (-2.339)	61.26 (2.933)	-47.30 (-2.265)	-96.92 (-4.641)

2. Maximum housing unit dimensions: 238.00"L x 72.01"W x 96.70" H.
3. Enclosure materials have been analyzed for yield and ultimate stresses using Von Mises stress criteria in accordance with the 2015 Aluminum Design Manual & AISC Steel Construction Manual 14th Edition. For both load case Von Mises Stress stood below ultimate strength; therefore, the sound aluminum enclosure will provide enough structural capacity to resist wind pressures shown.
4. All internal connection capacities, including bolted and welded components, have been checked for applicable tension and shear by applying a unity interaction equation where applicable and have been approved by this office.

All installation work shall follow the minimum requirements of the Florida Building Code Sixth Edition (2017) in addition to any additional site-specific requirements for tie-down certification which is not included in this letter. Except as expressly provided herein, no additional affirmations are intended. Thank you for your attention to this matter.

SECTION 3 DIMENSIONS & ELEVATIONS



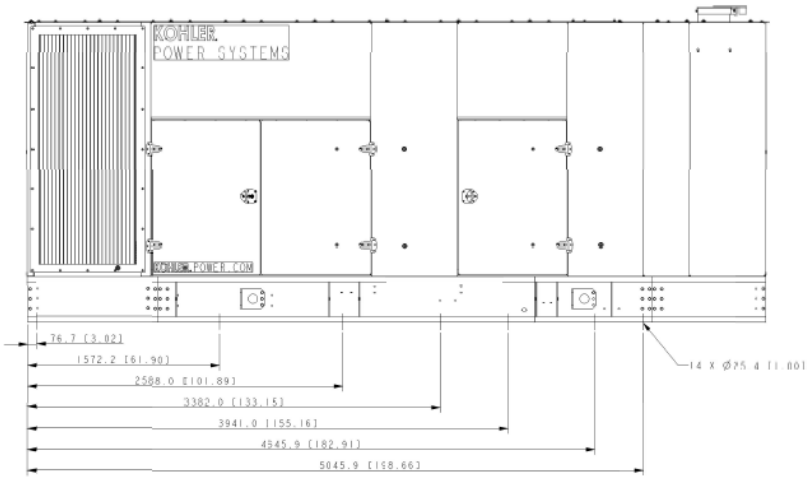


Note:

Enclosure housing must bear the official insignia of Kohler Power with model name referenced above for applicability and validity of this letter.

NO	DESCRIPTION	CONNECTION QTY PER WALL				
		RIGHT WALL	LEFT WALL	FRONT WALL	BACK WALL	ROOF
C1	PANEL TO PANEL	6	6	2	2	NA
C2	PANEL TO ACCESS PANEL	0	0	1	1	NA
C3	PANEL TO Z-FLAT	10	10	4	4	NA
C4	PANEL TO SKID	6	6	2	2	NA
C5	PANEL TO ROOF / ROOF PANEL TO ROOF PANEL	21	21	6	7	55
C6	PANEL TO HINGE / HINGE TO DOOR PANEL	6	6	0	0	NA
C7	LOUVER TO PANEL	1	1	0	0	NA

SECTION 4 ANCHORS LOCATION



Note:

Anchors to be calculated on a site-specific basis. (14) anchors location per manufacturer, (7) per long side. Additionally, holes might be added as needed.

IN ALL CONDITIONS IT IS THE RESPONSIBILITY OF THE PERMIT HOLDER TO ENSURE THE HOST STRUCTURE IS CAPABLE OF WITHSTANDING THE RATED GRAVITY, LATERAL, AND UPLIFT FORCES BY SITE-SPECIFIC DESIGN. NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, IS OFFERED BY ENGINEERING EXPRESS AS TO THE INTEGRITY OF THE HOST STRUCTURE TO CARRY DESIGN FORCE LOADS INCURRED BY THIS UNIT.

SECTION 5 ENCLOSURE MODELS INCLUDED

GENERATOR	ENCLOSURE TYPE	ENCLOSURE DRAWING NUMBER	REVISION & DATE	ADV	REVISION & DATE
500REOZVC	500REOZVC Sound Level 2 Aluminum Enclosure	GM81040-TA10	Revision H 06/15/16	ADV-8417	Revision C 08/10/17
550REOZVB	550REOZVB Sound Level 2 Aluminum Enclosure	GM81040-TA10	Revision H 06/15/16		
600REOZVB	600REOZVB Sound Level 2 Aluminum Enclosure	GM81040-TA7	Revision H 06/15/16		

LIMITATIONS & CONDITIONS OF USE (cnt'd):

Production Drawings**:**
The following drawings shall be accessible if required for a full permit application to be submitted to the Authority Having Jurisdiction in conjunction with this TER:

- Electrical schematic(s)
- Final assembly drawings and parts lists sufficient to detail primary components, operator controls, and their locations
- Complete set of mechanical drawings for all machined parts
- Complete part specifications (including manufacturer's model numbers, size, ratings, etc.) for all purchased parts
- Specification sheets for all parts/components
- Drawings showing all construction details
- Product label drawing(s) showing all required marking information. The label drawing shall show the proposed label location on the equipment and artwork showing the manufacturer's name, address, model and serial numbers, equipment ratings, warning markings.

Drawing and Change Control**:**
The manufacturer shall establish a system of product configuration control that shall allow no unauthorized changes to the product. Changes to critical documents, identified in this Technical Evaluation Report, must be reported to, and authorized by, this office prior to implementation for production.

Survivability**:**
This evaluation report is valid for a newly installed unit and does not include certification of the product beyond a design event if impacted, contact this office for any reevaluation needs as designated by the Authority Having Jurisdiction.

Durability
Components or component assemblies shall not deteriorate, crack, fail, or lose functionality due to galvanic corrosion or weathering.
Each component or component assembly shall be supported and oriented in its intended installation position. All exposed *plastic* components shall be certified to resist sunlight exposure as specified by ASTM B117, or ASTM G155 in Broward or Miami Dade counties.

Kohler Standby/Prime Generator Set Test Program

Testing is an integral part of quality assurance. In keeping with our uncompromising commitment to quality, safety, and reliability, every Kohler Standby/Prime power generator set undergoes an extensive series of prototype and production testing.

Prototype Testing

Prototype testing includes the potentially destructive tests necessary to verify design, proper function of protective devices and safety features, and reliability expectations. Kohler's prototype testing includes the following:

- Alternator temperature rise test per NEMA MG1-32.6. Standby and prime ratings of the alternator are established during this test.
- Maximum power test to assure that the prime mover and alternator have sufficient capacity to operate within specifications.
- Alternator overload test per NEMA MG1-32.8.
- Steady-state load test to ensure voltage regulation meets or exceeds ANSI C84.1, NEMA MG1-32.17 requirements and to verify compliance with steady-state speed control specifications.
- Transient test to verify speed controls meets or exceeds specifications.
- Transient load tests per NEMA MG1-32.18, and ISO 8528 to verify specifications of transient voltage regulation, voltage dip, voltage overshoot, recovery voltage, and recovery time.
- Motor starting tests per NEMA MG1-32.18.5 to evaluate capabilities of generator, exciter, and regulator system.
- Three-phase symmetrical short-circuit test per NEMA MG1-32.13 to demonstrate short circuit performance, mechanical integrity, ability to sustain short-circuit current.
- Harmonic analysis, voltage waveform deviation per NEMA MG1-32.10 to confirm that the generator set is producing clean voltage within acceptable limits.
- Generator set cooling and air flow tests to verify maximum operating ambient temperature.
- Reliability tests to demonstrate product durability, followed by root cause analysis of discovered failures and defects. Corrective action is taken to improve the design, workmanship, or components.
- Acoustical noise intensity and sound attenuation effects tests.

Production Testing

In production, Kohler Standby/Prime generator sets are built to the stringent standards established by the prototype program. Every Kohler generator set is fully tested prior to leaving the factory. Production testing includes the following:

- Stator and exciter winding high-potential test on all generators. Surge transient tests on stators for generators 180 kW or larger. Continuity and balance tests on all rotors.
- One-step, full-load pickup tests to verify that the performance of each generator set, regulator, and governor meets published specifications.
- Regulation and stability of voltage and frequency are tested and verified at no load, 1/4 load, 1/2 load, 3/4 load, and full-rated load.
- Voltage, amperage, frequency and power output ratings verified by full-load test.
- The proper operation of controller logic circuitry, prealarm warnings, and shutdown functions is tested and verified.
- Any defect or variation from specification discovered during testing is corrected and retested prior to approval for shipment to the customer.

Torsional analysis data, to verify torsional effects are not detrimental and that the generator set will provide dependable service as specified, is available upon request.

Kohler offers other testing at the customer's request at an additional charge. These optional tests include power factor testing, customized load testing for specific application, witness testing, and a broad range of MIL-STD-705c testing. A certified test report is also available at an additional charge.

KOHLER®

KOHLER CO. Kohler, Wisconsin 53044
Phone 920-565-3381, Fax 920-459-1646
For the nearest sales/service outlet in the US and Canada, phone 1-800-544-2444
KohlerPowerSystemscom

G18-56 12/05b

KOHLER®

Prestartup Checklist

Generator Set/Transfer Switch Installation Checklist

This document has generic content and some items may not apply to some applications. Check only the items that apply to the specific application. Read and understand all of the safety precautions found in the Operation and Installation Manuals. Make the following installation checks before performing the Startup Checklist.

Note: Use this form as a general guide, along with any applicable codes or standards. Comply with all applicable codes and standards. Improper installation voids the warranty.

Equipment Room or Weather Housing

Yes	Does Not Apply		
❑	❑	1.	Is the equipment installed in a fire-resistant room (made of non-combustible material) or in an outdoor weather housing?
❑	❑	2.	Is there adequate clearance between the engine and floor for service maintenance?
❑	❑	3.	Is there emergency lighting available at the equipment room or weather housing?
❑	❑	4.	Is there adequate heating for the equipment room or outdoor weather housing?
❑	❑	5.	Is the equipment room clean with all materials not related to the emergency power supply system removed?
❑	❑	6.	Is the equipment room protected with a fire protection system?

Engine and Mounting

❑	❑	7.	Is the mounting surface(s) properly constructed and leveled?
❑	❑	8.	Is the mounting surface made from non-combustible material?
❑	❑	9.	Was the generator-to-engine alignment performed after attaching the skid to the mounting base? Generator sets with two-bearing generators require alignment.

Lubrication

❑	❑	10.	Is the engine crankcase filled with the specified oil?

Cooling and Ventilation

❑	❑	11.	Is the cooling system filled with the manufacturer's specified coolant/antifreeze and purged of air?
❑	❑	12.	Is there adequate inlet and outlet air flow (electric louvers adjusted and ventilation fan motor(s) connected to the corresponding voltage)?
❑	❑	13.	Is the radiator duct properly sized and connected to the air vent or louver?
❑	❑	14.	Are flexible sections installed in the cooling water lines?

Fuel

❑	❑	15.	Is there an adequate/dedicated fuel supply?
❑	❑	16.	Are the fuel filters installed?
❑	❑	17.	Are the fuel tanks and piping installed in accordance with applicable codes and standards?
❑	❑	18.	Is there adequate fuel transfer tank pump lift capacity and is the pump motor connected to the corresponding voltage?
❑	❑	19.	Is the fuel transfer tank pump connected to the emergency power source?
❑	❑	20.	Are flexible fuel lines installed between the engine fuel inlet and fuel piping?
❑	❑	21.	Is the specified gas pressure available at the fuel regulator inlet?
❑	❑	22.	Does the gas solenoid valve function?
❑	❑	23.	Are the manually operated fuel and cooling water valves installed allowing manual operation or bypass of the solenoid valves?

Exhaust

❑	❑	24.	Is the exhaust line sized per guidelines and does it have flexible connector(s)? Is the flexible connector(s) straight?
❑	❑	25.	Is there an exhaust line condensate trap with a drain installed?
❑	❑	26.	Is the specified silencer installed and are the hanger and mounting hardware tightened?
❑	❑	27.	Is a heat-isolating thimble(s) installed at points where exhaust lines pass through combustible wall(s) or partition(s)?
❑	❑	28.	Is the exhaust line free of excessive bends and restrictions? Is the backpressure within specifications?
❑	❑	29.	Is the exhaust line installed with a downward pitch toward the outside of the building?
❑	❑	30.	Is the exhaust line protected from entry by rain, snow, and animals?
❑	❑	31.	Does the exhaust system outlet location prevent entry of exhaust gases into buildings or structures?
❑	❑	32.	Are individuals protected from exposure to high temperature exhaust parts and are hot parts safety decals present?

AC Electrical System

❑	❑	33.	Does the nameplate voltage/frequency of the generator set and transfer switch match normal/utility source ratings?
❑	❑	34.	Do the generator set load conductors have adequate ampacity and are they correctly connected to the circuit breakers and/or the emergency side of the transfer switch?
❑	❑	35.	Are the load conductors, engine starting cables, battery charger cables, and remote annunciator leads installed in separate conduits?
❑	❑	36.	Is the battery charger AC circuit connected to the corresponding voltage?

Transfer Switch, Remote Control System, Accessories

❑	❑	37.	Is the transfer switch mechanism free of binding? **Note:** Disconnect all AC sources and operate the transfer switch manually.
❑	❑	38.	Are the transfer switch AC conductors correctly connected? Verify lead designations using the appropriate wiring diagrams.
❑	❑	39.	Is all other wiring connected, as required?

Batteries and DC Electrical System

❑	❑	40.	Does the battery(ies) have the specified CCA rating and voltage?
❑	❑	41.	Is the battery(ies) filled with electrolyte and connected to the battery charger?
❑	❑	42.	Are the engine starting cables connected to the battery(ies)?
❑	❑	43.	Do the engine starting cables have adequate length and gauge?
❑	❑	44.	Is the battery(ies) installed with adequate air ventilation?
❑	❑	45.	Are the ends of all spark plug wires properly seated onto the coil/distributor and the spark plug?

Special Requirements

❑	❑	46.	Is the earthquake protection adequate for the equipment and support systems?
❑	❑	47.	Is the equipment protected from lightning damage?

Generator Set/Transfer Switch Startup Checklist

This document has generic content and some items may not apply to some applications. Check only the items that apply to the specific application. Read and understand all of the safety precautions found in the Operation and Installation Manuals. Complete the Installation Checklist before performing the initial startup checks. Refer to Service Bulletin 616 for Warranty Startup Procedure Requirements regarding generator set models with ECM-controlled engines.

Yes	Does Not Apply		
❑	❑	1.	Verify that the engine is filled with oil and the cooling system is filled with coolant/antifreeze.
❑	❑	2.	Prime the fuel system.
❑	❑	3.	Open all water and fuel valves. Temporarily remove the radiator cap to eliminate air in the cooling system. Replace radiator cap in step 21.
❑	❑	4.	Place the generator set master switch in the OFF/RESET position. Observe Not-in-Auto lamp and alarm, if equipped, on the controller.
❑	❑	5.	Press the lamp test, if equipped on controller. Do all the alarm lamps on the panel illuminate?
❑	❑	6.	Open the main line circuit breakers, open the safeguard breaker, and/or remove fuses connected to the generator set output leads.
❑	❑	7.	Turn down the speed control (electronic governor) or speed screw (mechanical governor).*
❑	❑	8.	Verify the presence of lube oil in the turbocharger, if equipped. See the engine and/or generator set operation manual.
❑	❑	9.	Place the generator set master switch in the RUN position. Allow the engine to start and run for several seconds.
❑	❑	10.	Verify that the day tank, if equipped, is energized.
❑	❑	11.	Place the generator set master switch in the OFF/RESET position. Check for oil, coolant, and exhaust leaks.
❑	❑	12.	Turn on the water/oil heaters and fuel lift pumps.
❑	❑	13.	Check the battery charger ammeter for battery charging indication.
❑	❑	14.	Place the generator set master switch in the RUN position. Verify whether there is sufficient oil pressure. Check for oil, coolant, and exhaust leaks.
❑	❑	15.	Close the safeguard circuit breaker. Adjust the engine speed to 50/60 Hz if equipped with an electronic governor or to 52.8/63 Hz if equipped with a mechanical governor.*
❑	❑	16.	If the speed is unstable, adjust according to the appropriate engine and/or governor manual.*
❑	❑	17.	Adjust the AC output voltage to match the load voltage using the voltage adjusting control. See the generator set/controller operation manual.
❑	❑	18.	Allow the engine to reach normal operating coolant temperature.
❑	❑	19.	Check the operating temperature on city water-cooled models and adjust the thermostatic valve as necessary.
❑	❑	20.	Manually overspeed the engine to cause an engine shutdown (68-70 Hz on 60 Hz models and 58-60 Hz on 50 Hz models). Place the generator set master switch in the OFF/RESET position.*
❑	❑	21.	Check the coolant level, add coolant as necessary, and replace the radiator cap. Verify that all hose clamps are tight and secure.
❑	❑	22.	Place the generator set master switch in the RUN position.
❑	❑	23.	Verify the engine low oil pressure and high coolant temperature shutdowns.*
❑	❑	24.	Check the overcrank shutdown.*
❑	❑	25.	Place the generator set master switch in the OFF/RESET position.
❑	❑	26.	Open the normal source circuit breaker or remove fuses to the transfer switch.
❑	❑	27.	Disconnect the power switching device and logic controller wire harness at the inline disconnect plug at the transfer switch.
❑	❑	28.	Manually transfer the load to the emergency source.
❑	❑	29.	Close the normal source circuit breaker or replace fuses to the transfer switch.
❑	❑	30.	Check the normal source voltage, frequency, and phase sequence on three-phase models. The normal source must match the load.
❑	❑	31.	Open the normal source circuit breaker or remove fuses to the transfer switch.
❑	❑	32.	Manually transfer the load to the normal source.
❑	❑	33.	Close the generator set main line circuit breakers, close the safeguard breaker, and/or replace the fuses connected to the transfer switch.
❑	❑	34.	Place the generator set master switch in the RUN position.
❑	❑	35.	Check the generator set voltage, frequency, and phase sequence on three-phase models. The generator set must match normal source and load.
❑	❑	36.	Place the generator set master switch in the OFF/RESET position.
❑	❑	37.	Open the generator set main line circuit breakers, open the safeguard breaker, and/or remove the fuses connected to the transfer switch.
❑	❑	38.	Reconnect the power switching device and logic controller wire harness at the inline disconnect plug at the transfer switch.
❑	❑	39.	Close the normal source circuit breaker or replace fuses to the transfer switch. Place the generator set master switch to the AUTO position.
❑	❑	40.	Close the generator set main line circuit breakers, close the safeguard breaker, and/or replace the fuses connected to the transfer switch.
❑	❑	41.	Place the transfer switch in the TEST position (load test or open normal source circuit breaker). **NOTE:** Obtain permission from the building authority before proceeding. This procedure tests transfer switch operation and connects building load to generator set power.
❑	❑	42.	Readjust frequency to 50 or 60 Hz with total building loads.*
❑	❑	43.	Verify that the current phase is balanced for three phase systems.
❑	❑	44.	Release the transfer switch test switch or close the normal circuit breaker. The transfer switch should retransfer to the normal source after appropriate time delay(s).
❑	❑	45.	Allow the generator set to run and shut down automatically after the appropriate cool down time delay(s).
❑	❑	46.	Set the plant exerciser to the customer's required exercise period, if equipped.
❑	❑	47.	Verify that all options on the transfer switch are adjusted and functional for the customer's requirements.
❑	❑	48.	If possible, run the building loads on the generator set for several hours or perform the load bank test if required.
❑	❑	49.	Verify that all the wire connections from the generator set to the transfer switch and optional accessories are tight and secure.
❑	❑	50.	Verify that the customer has the appropriate engine/generator set and transfer switch literature. Instruct the customer in the operation and maintenance of the power system.
❑	❑	51.	Fill out the startup notification at this time and send the white copy to the Generator Warranty Dept. Include the warranty form if applicable.

* Some models with an Engine Electronic Control Module (ECM) may limit or prohibit adjusting the engine speed or testing shutdowns. Refer to appropriate documentation available from the manufacturer.

CONTRACTOR TO SAWCUT & REMOVE ASPH. PVM'T. & CONST. 3' CONC. SWALE ALONG PERIMETER OF GENERATOR PAD AREA. SEE SHT. C-5 FOR GRADING.

CONTRACTOR TO SAWCUT & REPLACE ASPHALT PAVING, PER DETAIL THIS SHEET, TO MATCH EXIST. PAVING. SEE SHT. C-5 FOR GRADING.

886.63'

UE

FDC

3'

62.42'

22.56'

18.56'

14.42'

8'

6W

REFER TO FINAL GEOTECH REPORT PREPARED BY KLEINFELDER, PROJECT NO. 20193536.001A DATED AUGUST 27, 2021 FOR PAVING & SUBGRADE RECOMMENDATIONS.

APGB 70-16

H.M.A.C.

8"

8"

8"

LIME STABILIZED SUBGRADE PER GEOTECH REPORT

SCARIFY SUBGRADE 8", COMPACTED TO A MIN. OF 95% OF MODIFIED PROCTOR DENSITY AT MOISTURE CONTENTS OF +1 TO +4 PERCENT OF OPTIMUM

HEAVY DUTY ASPHALT PAVEMENT SECTION

N.T.S.

REFER TO FINAL GEOTECH REPORT PREPARED BY KLEINFELDER, PROJECT NO. 20193536.001A DATED AUGUST 27, 2021 FOR PAVING & SUBGRADE RECOMMENDATIONS.

PAD PREP PER GEOTECH REPORT PREPARED BY KLEINFELDER. PROJECT NO. 20193536.001A DATED AUGUST 27, 2021, SECTION 4.4 "BUILDING SLAB-ON-GRADE."

H.M.A.C. PER COSTCO WHOLESALE ASPHALT PAVEMENT AND SURFACING SPECIFICATION 321216. PAVEMENT LIFTS SHOULD NOT EXCEED 3 INCHES.

REFER TO GEOTECH REPORT PREPARED BY KLEINFELDER, PROJECT NO. 20211962.001A DATED AUGUST 27, 2021 FOR PAVING & SUBGRADE RECOMMENDATIONS.

PAD PREP PER GEOTECH REPORT PREPARED BY KLEINFELDER. PROJECT NO. 20211962.001A DATED AUGUST 27, 2021, SECTION 4.4 "BUILDING SLAB-ON-GRADE."

REFERENCE SHEET C-6.2 FOR PAVING SECTIONS.

0' 10' 20' 40'

Scale: 1"= 20'

NOTICES TO CONTRACTOR

EXISTING UNDERGROUND/BURIED PUBLIC, PRIVATE, AND FRANCHISE UTILITIES/FACILITIES AFFECT THIS SITE, AND ARE DEPICTED ON THE PLANS PER THE BEST AVAILABLE INFORMATION AT THE TIME THE PLANS WERE PRODUCED. WINKELMANN & ASSOC., INC. SHALL NOT BE RESPONSIBLE FOR KNOWING THE EXACT LOCATION OF ALL FACILITIES OR DEPICTING EXACT LOCATIONS OF SAID FACILITIES ON THE PLANS BEYOND WHAT IS STATED ABOVE.

CONTRACTOR(S) SHALL CALL "811" A MINIMUM OF 48 HOURS PRIOR TO BEGINNING WORK ON THE SITE, AND SHALL NOT BEGIN ANY EXCAVATION OR DEMOLITION ACTIVITES UNTIL AFTER SAID FACILITIES HAVE BEEN MARKED AND/OR FLAGGED PER "811" OR THE FACILITY OWNERS.

CONTRACTOR(S) SHALL BE WHOLLY RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR TO SAID FACILITIES DUE TO WORK BEING DONE WITHOUT FOLLOWING THE PROCEDURES ABOVE.

BEFORE YOU DIG Texas 811

ENCH MARKS:

M#1 – Square cut, top of headwall at the centerline, 84.0 feet northeast of the centerline of Airport Drive and ±84.9 feet northwest of the centerline of the outh bound service road to I.H. 35.

LEVATION – 742.14 feet

M#2 – Square cut top of curb, north end, median on the south bound service road to I.H. 35, ±212.7 feet southwest of the northeast property corner and ±65.3 feet southeast of the southeast property line.

ELEVATION – 746.60 feet

No.	DATE	REVISION	APPROV.
1	05/05/2023	ISSUED FOR PERMIT	MDC

LAST SAVED BY: LOKEN May 17, 2023

Winkelmann & Associates, Inc.
CONSULTING CIVIL ENGINEERS ▪ SURVEYORS
6750 HILLCREST PLAZA DRIVE, SUITE 325
DALLAS, TEXAS 75230
(972) 490-7090
(972) 490-7099 FAX
Texas Engineers Registration No. 89
Texas Surveyors Registration No. 100866-00

STATE OF TEXAS
MICHAEL D. CLARK
63290
REGISTERED
PROFESSIONAL ENGINEER
05-17-2023
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MICHAEL D. CLARK P.E. # 63290

REMODEL PERMIT SET

PAVING PLAN

COSTCO WHOLESALE
GEORGETOWN, TEXAS

05/05/2023

C-4

588.27(20)

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LOT 1
20.37 ACRES
(872,842 SF)

GENERATORS WITH ABOVE GROUND DOUBLE-WALLED FUEL TANKS & ENCLOSURES

CURB LEGEND

(A) - 6" CURB
(B) - 12" CURB
(C) - 0" CURB

COSTCO WHOLESALE

BLDG. SF= 160,437

FFE= 749.50

FFE= 749.50

LEGEND

740 EXIST. CONTOURS
748 PROP. CONTOURS

NOTE:
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THE SURVEYOR DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

BEFORE YOU DIG TEXAS 811

NOTICES TO CONTRACTOR

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CONTRACTOR(S) SHALL BE WHOLLY RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR TO SAID FACILITIES DUE TO WORK BEING DONE WITHOUT FOLLOWING THE PROCEDURES ABOVE.

BENCH MARKS:

BM#1 – Square cut, top of headwall at the centerline, ±84.0 feet northeast of the centerline of Airport Drive and ±84.9 feet northwest of the centerline of the south bound service road to I.H. 35.

ELEVATION – 742.14 feet

BM#2 – Square cut top of curb, north end, median on the south bound service road to I.H. 35, ±212.7 feet southwest of the northeast property corner and ±65.3 feet southeast of the southeast property line.

ELEVATION – 746.60 feet

Scale: 1"= 30'

1 2 4 3

No.	DATE	REVISION	APPROV.
18	11/10/2022	RFI 0047 REVISIONS	MDC
12	11/09/2022	RFI 0029 REVISIONS	MDC
	09/30/2022	IFC/PR-01	MDC
	07/14/2022	BID SET	MDC
2	05/13/2022	PERMIT REVISIONS	MDC
1	11/18/2021	PERMIT ISSUE	TCY
37	05/09/2023	PERMIT REVISION 03	MDC
	05/05/2023	PERMIT REVISION FF PR-09/WHSE PR-21	MDC
34	03/24/2023	RFI 0103 REVISED BLDG WALK	MDC
33	03/08/2023	RFI 0100	MDC
	02/03/2023	FUTURE GENERATORS & ENCLOSURES	MDC
	01/26/2023	PR-09	MDC
	01/18/2023	RFI 0072 REVISIONS	MDC
27	01/17/2023	PR-07	MDC

LAST SAVED BY: LOKEN May 17, 2023

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STATE OF TEXAS
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REGISTERED
PROFESSIONAL ENGINEER
05-17-2023
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MICHAEL D. CLARK P.E. # 63290

PERMIT REVISION SET

GRADING PLAN 2

COSTCO WHOLESALE
GEORGETOWN, TEXAS

588.27(20)

08-02-2021

C-7.2

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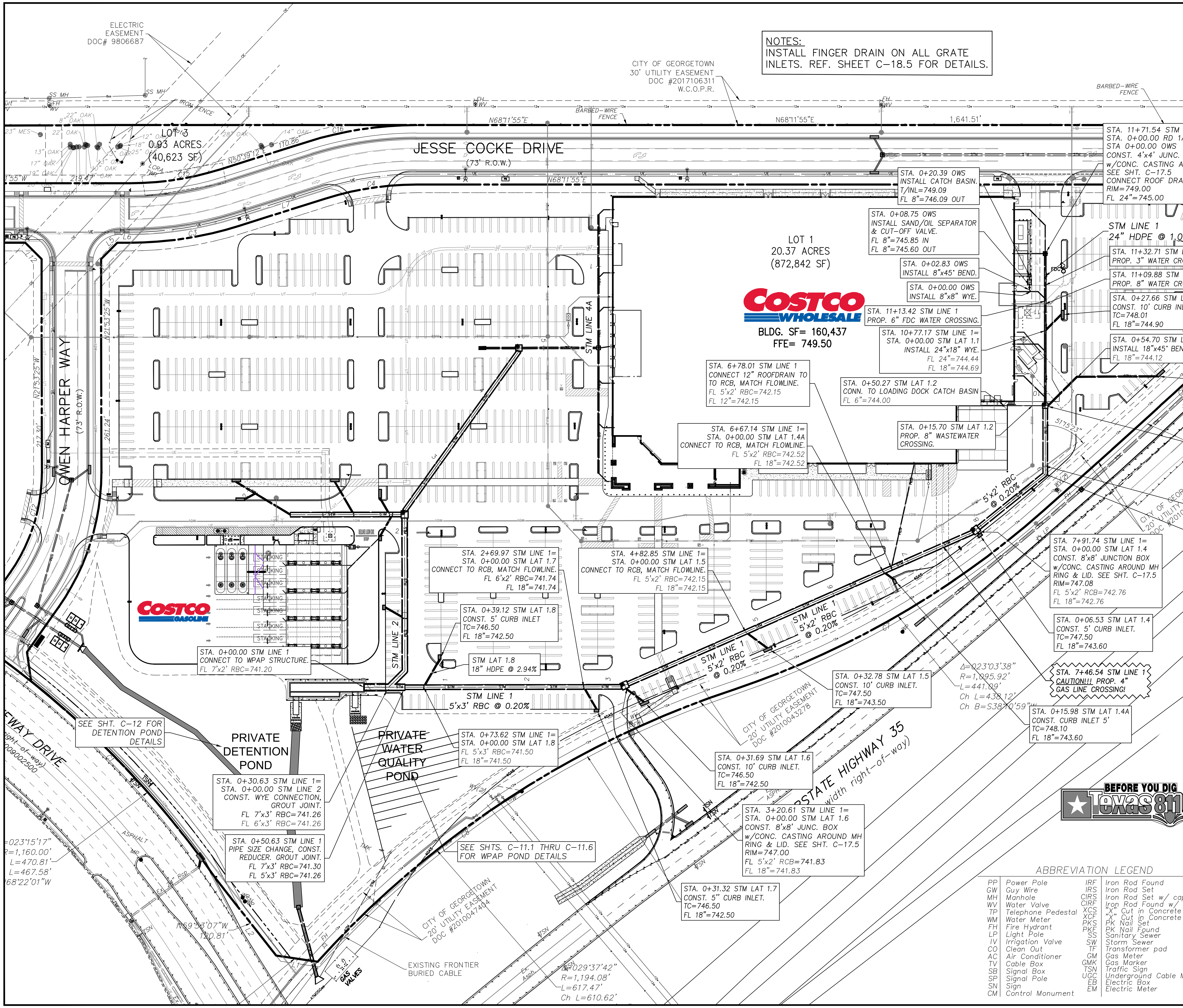
NOTES:
INSTALL FINGER DRAIN ON ALL GRATE INLETS. REF. SHEET C-18.5 FOR DETAILS.



ELECTRIC EASEMENT DOC# 9806687
CITY OF GEORGETOWN 30' UTILITY EASEMENT DOC #2017106311 W.C.O.P.R.
GEORGETOWN UTILITY EASEMENT DOC #2010043278
BARBED-WIRE FENCE
JESSE COCKE DRIVE
(73' R.O.W.)
N68°11'55"E
1,641.51'
LOT 3
0.93 ACRES
(40,623 SF)
LOT 4
0.45 ACRES
(19,403 SF)
LOT 1
20.37 ACRES
(872,842 SF)
COSTCO WHOLESALE
BLDG. SF= 160,437
FFE= 749.50
OWEN HARPER WAY
(73' R.O.W.)
COSTCO GASOLINE
STM LINE 4A
STM LINE 2
STM LINE 1
24" HDPE @ 1.00%
STM LINE 1
5'x3' RBC @ 0.20%
STM LINE 1
5'x2' RBC @ 0.20%
5'x2' RBC @ 0.20%
STM LAT 1.8
18" HDPE @ 2.94%
STA. 11+71.54 STM LINE 1= STA. 0+00.00 RD 1A= STA 0+00.00 OWS CONST. 4'x4' JUNC. BOX w/CONC. CASTING AROUND MH RING & LID. SEE SHT. C-17.5 CONNECT ROOF DRAIN. RIM=749.00 FL 24"=745.00
STA. 0+20.39 OWS INSTALL CATCH BASIN. T/INL=749.09 FL 8"=746.09 OUT
STA. 0+08.75 OWS INSTALL SAND/OIL SEPARATOR & CUT-OFF VALVE. FL 8"=745.85 IN FL 8"=745.60 OUT
STA. 0+02.83 OWS INSTALL 8"x45° BEND.
STA. 0+00.00 OWS INSTALL 8"x8" WYE.
STA. 11+13.42 STM LINE 1 PROP. 6" FDC WATER CROSSING.
STA. 10+77.17 STM LINE 1= STA. 0+00.00 STM LAT 1.1 INSTALL 24"x18" WYE. FL 24"=744.44 FL 18"=744.69
STA. 11+32.71 STM LINE 1 PROP. 3" WATER CROSSING.
STA. 11+09.88 STM LINE 1 PROP. 8" WATER CROSSING.
STA. 0+27.66 STM LAT 1.1 CONST. 10' CURB INLET. TC=748.01 FL 18"=744.90
STA. 0+54.70 STM LAT 1.3 INSTALL 18"x45° BEND. FL 18"=744.12
STA. 1+52.32 STM LAT 1.3 CONST. 10' CURB INLET. TC=748.00 FL 18"=744.50
STA. 9+85.10 STM LINE 1= STA. 0+00.00 STM LAT 1.2= STA. 0+00.00 STM LAT 1.3 CONST. 6'x6' JUNC. BOX w/CONC. CASTING AROUND MH RING & LID. SEE SHT. C-17.5 RIM=748.90 FL 5'x2' RBC=743.14 FL 24"=743.14 FL 18"=743.14 FL 6"=743.90
STA. 9+10.99 STM LINE 1 PROP. 8" WATER CROSSING.
STA. 9+01.12 STM LINE 1 CONST. 51°15'23" HORIZ. BEND. FL 5'x2' RBC=742.98
STA. 6+78.01 STM LINE 1 CONNECT 12" ROOFDRAIN TO TO RCB, MATCH FLOWLINE. FL 5'x2' RBC=742.15 FL 12"=742.15
STA. 0+50.27 STM LAT 1.2 CONN. TO LOADING DOCK CATCH BASIN FL 6"=744.00
STA. 6+67.14 STM LINE 1= STA. 0+00.00 STM LAT 1.4A CONNECT TO RCB, MATCH FLOWLINE. FL 5'x2' RBC=742.52 FL 18"=742.52
STA. 0+15.70 STM LAT 1.2 PROP. 8" WASTEWATER CROSSING.
STA. 2+69.97 STM LINE 1= STA. 0+00.00 STM LAT 1.7 CONNECT TO RCB, MATCH FLOWLINE. FL 6'x2' RBC=741.74 FL 18"=741.74
STA. 4+82.85 STM LINE 1= STA. 0+00.00 STM LAT 1.5 CONNECT TO RCB, MATCH FLOWLINE. FL 5'x2' RBC=742.15 FL 18"=742.15
STA. 7+91.74 STM LINE 1= STA. 0+00.00 STM LAT 1.4 CONST. 8'x8' JUNCTION BOX w/CONC. CASTING AROUND MH RING & LID. SEE SHT. C-17.5 RIM=747.08 FL 5'x2' RCB=742.76 FL 18"=742.76
STA. 0+39.12 STM LAT 1.8 CONST. 5' CURB INLET TC=746.50 FL 18"=742.50
STA. 0+06.53 STM LAT 1.4 CONST. 5' CURB INLET. TC=747.50 FL 18"=743.60
STA. 7+46.54 STM LINE 1 CAUTION!!! PROP. 4" GAS LINE CROSSING!
STA. 0+00.00 STM LINE 1 CONNECT TO WPAP STRUCTURE. FL 7'x2' RBC=741.20
STA. 0+32.78 STM LAT 1.5 CONST. 10' CURB INLET. TC=747.50 FL 18"=743.50
STA. 0+15.98 STM LAT 1.4A CONST. CURB INLET 5' TC=748.10 FL 18"=743.60
SEE SHT. C-12 FOR DETENTION POND DETAILS
PRIVATE DETENTION POND
PRIVATE WATER QUALITY POND
STA. 0+73.62 STM LINE 1= STA. 0+00.00 STM LAT 1.8 FL 5'x3' RBC=741.50 FL 18"=741.50
STA. 0+31.69 STM LAT 1.6 CONST. 10' CURB INLET. TC=746.50 FL 18"=742.50
STA. 0+30.63 STM LINE 1= STA. 0+00.00 STM LINE 2 CONST. WYE CONNECTION, GROUT JOINT. FL 7'x3' RBC=741.26 FL 6'x3' RBC=741.26
STA. 0+50.63 STM LINE 1 PIPE SIZE CHANGE, CONST. REDUCER. GROUT JOINT. FL 7'x3' RBC=741.30 FL 5'x3' RBC=741.26
SEE SHTS. C-11.1 THRU C-11.6 FOR WPAP POND DETAILS
STA. 3+20.61 STM LINE 1= STA. 0+00.00 STM LAT 1.6 CONST. 8'x8' JUNC. BOX w/CONC. CASTING AROUND MH RING & LID. SEE SHT. C-17.5 RIM=747.00 FL 5'x2' RCB=741.83 FL 18"=741.83
STA. 0+31.32 STM LAT 1.7 CONST. 5" CURB INLET. TC=746.50 FL 18"=742.50
CITY OF GEORGETOWN 20' UTILITY EASEMENT DOC #2010043278
CITY OF GEORGETOWN 20' UTILITY EASEMENT DOC #2010047404
INTERSTATE HIGHWAY 35 (width right-of-way)
Δ=023°03'38" R=1,095.92' L=441.09' Ch L=438.12' Ch B=S38°10'59"W
Δ=003°28'22" R=11,409.20' L=691.50' Ch L=691.40' Ch B=S25°01'38"W
Δ=023°15'17" R=1,160.00' L=470.81' L=467.58' 68°22'01"W
Δ=029°37'42" R=1,194.08' L=617.47' Ch L=610.62'
N59°53'07"W 120.81'
EXISTING FRONTIER BURIED CABLE
GAS VALVES
0' 30' 60' 120'
Scale: 1"= 60'

BEFORE YOU DIG Texas 811

NOTICES TO CONTRACTOR

EXISTING UNDERGROUND/BURIED PUBLIC, PRIVATE, AND FRANCHISE UTILITIES/FACILITIES AFFECT THIS SITE, AND ARE DEPICTED ON THE PLANS PER THE BEST AVAILABLE INFORMATION AT THE TIME THE PLANS WERE PRODUCED. WINKELMANN & ASSOC., INC. SHALL NOT BE RESPONSIBLE FOR KNOWING THE EXACT LOCATION OF ALL FACILITIES OR DEPICTING EXACT LOCATIONS OF SAID FACILITIES ON THE PLANS BEYOND WHAT IS STATED ABOVE.

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CONTRACTOR(S) SHALL BE WHOLLY RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR TO SAID FACILITIES DUE TO WORK BEING DONE WITHOUT FOLLOWING THE PROCEDURES ABOVE.

ABBREVIATION LEGEND

PP	Power Pole	IRF	Iron Rod Found
GW	Guy Wire	IRS	Iron Rod Set
MH	Manhole	CIRS	Iron Rod Set w/ cap "WAI"
WV	Water Valve	CIRF	Iron Rod Found w/ cap
TP	Telephone Pedestal	XCS	"X" Cut in Concrete Set
WM	Water Meter	XCF	"X" Cut in Concrete Found
FH	Fire Hydrant	PKS	PK Nail Set
LP	Light Pole	PKF	PK Nail Found
IV	Irrigation Valve	SS	Sanitary Sewer
CO	Clean Out	SW	Storm Sewer
AC	Air Conditioner	TF	Transformer pad
TV	Cable Box	GM	Gas Meter
SB	Signal Box	GMK	Gas Marker
SP	Signal Pole	TSN	Traffic Sign
SN	Sign	UGC	Underground Cable Marker
CM	Control Monument	EB	Electric Box
		EM	Electric Meter

BENCH MARKS:

BM#1 – Square cut, top of headwall at the centerline, ±84.0 feet northeast of the centerline of Airport Drive and ±84.9 feet northwest of the centerline of the south bound service road to I.H. 35.

ELEVATION – 742.14 feet

BM#2 – Square cut top of curb, north end, median on the south bound service road to I.H. 35, ±212.7 feet southwest of the northeast property corner and ±65.3 feet southeast of the southeast property line.

ELEVATION – 746.60 feet

No.	DATE	REVISION	APPROV.
37	05/05/2023	PERMIT REVISION 03	MDC
	05/05/2023	PERMIT REVISION FF PR-09/WHSE PR-21	MDC
	01/26/2023	PR-09	MDC
27	01/18/2023	RFI 0072 ADDED INLET	MDC
	01/17/2023	PR-07	MDC
23	12/07/2022	RFI 0059	MDC
15	11/10/2022	RFI 0045	MDC
14	11/09/2022	RFI 0040	MDC
	09/30/2022	IFC/PR-01	MDC
	07/14/2022	BID SET	MDC
2	05/13/2022	PERMIT REVISIONS	MDC
1	11/18/2021	PERMIT ISSUE	TCY

LAST SAVED BY: LOKEN May 17, 2023

Winkelmann & Associates, Inc.
CONSULTING CIVIL ENGINEERS ■ SURVEYORS
6750 HILLCREST PLAZA DRIVE, SUITE 325 DALLAS, TEXAS 75230
(972) 490-7090 (972) 490-7099 FAX
Texas Engineers Registration No. 89
Texas Surveyors Registration No. 100866-00

STATE OF TEXAS
MICHAEL D. CLARK
63290
REGISTERED PROFESSIONAL ENGINEER
05-17-2023
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MICHAEL D. CLARK P.E. # 63290

PERMIT REVISION SET

STORM DRAIN PLAN LINE 1

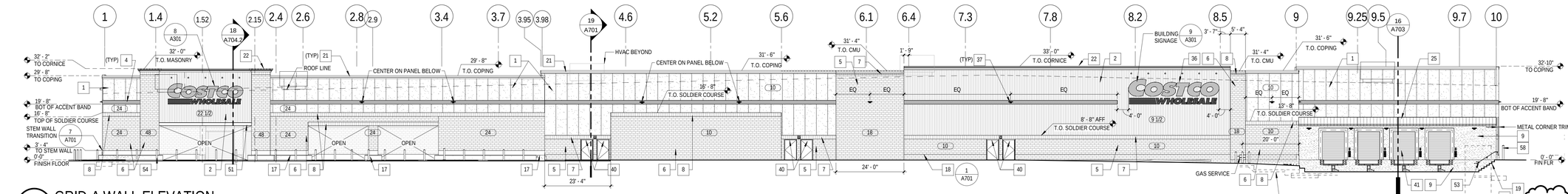
COSTCO WHOLESALE
GEORGETOWN, TEXAS

08-02-2021

C-10.1

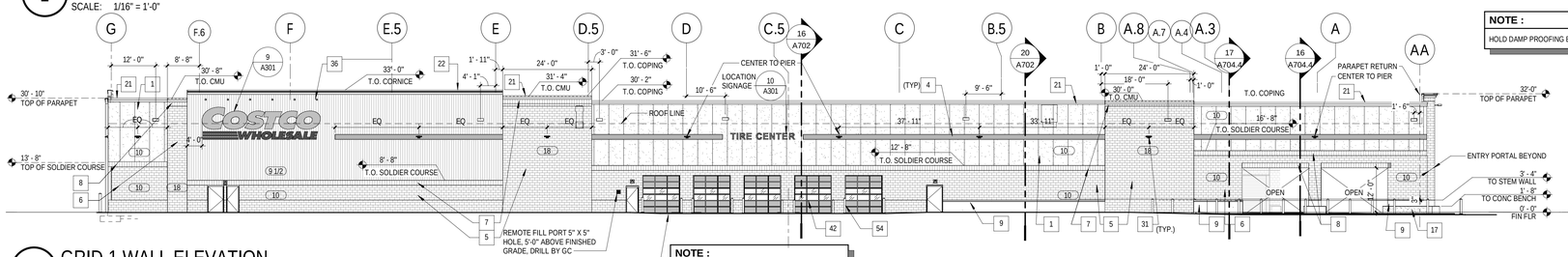
588.27(20)

G:\5882\27\ENGINEERING\Construction Plans\5882-STM.dwg



1 GRID-A WALL ELEVATION (SOUTH ELEVATION)

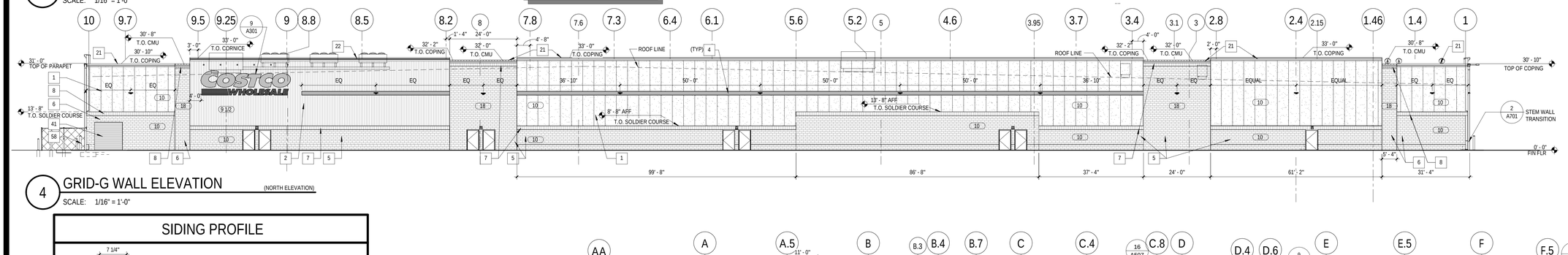
SCALE: 1/16" = 1'-0"



NOTE : SILL 3' BELOW WAREHOUSE FLOOR

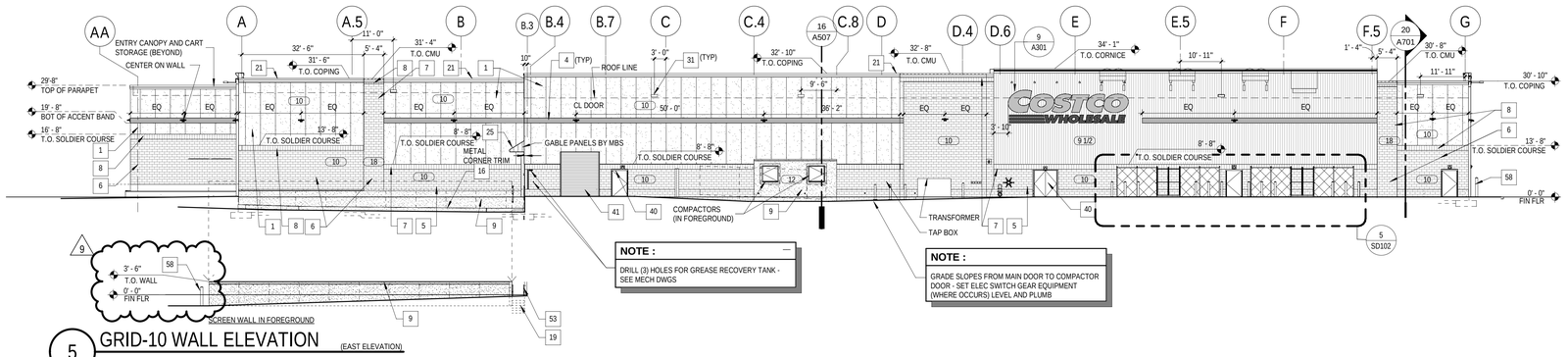
2 GRID-1 WALL ELEVATION (WEST ELEVATION)

SCALE: 1/16" = 1'-0"



4 GRID-G WALL ELEVATION (NORTH ELEVATION)

SCALE: 1/16" = 1'-0"



NOTE : DRILL (3) HOLES FOR GREASE RECOVERY TANK - SEE MECH DWGS

NOTE : GRADE SLOPES FROM MAIN DOOR TO COMPACTOR DOOR - SET ELEC SWITCH GEAR EQUIPMENT (WHERE OCCURS) LEVEL AND PLUMB

5 GRID-10 WALL ELEVATION (EAST ELEVATION)

SCALE: 1/16" = 1'-0"

NOTE : HOLD DAMP PROOFING BELOW GRADE

NOTE : FASTEN METAL PANELS BELOW 8'-0" AFF WITH SECURITY SCREWS BY MBS

NOTE : DIMENSIONS AND NOTES IN THIS ELEVATION APPLY TO ALL ELEVATOINS UNLESS NOTED OTHERWISE

NOTE : SEE A301.1 FOR WALL PACK SPACING

NOTE : SCUPPER LOCATIONS SEE 14, 15/A202.1

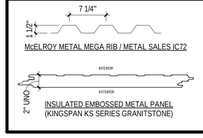
NOTE : INDICATES GRID TO FACE OF MATERIAL IN INCHES

NOTE : ELEVATIONS SHOWN ARE TO TOP OF COPING/CORNICE AND ARE NOT TOP OF GIRT - SEE WALL SECTIONS & A202.1 FOR TOP OF GIRT ELEVATIONS

NOTE : BOTTOM OF SIDING IS 4" BELOW TOP OF CMU UON

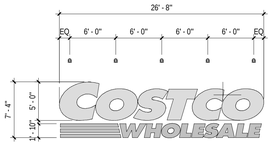
NOTE :
MASON NOTE:
- SEE A301.2
- ALL CMU EXPOSED BELOW FLOOR LEVELS IS TO MATCH CMU OF WALL ABOVE (NO GRAY UNITS)
- SMOOTH FACED UNITS REQUIRED AT JOINT COVERS AND WHERE SIDING, COPING, FLASHING, ETC - OVERLAPS ONTO CMU

SIDING PROFILE



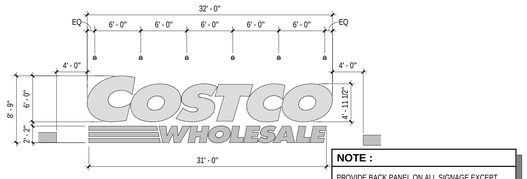
SIGNAGE AREA TABULATION (WALL SIGNS)

QTY	SIGN	SIZE	AREA (SF) EA	TOTAL SF
4	COSTCO WHOLESALE	6'-0" "C"	280 SF	1120
1	COSTCO WHOLESALE	5'-0" "C"	194 SF	194
1	TIRE CENTER	17'-4" X 1'-9"	31 SF	31
TOTAL SIGNAGE AREA				1345



8 ENTRY SIGNAGE

SCALE: 1/8" = 1'-0" (SUPPLIED AND INSTALLED BY MBS) 1015

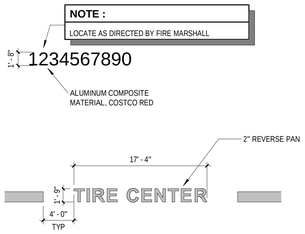


NOTE : PROVIDE BACK PANEL ON ALL SIGNAGE EXCEPT WHEN APPLIED TO SOLID FLAT SURFACE, E.G., CMU, TEXTURED PANELS, ETC.

9 BUILDING SIGNAGE

SCALE: 1/8" = 1'-0" (SUPPLIED AND INSTALLED BY MBS) 0221

NOTE : LOCATE AS DIRECTED BY FIRE MARSHALL



10 LOCATION SIGNAGE

SCALE: 1/8" = 1'-0" (SUPPLIED AND INSTALLED BY MBS) 1115

EXTERIOR FINISH SCHEDULE (NOT ALL ITEMS LISTED BELOW APPLY TO PROJECT)

WALL MATERIALS

#	ITEM	MATERIAL	FINISH	COLOR	MFR \ NOTES
1	METAL INSULATED PANEL	METAL	PRE-FINISHED	LIGHT STONE	1
2	METAL PANELS - IC72	METAL	PRE-FINISHED	METALLIC CHAMPAGNE	1
4	ACCENT BAND	METAL	PRE-FINISHED	SAFETY RED	1
5	MASONRY SPLIT-FACE	CMU	WATER REPELLENT	MOCHA	5
6	MASONRY SPLIT-FACE	CMU	WATER REPELLENT	SALT & PEPPER	5
7	MASONRY SOLDIER COURSE	CMU	WATER REPELLENT	MOCHA	7
8	MASONRY SOLDIER COURSE	CMU	WATER REPELLENT	SALT & PEPPER	7
9	CONCRETE CAST-IN-PLACE	ARCHITECTURAL FINISH	WATER REPELLENT	NATURAL	
13	MASONRY SILL		WATER REPELLENT		
14	WALL CAP		WATER REPELLENT		

MISC WALL

#	ITEM	MATERIAL	FINISH	COLOR	MFR \ NOTES
16	WALL CURB	CONCRETE	WATER REPELLENT		
17	COLUMN PLINTH PLINTH/BENCH	CONCRETE	WATER REPELLENT		
18	WALL REVEALS / CONTROL JOINT				SEE 1/A701 & STRUCT DWGS
19	STAIRS	CONCRETE SAFETY NOSING	WATER REPELLENT		

COPINGS

#	ITEM	MATERIAL	FINISH	COLOR	MFR \ NOTES
21	COPING 1x6	SHEET METAL	PRE-FINISHED	MEDIUM BRONZE	1
22	CORNICE	SHEET METAL	PRE-FINISHED	MEDIUM BRONZE	1

ROOF

#	ITEM	MATERIAL	FINISH	COLOR	MFR \ NOTES
25	STANDING SEAM VSR	METAL	PRE-FINISHED	COSTCO RED	1
26	STANDING SEAM MR24	METAL	PRE-FINISHED		1

ARCHITECTRAL SHEET METAL

#	ITEM	MATERIAL	FINISH	COLOR	MFR \ NOTES
30	ACCENT TRIM	SHEET METAL	PRE-FINISHED		1
31	SCUPPER	SHEET METAL	PAINT BY GC		1,4
33	JOINT COVER	SHEET METAL	PRE-FINISHED		1
34	FLASHING	SHEET METAL	PRE-FINISHED		1
35	SOFFIT PANELS	SHEET METAL	PRE-FINISHED		1

LIGHTING

#	ITEM	MATERIAL	FINISH	COLOR	MFR \ NOTES
36	SIGN LIGHTING FIXTURE	METAL	PRE-FINISHED	TECHLIGHT BRONZE	
37	WALL PACK FIXTURE	METAL	PRE-FINISHED		

OPENINGS

#	ITEM	MATERIAL	FINISH	COLOR	MFR \ NOTES
40	DOOR AND FRAME	STEEL	PAINT BY GC	MATCH WALL COLOR	2
41	ROLLING SERVICE DOOR	STEEL	PRE-FINISHED	TAN OR GRAY	1
42	GLAZED SECTIONAL DOOR	ALUMINUM	PRE-FINISHED	BRONZE	1

MISCELLANEOUS METALS

#	ITEM	MATERIAL	FINISH	COLOR	MFR \ NOTES
50	TRELLIS	STEEL	PAINT BY GC		1
51	ACCENT CHANNEL	STEEL	PAINT BY GC		1
52	STRUCTURAL FRAMING	STEEL	PAINT BY GC		1
53	HANDRAIL/GUARDRAIL	STEEL GALVANIZED	PAINT BY GC		2
54	BOLLARD	STEEL PIPE CONCRETE FILL	PLASTIC SLEEVE	RED	2
56	DECORATIVE SCREEN	METAL	PRE-FINISHED		
57	COMPACTOR GATE	METAL PANELS STEEL FRAMING	PRE-FINISHED PAINT BY GC		
58	BOLLARD 5-FEET TALL	STEEL PIPE CONCRETE FILL	PLASTIC SLEEVE	RED	2

NOTES:
1. SUPPLIED AND INSTALLED BY MBS
2. SUPPLIED BY MBS, INSTALLED BY GC
3. GRATE LANDING AND TREADS WITH SAFETY NOSING
4. LOCATE SCUPPER PER 14, 15/A202.1
5. AUSTIN BLOCK & QUARRY LLC, SEE A301.2 FOR LOCATIONS WHERE SMOOTH-FACE IS REQUIRED.
6. EMBOSSED
7. AUSTIN BLOCK & QUARRY LLC, SMOOTH FACE

COSTCO WHOLESALE

#1385
2201 N. IH 35
GEORGETOWN, TX
78628

COSTCO WHOLESALE CORPORATION
999 LAKE DRIVE
ISSAQUAH, WA 98027
T: 425.313.8100
www.costco.com

PR-08

01.25.23

KEY PLAN

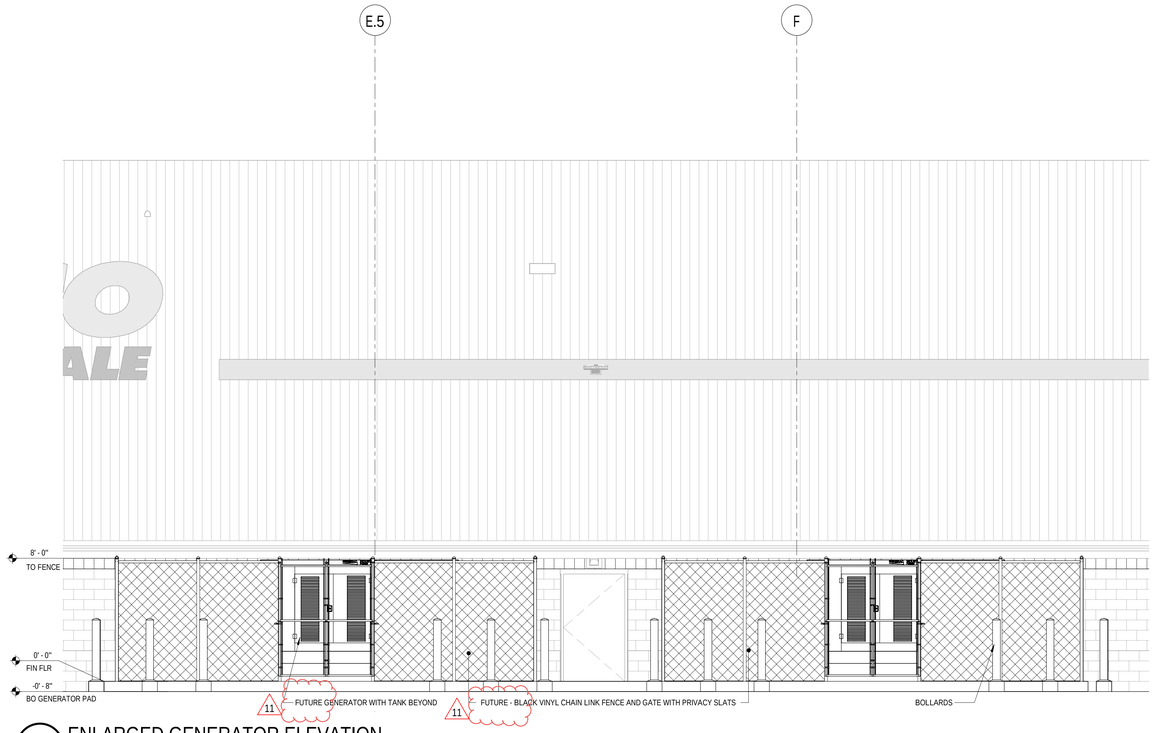
MATTHEW L. GOELZER, ARCHITECT

	DATE	DESCRIPTION
	07.15.19	OWNER APPROVAL (GREEN INK)
	11.18.21	PERMIT ISSUE
1	05.13.22	PERMIT REVISIONS
	07.14.22	BID ISSUE
3	07.27.22	BID ADDENDUM 01
	08.03.22	BID RFI SPAN-01
	08.05.22	BID RFI SPAN-07
	08.17.22	BID RFI 0024
4	09.30.22	IFC / PR-01
	10.20.22	RFI 0036
5	11.23.22	PR-03
6	12.02.22	PR-04
	12.14.22	RFI SPAN-11
8	12.14.22	PR-06
9	01.25.23	PR-08

17-0183-01
PM: NANCY BENNETT EVANS
DRAWN BY: CF
09.14.21

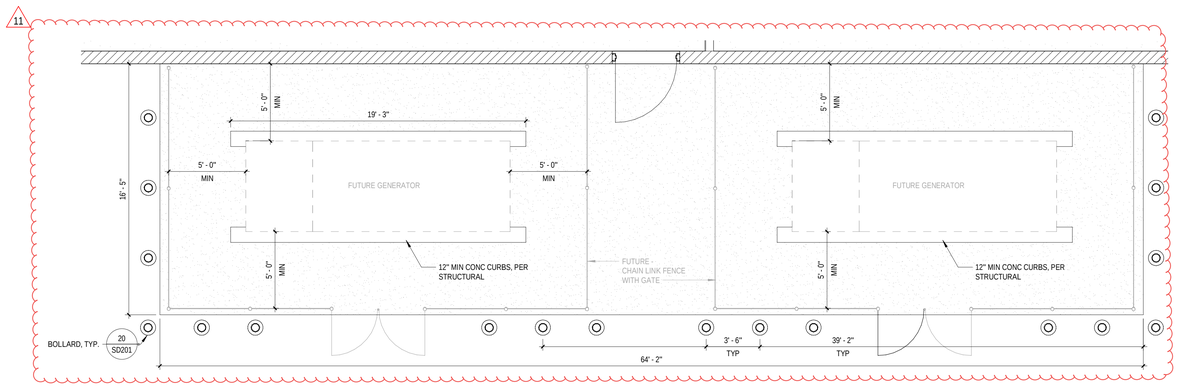
EXTERIOR ELEVATIONS

A301



5 ENLARGED GENERATOR ELEVATION

SCALE: 1/4" = 1'-0"



6 ENLARGED GENERATOR SITE PLAN

SCALE: 1/4" = 1'-0"

#: GEORGETOWN, TX
GEORGETOWN, TX

2201 N. IH 35
GEORGETOWN, TX 78628

COSTCO WHOLESALE CORPORATION

999 LAKE DRIVE
ISSAQUAH, WA 98027
T: 425.313.8100
www.costco.com

1101 Second Ave, Ste 100
Seattle, WA 98101

206 962 6500
MG2.com

PR-10

02.06.23

KEY PLAN

MATTHEW L. GOELZER, ARCHITECT

	DATE	DESCRIPTION
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	11.18.21	PERMIT ISSUE
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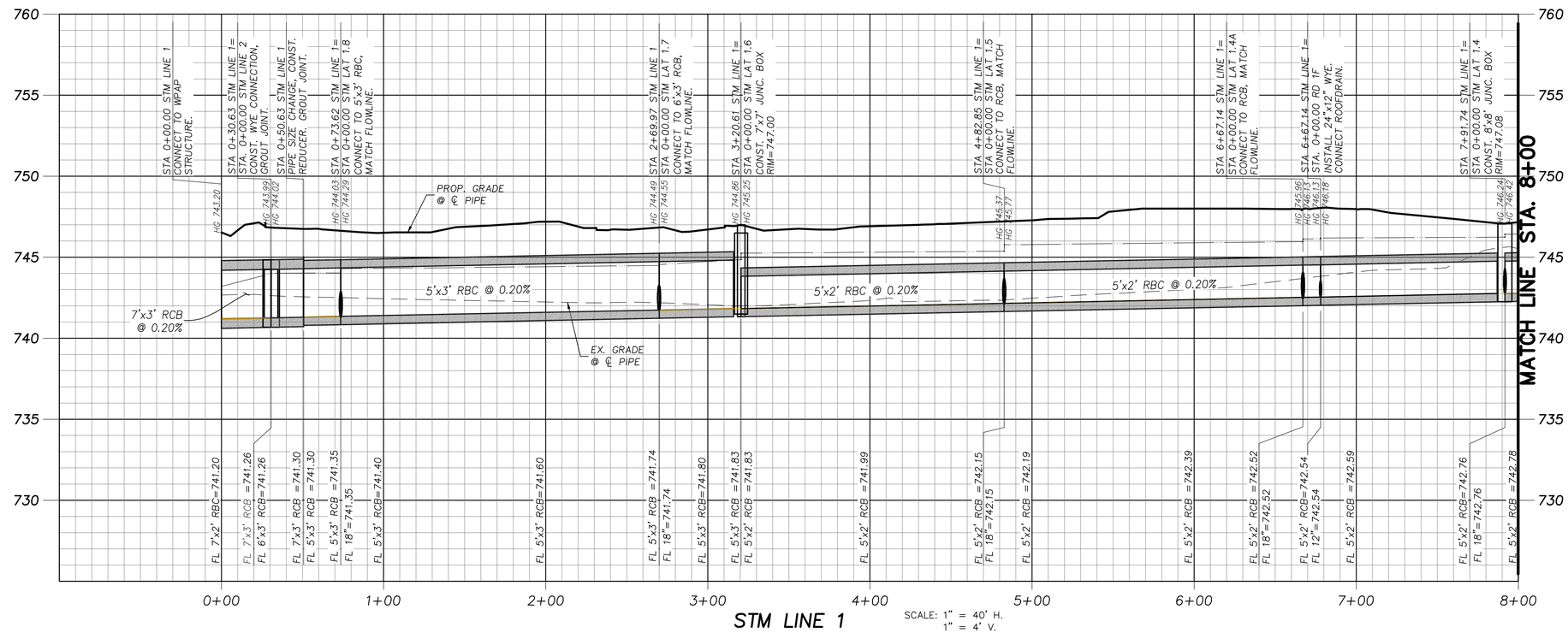
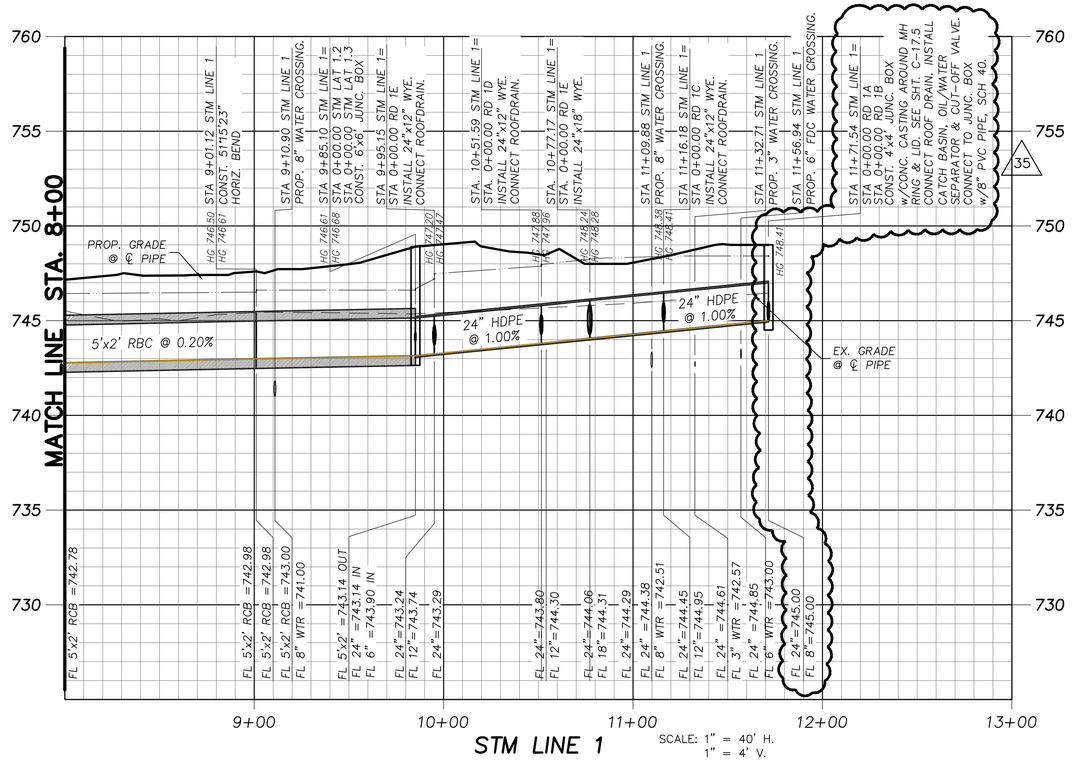
	07.14.22	BID ISSUE

17-0183-01
PM: NANCY BENNETT EVANS
DRAWN BY: CF
11/02/21

ENLARGED GENERATOR PLAN - FUTURE

SD102





BEFORE YOU DIG Texas 811

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ELEVATION – 742.14 feet

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ELEVATION – 746.60 feet

No.	DATE	REVISION	APPROV.
35	04/10/2023	GENERATOR TANK CONTAINMENT	MDC
	01/26/2023	PR-09	MDC
27	01/18/2023	RFI 0072 ADDED INLET	MDC
	01/17/2023	PR-07	MDC
15	11/10/2022	RFI 0045	MDC
14	11/09/2022	RFI 0040	MDC
	09/30/2022	IFC/PR-01	MDC
	07/14/2022	BID SET	MDC
2	05/13/2022	PERMIT REVISIONS	MDC
1	11/18/2021	PERMIT ISSUE	TCY

LAST SAVED BY: LOKEN April 10, 2023

Winkelmann & Associates, Inc.
CONSULTING CIVIL ENGINEERS ▪ SURVEYORS
6750 HILLCREST PLAZA DRIVE, SUITE 325
DALLAS, TEXAS (972) 490-7090
Texas Engineers Registration No. 89 (972) 490-7099 FAX
Texas Surveyors Registration No. 100866-00

STATE OF TEXAS
MICHAEL D. CLARK
63290
REGISTERED
PROFESSIONAL ENGINEER
04-10-2023
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MICHAEL D. CLARK P.E. # 63290

CONSTRUCTION SET

STORM DRAIN PROFILE LINE 1

COSTCO WHOLESALE
GEORGETOWN, TEXAS

08-02-2021

588.27(20)

C-10.4

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Jones Covey Group, Inc.
9595 Lucas Ranch Road, #100
Rancho Cucamonga, California 91730
P: (888) 972-7581
F: (909) 484-0300

Project: GC22035 Costco Georgetown TX (GU)
Costco Fuel Center # 1385
2201 N. IH 35
Georgetown, Texas 78628

Submittal #1.0 - OWS/Catch Basin Submittal

Revision	0	**Submittal Manager**	Jessica Brandi (Jones Covey Group, Inc.)
Status	Open	**Date Created**	Apr 4, 2023
Issue Date	Apr 4, 2023	**Spec Section**	
Responsible Contractor	Jones Covey Group, Inc.	**Received From**	Brian S. Finnell (Jones Covey Group, Inc.)
Received Date		**Submit By**	
Final Due Date	Apr 6, 2023	**Lead Time**	
		Cost Code	
Location		**Type**	Product Information

Approvers Nancy Bennett Evans (MG2 Architecture)

Ball in Court Jessica Brandi (Jones Covey Group, Inc.)

Distribution Cary L Rast (Jones Covey Group, Inc.), Brian S. Finnell (Jones Covey Group, Inc.), Ellen Collins (Jones Covey Group, Inc.), Jessica Brandi (Jones Covey Group, Inc.)

Description 330510 - OWS/Catch Basin Submittal

Submittal Workflow

Name	Sent Date	Due Date	Returned Date	Response	Attachments
General Information Attachments					sample catch basin.pdf 020-576CPS.pdf
Jessica Brandi		Apr 4, 2023		Pending	
Nancy Bennett Evans		Apr 6, 2023		Pending	

☒ Reviewed ☐ Furnished as Corrected
☐ Rejected ☐ Revised and Resubmit
☐ Submit Specified item

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during this review do no relieve the contractor from compliance with the requirements of the plans and specifications and applicable laws, codes and regulations. Review of a specific item shall not include review of an assembly of which the item is a component. The contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the work with that of all other trades and performing all work in a safe and satisfactory manner.

Winkelmann & Associates, Inc.

By: Ronald Loken

Dated: 04-04-2023

Shop Drawing / Submittal Review

JONES COVEY GROUP, INC.
GENERAL CONSTRUCTORS

☑ Reviewed ☐ Revise and Resubmit

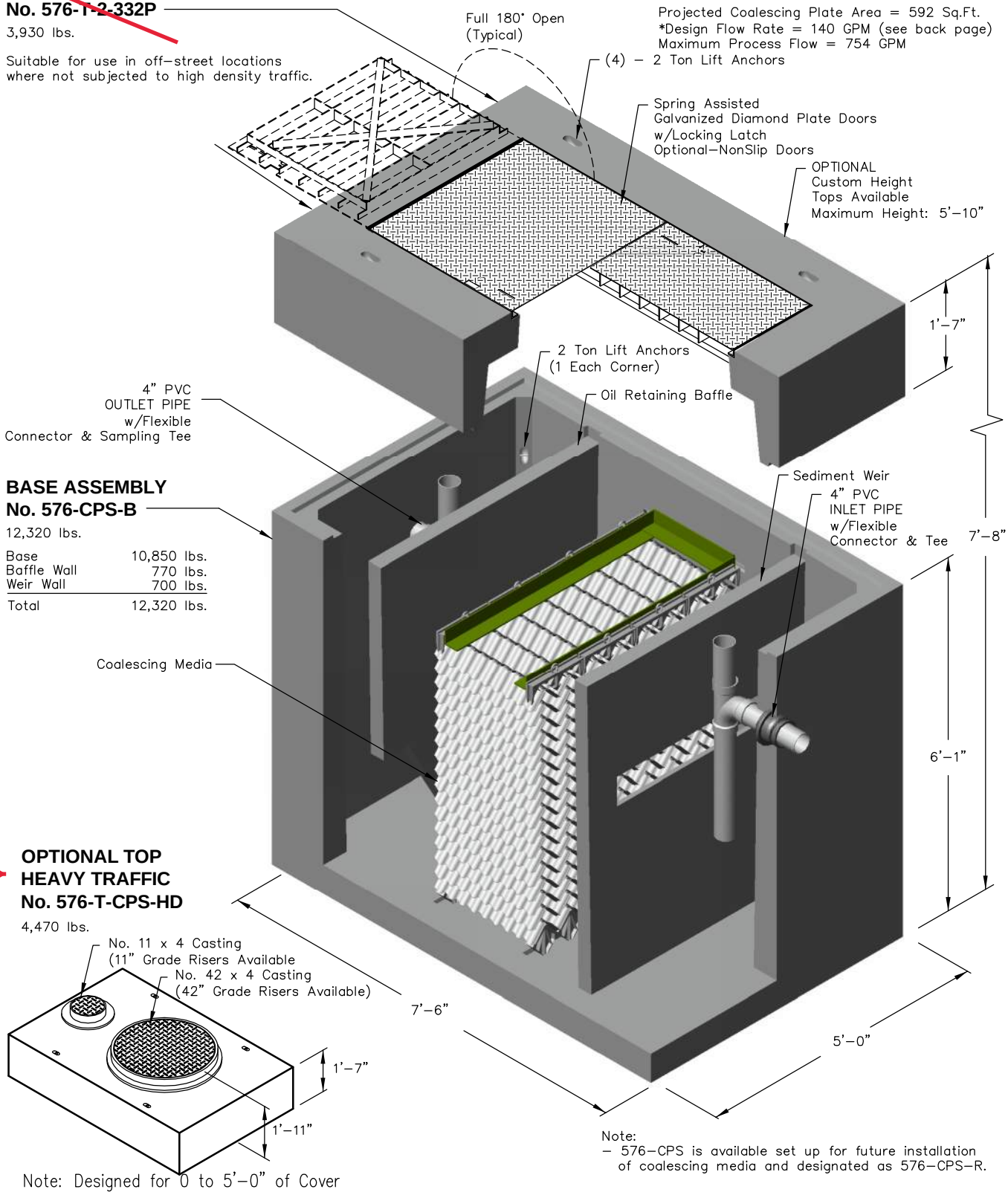
Reviewed only for general conformance with plans and specifications. Sole responsibility for correctness of dimensions, details, quantities, and safety during fabrication and erection remain with the subcontractor. Subcontractor to notify general contractor if discrepancies arise and/or if coordination is required with other trades.

Reviewed by:
04/04/2023
jbrandi
e-signature required

576-CPS

TOP
No. 576-T-2-332P
3,930 lbs.

Suitable for use in off-street locations where not subjected to high density traffic.



BASE ASSEMBLY
No. 576-CPS-B
12,320 lbs.

Base	10,850 lbs.
Baffle Wall	770 lbs.
Weir Wall	700 lbs.
Total	12,320 lbs.

OPTIONAL TOP
HEAVY TRAFFIC
No. 576-T-CPS-HD
4,470 lbs.

Note: Designed for 0 to 5'–0" of Cover

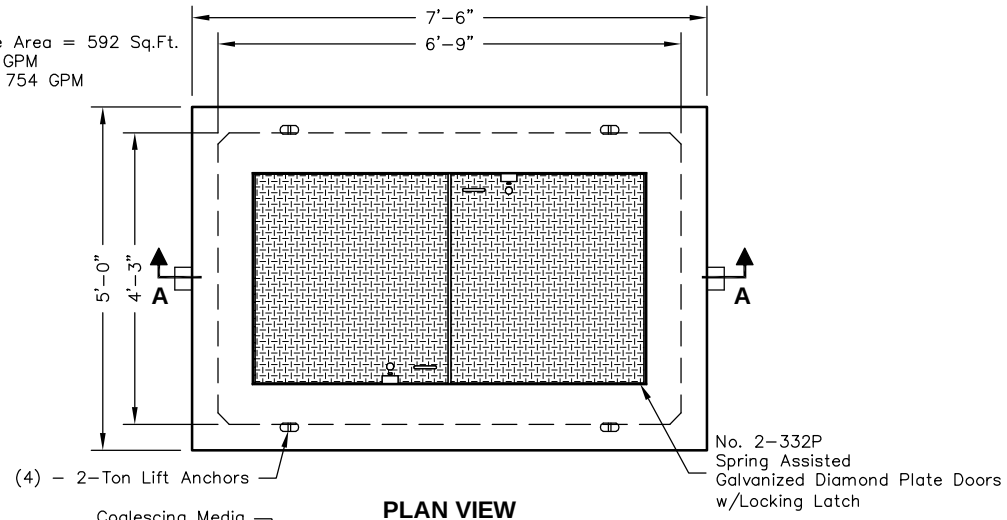
Note:
– 576–CPS is available set up for future installation of coalescing media and designated as 576–CPS–R.

Oldcastle Precast®
PO Box 323, Wilsonville, Oregon 97070-0323
Tel: (503) 682-2844 Fax: (503) 682-2657

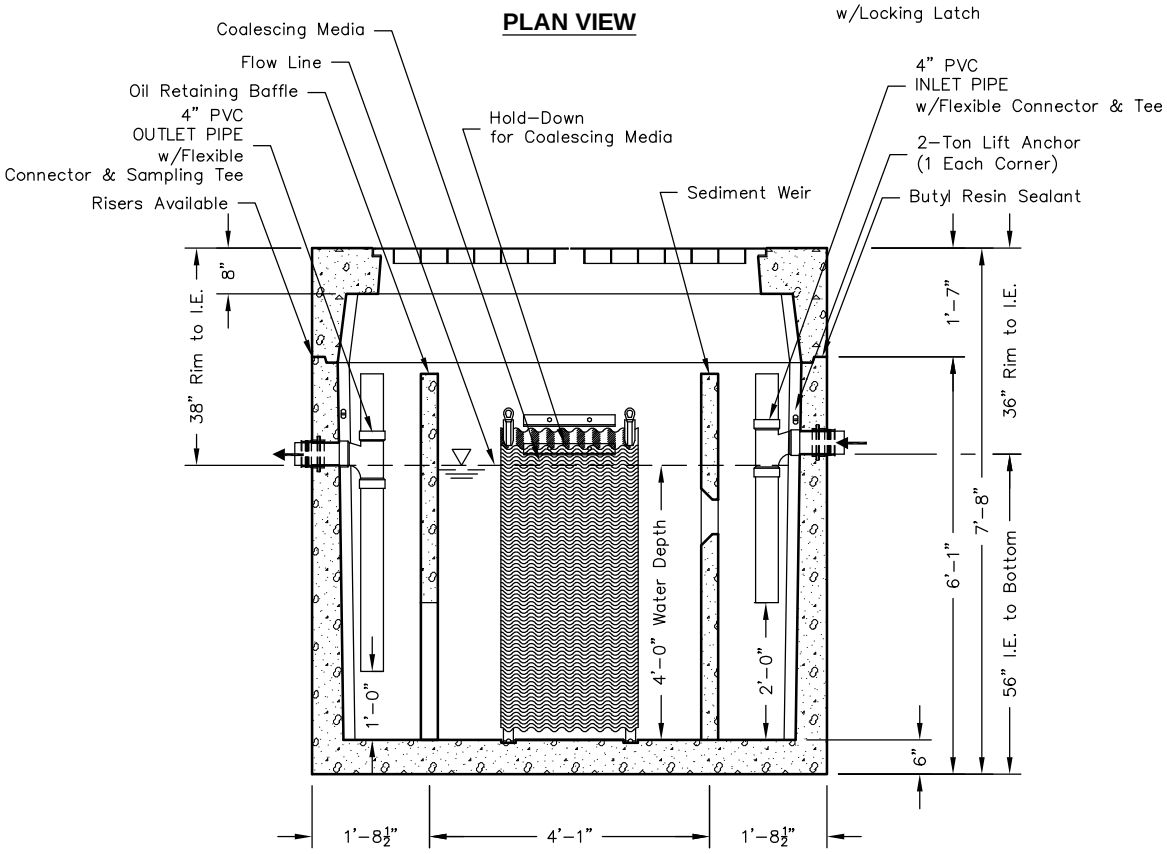
576-CPS	576-CPS OIL / WATER SEPARATOR COALESCING - 140 GPM
File Name: 020ECO576CPS1	
Issue Date: 2018	
oldcastleprecast.com/wilsonville	

576-CPS

Projected Coalescing Plate Area = 592 Sq.Ft.
*Design Flow Rate = 140 GPM
Maximum Process Flow = 754 GPM



PLAN VIEW



SECTION AA

*DESIGN FLOW RATE	EFFLUENT QUALITY	100% COLLECTED SIZE
140 GPM	10 ppm	60 Micron

Notes:
- Static Water Depth = 4'–0"
- Prior to "Startup" of system, fill with clean water to bottom of outlet pipe. For best results, fill to flow line.
- Follow Regular Inspection, Cleaning, & Maintenance Schedule (See Clean Out & Maintenance).

Basic Design Information: *
Influent Characterics
- Oil Specific Gravity = 0.88
- Operating Temperature = 50°
- Influent Oil Concentration = 100 ppm
- Mean Oil Droplet Size = 130 Microns
- .033 ft/min. Critical Oil Droplet Predicted Rise Rate

*Basic Design Information per Washington State Department of Ecology; User to Adjust Estimates for Variations in Real Conditions.

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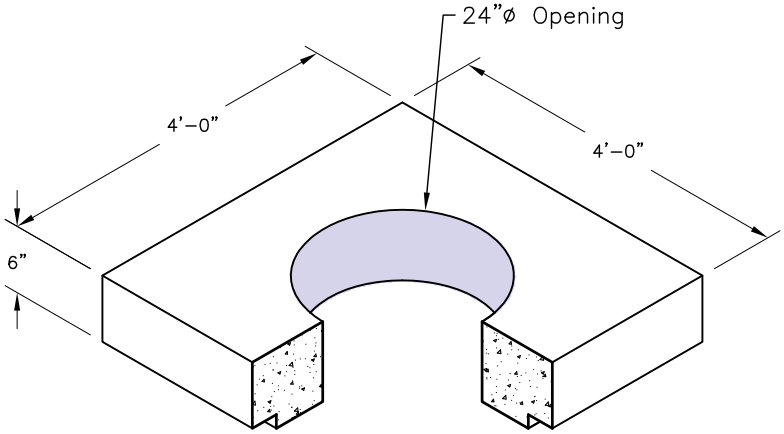
PO Box 323, Wilsonville, Oregon 97070-0323
Tel: (503) 682-2844 Fax: (503) 682-2657

576-CPS	576-CPS OIL / WATER SEPARATOR COALESCING - 140 GPM
File Name: 020-576CPS	
Issue Date: 2018	
oldcastleprecast.com/wilsonville	

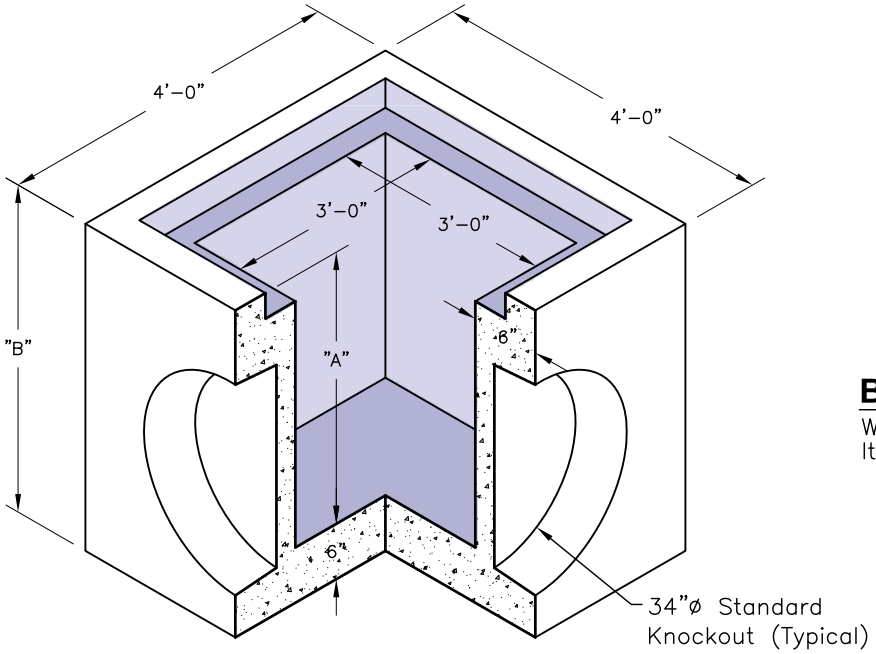


Roof Slab

Weight – 975 Lbs.
Item# – 1041220

GENERAL NOTES:
1. Different Height of Extensions and Bodies are Available by Request.
2. Frame and Cover Also Available.

SPECIFICATIONS:
1. Concrete has a design strength of 5000 PSI at 28 days.
2. Steel reinforcement: ASTM A-615 Grade 60 or ASTM A-497 Welded wire fabric.
3. Loading: Designed for H20 Loading.
4. C.I. Castings: ASTM A-48, Class 30/35.

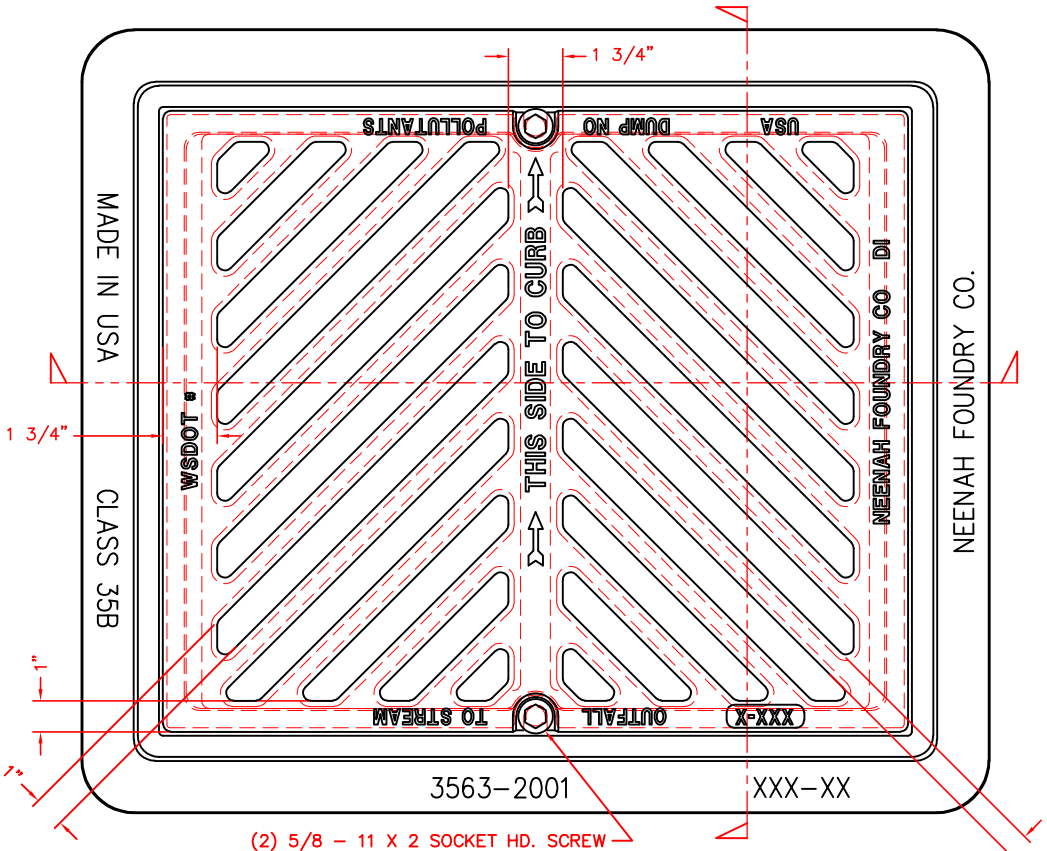


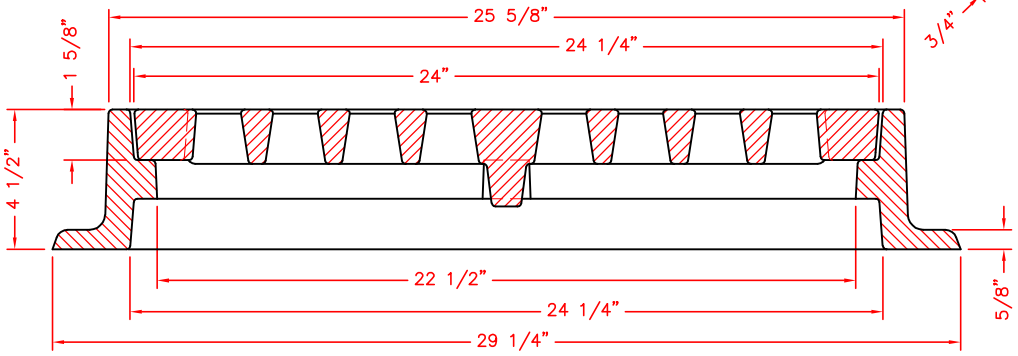
Body

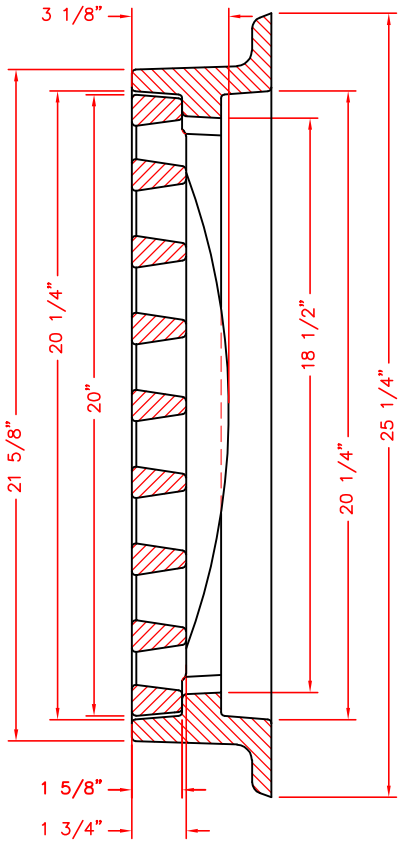
Weight – See Table
Item# – See Table

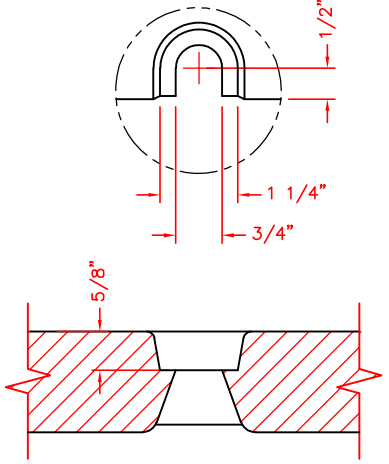
Body			
A	B	Weight	Item#
12"	18"	2250 Lbs.	1203520
18"	24"	2775 Lbs.	1203560
24"	30"	3300 Lbs.	1203660
30"	36"	3825 Lbs.	1203740
36"	42"	4350 Lbs.	1203780
42"	48"	4875 Lbs.	1203880
48"	54"	5400 Lbs.	1203960

3563 100— 1 B4









BOLT SLOT DETAIL

DETAIL A
SCALE 1:2

NOTE: WASH. TB REQUIRED
COMPONENT NOS.: FRAME 3563-2001; GRATE 3563-3007
MATERIAL: FRAME - CAST GRAY IRON ASTM A-48, CLASS 35B
GRATE - CAST DUCTILE IRON ASTM A-536, 55 + KSI YIELD
FINISH: NO PAINT
WEIGHT: FRAME 136#; GRATE 116#

1	05-13-2010	CORRECTED THE GRATE. WAS 3563-3001	ELN
	DATE	REVISION	INT

DR. CSM	SCALE 1/4"=1"	TITLE: R-3563-HB FRAME AND TYPE "K" GRATE	
CH.			
APP.	DIM CHK.	NEENAH FOUNDRY COMPANY NEENAH WISCONSIN 54956	NF- 3563 100 B
DATE 07-10-2007			

CAD DWG. REF: 3563 100.DWG— 1

SUBMITTAL COVER SHEET

PROJECT NAME: Costco Warehouse - Georgetown, TX

2201A N. IH 35 Georgetown, TX 78626

ARCHITECT: MG2 Corporation

CIVIL ENGINEER: Winkleman & Associates

STRUCTURAL ENGINEER: Engineers Northwest

SPECIFICATION SECTION: 330513 Manholes and Structures

CONTRACTOR: Robinson Construction Co.

SUBCONTRACTOR'S NAME: Park USA

SUBCONTRACTOR'S PHONE: (210) 227-7275

ITEM: 330513-11.0 Sand Oil Separator

ITEM:

ITEM:

ITEM:

ITEM:

ENGINEER'S STAMP IF REQUIRED

- [x] Reviewed
- [ ] Rejected
- [ ] Furnished as Corrected
- [ ] Revised and Resubmit
- [ ] Submit Specified item

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Winkelmann & Associates, Inc.

By: Ronald Loken

Dated: 04-24-2023

CONTRACTOR'S STAMP

THESE DRAWINGS / PRODUCT DATA HAVE BEEN REVIEWED BY ROBINSON CONSTRUCTION CO FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. THIS REVIEW OF ACCEPTANCE DOES NOT RELIEVE THE SUBCONTRACTOR FROM RESPONSIBILITY FOR CORRECTNESS AND COMPLETENESS.

SPEC. SECT. 330513 Manholes and Structures

DATE: April 21, 2023

REVIEWED BY N. Pennington

SUBMITTAL 330513-11.0 Sand Oil Separator

Headquarters
Northwest Pipe Company
201 NE Park Plaza Drive, Suite 100
Vancouver, WA 98684
P: 360-397-6250

ParkUSA Texas Coastal
7015 Fairbanks N Houston
Houston, TX 77040
P: 713-937-7602

ParkUSA Central Texas
8491 Hwy 87 East
San Antonio, TX 78263
P: 210-227-7275

ParkUSA North Texas
1200 N Fwy Service Rd
Ferris, TX 75125
P: 972-842-8801

Submittal Package for

COSTCO WHOLESALE

Georgetown, Tx

PRODUCTS

Sand/Oil Separator Sample Well

CUSTOMER

ACT Pipe & Supply - Temple
5817 S. General Bruce Dr
Temple, Texas 76502
(254) 742-0888

MANUFACTURER

ParkUSA
A Northwest Pipe Company
7015 Fairbanks N Houston
Houston, TX 77040
713-937-7602

April 17, 2023

Job #: 99511 / 22-45914

PM: NW
CELL: (281) 736-2250
EMAIL: nwhite@parkusa.com

ENG: AR / HP
arivas@park-usa.com

Expect the Best...

Who would expect any less than the best when specifying or purchasing equipment for their construction projects. Engineers and contractors know ParkUSA Company for its quality products and services in the construction industry. Feel free to contact our office for engineering and sales assistance.

Limited Warranty

All goods sold hereunder are warranted to be free from defects in material and factory workmanship for a period of one year from the date of purchase. We will replace goods that prove defective at no cost,provided we are notified in writing of such defect and evidence that the product has been properly maintained and used in accordance with manufacturer's intended purpose. We will not be responsible for any labor charges, loss, injury, or damages whatsoever, including incidental or consequential damages. The sole and exclusive remedy shall be limited to the replacement of the defective goods. Before installation and use, the purchaser shall determine the suitability of the product for its intended use and the purchaser assumes all risk and liability, whatever in connection there with.

Table of Contents

Subject	*Section*
Sand/Oil Separator SOCMP-1000	**SECTION 1**
Sample Well SWB-154	**SECTION 2**

ParkUSA Quick Submittal Response:
For clarifications or additional questions regarding this submittal, please contact Engineering at eng@parkusa.com

PARK USA
A Northwest Pipe Company

SECTION 1

Sand/Oil Separator

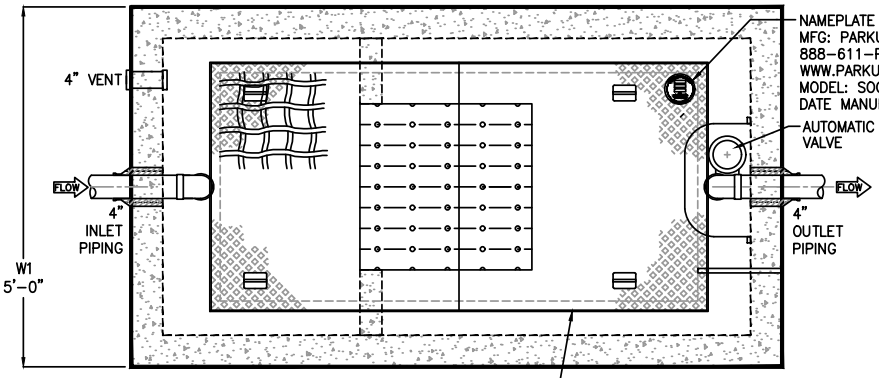
SOCMP-1000

PARK USA
A Northwest Pipe Company

SOCMP–1000–XXX

SEPARATOR SIZE
550 – 550 GALLON
750 – 750 GALLON
1000 – 1000 GALLON
1500 – 1500 GALLON
ETC...

MAXIMUM FLOW RATE
25 – 25 GPM
50 – 50 GPM
ETC...

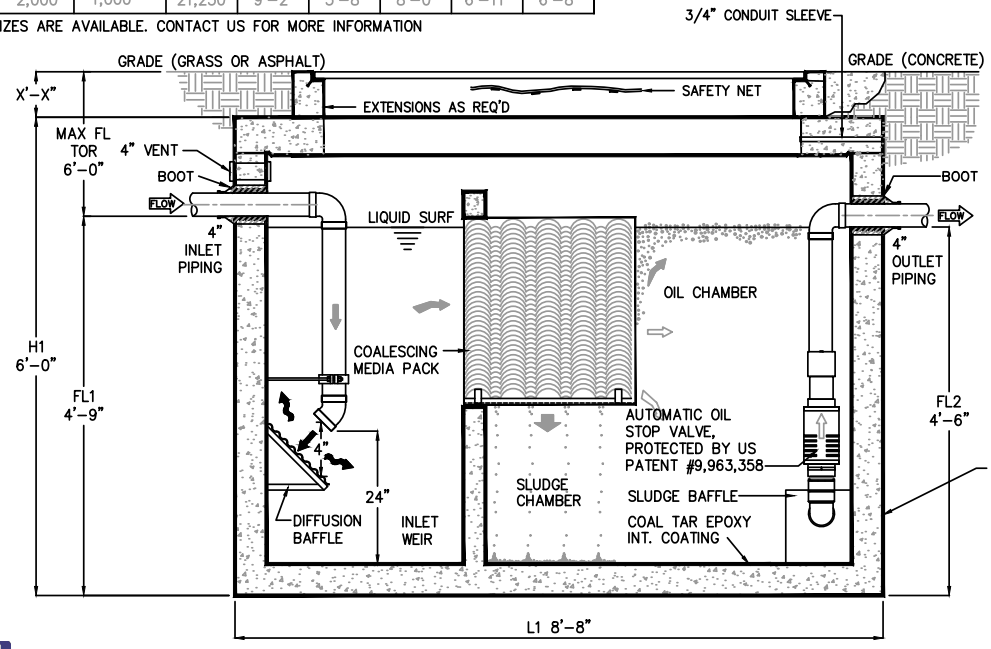


PLAN VIEW

SAND–OIL INTERCEPTOR SCHEDULE

MODEL NO.	CAPACITY USGal	OIL CAP. US (GAL)	EMPTY WT (LBS)	LENGTH L1	WIDTH W1	HEIGHT H1	INLET FL1	OUTLET FL2
SOCMP–500	500	250	9,500	7'–10"	4'–4"	4'–6"	3'–3"	3'–0"
SOCMP–750	750	375	9,900	7'–10"	4'–4"	6'–0"	4'–5"	4'–2"
SOCMP–1000	1,000	500	13,350	8'–8"	5'–0"	6'–0"	4'–9"	4'–6"
SOCMP–1500	1,500	750	16,050	9'–2"	5'–8"	7'–0"	5'–9"	5'–6"
SOCMP–2000	2,000	1,000	21,250	9'–2"	5'–8"	8'–0"	6'–11"	6'–8"

NOTE: OTHER SIZES ARE AVAILABLE. CONTACT US FOR MORE INFORMATION



ELEVATION

APPLICATIONS
- MAINTENANCE WASHDOWN & GARAGES
- GOLF COURSES
- EQUIPMENT & TRANSPORTATION WASHDOWN FACILITIES
- CARWASHES
- STORMWATER RUNOFF
- SERVICE STATION FUEL DEPOTS
- MANUFACTURING FACILITY EFFLUENT WATER
- REMEDIATION WATER CLEANUP
- GENERAL INDUSTRY

GUARANTEED PERFORMANCE

A CERTIFIED PERFORMANCE ANALYSIS UTILIZING A PROPIETARY COMPUTER PROGRAM WILL ACCURATELY MODEL SYSTEMS TO ENSURE THAT THEIR EFFLUENT QUALITIES MEET THE REQUIRED DISCHARGE CRITERIA (EPA AND LOCAL CODES)

INFLUENT OILY WATER CONTAINS OIL DROPLETS OF MANY DIFFERENT SIZES. THESE DROPLETS RISE AT DIFFERENT RATES. PARK UTILIZES A STATISTICAL PROGRAM THAT DIVIDES THE DROPLETS INTO RANGES OF SIZES AND CALCULATES THE RISE RATES OF EACH RANGE. THIS CALCULATION DETERMINES WHICH DROPLETS THE SEPARATOR CAN CAPTURE.

CONTACT OUR ENGINEERING DEPT. @ 888–611–PARK FOR A FREE PERFORMANCE EVALUATION.

Uniform Plumbing Code Listed

ASPE Member

NPCA CERTIFIED PLANT

Oil Trooper™
PATENT #9,963,358

PLOTTED ON 4/17/2023 1:03 PM BY Jennings, Jonathon, Y:\Parkdwgs\SO\SOCMP JOBS\SOCMP–1000–99511–COSTCO FUEL CENTER GEORGETOWN–2245914

SPECIFICATIONS

GUARANTEED PERFORMANCE FOR CODE MAX OIL CONCENTRATION (SANITARY SEWER 400 PPM, STORM SEWER 15 PPM)

CONCRETE: CLASS I/II CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT: GRADE 60 REINFORCED WITH STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

MATERIALS: ACCESS FRAME & COVER SHALL BE FABRICATED WITH MIN. 1/4" THICK NON–SKID FLOOR PLATE, BOLT DOWN, & LIFTING HANDLES. ALL MATERIALS TO BE CORROSION RESISTANT.

ENGINEERING DATA

INTERCEPTOR IS STRUCTURALLY AND HYDRAULICALLY ENGINEERED. NOMINAL TOTAL LIQUID CAPACITY AND OIL HOLDING CAPACITY AS INDICATED. RECOMMENDED FOR FLOW RATES OF 5 TO 200 GPM (CONSULT PARK FOR PROPER SIZING).

MANUFACTURER SHALL SUBMIT PERFORMANCE CALCULATIONS FOR OIL & WATER SEPARATION CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER, UPON REQUEST FIELD EXCAVATION AND PREPARATION SHALL BE COMPLETED PRIOR TO DELIVERY OF INTERCEPTOR.

REV	DATE	BY	DESCRIPTION
A	04/17/23	JJ	ORIGINAL SUBMITTAL

PROJECT: COSTCO FUEL CENTER
CUSTOMER: ACT PIPE & SUPPLY – TEMPLE
ENGINEER: .
ORDER #: 99511 PROJ #: 22–45914
DATE: 04/17/2023 LOCATION: GEORGETOWN, TX

PARK USA
A Northwest Pipe Company

SAND–OIL SEPARATOR SOCMP
MODEL SOCMP – 1000 GALLONS

PM	PC	DRN	ENG
NW	.	JJ	AR

DATE 04/2023

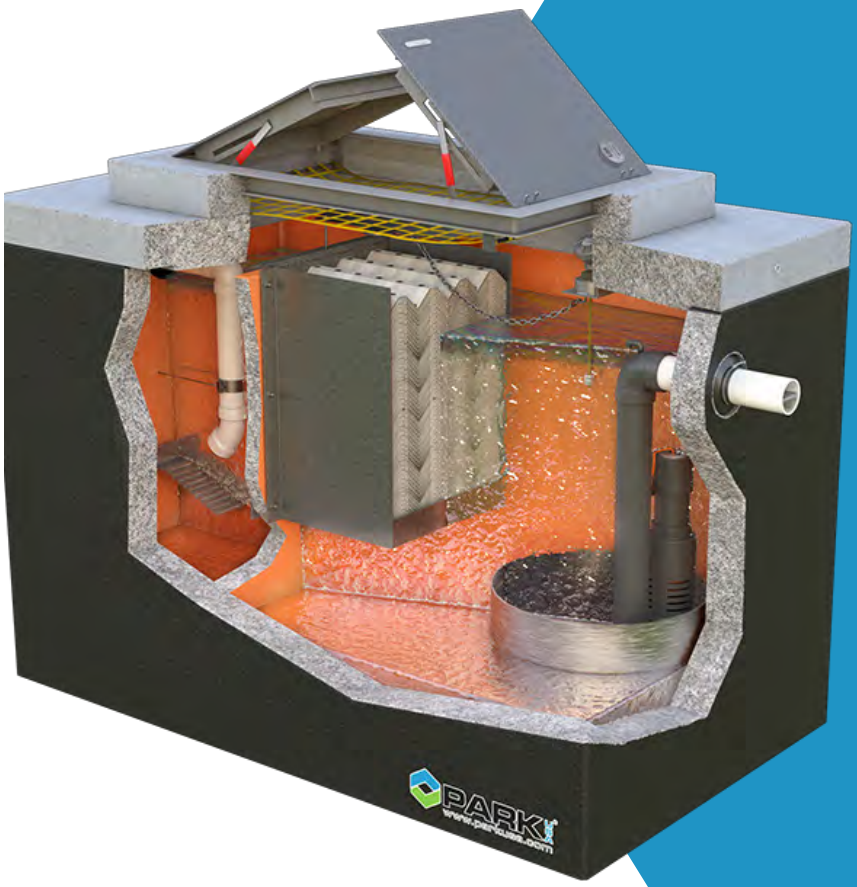
DWG. NO. SOCMP1000–99511

REV. A

MARK: – OIL/WATER
LINE: – SEPARATOR
STA: –
SHEET: – C–18.5
DATE: – 08–02–21

CREATED ON 4/17/2023 BY ----
LAST MODIFIED ON 4/17/2023 12:53 PM BY JJENNINGS

SOCMP



PARK USA
A Northwest Pipe Company

ENGINEERING **FACTS**

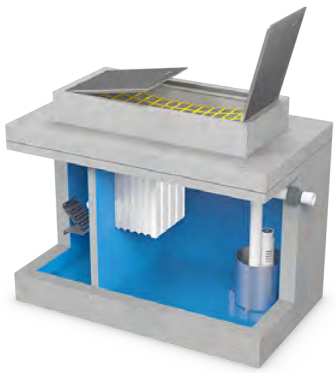
GENERAL INFORMATION

Wastewater that contains significant amounts of oils or solids, that interfere with the proper drainage and treatment of wastewater, must be treated before being discharged into the sanitary sewer system. To comply with effluent water quality standards mandated by the EPA and local plumbing codes, wastewater treatment utilizing oil/water separators is common. The Sand-Oil CMP (Coalescing Media Pack) Separator consist of a two-compartment precast concrete vault which utilizes an enhanced gravity technique for oil separation: the patented coalescing media pack. Typical applications include vehicle maintenance and wash down facilities, fueling depots, parking lots, and storm water runoff.

The ParkUSA Oil Trooper Oil-Water Separator is a passive gravity flow system for the separation of oil from oily water mixtures. The design uses the difference in specific gravities between oil and water (buoyancy force) and is enhanced by the use of patented coalescing plates. Using a gravity flow system, the separator is designed to receive oily water and process it in a single step.

OILTROOPER MODELS

SOCMP-S



SOCMP

MODELS

The current models available for Sand-Oil Interceptor units are:

ParkUSA SOCMP, typically, this series of sand-oil separator is the most economic and preferred choice over all other separator types. The SOCMP series separator is manufactured of Class II 4500 PSI precast concrete offering superior structural strength and longevity. As an option, the interceptor can be equipped with a variety of interior chemical proof liners including PVC.

ParkUSA SOCMP-S, this series is a steel unit and is recommended for applications where the separator is installed in a freestanding location, i.e., in a basement or on a slab.

The ParkUSA Oil Trooper® Oil-Water Separator is a passive gravity flow system for the separation of oil from oily water mixtures. The design uses the difference in specific gravities between oil and water (buoyancy force) and is enhanced by the use of patented coalescing plates.

FEATURES

- Precast Concrete, Fiberglass or Steel Construction
- Oil-Water Separation with Oil Detection and Separation Technology
- Certified Performance
- Above or Below Grade Installation
- Pedestrian or Traffic Rated
- Remote Maintenance Alarm
- Interior Liners Available Meets all Building Codes
- Low and Easy Maintenance

SYSTEM COMPONENTS

The ParkUSA Sand-Oil Separator presents the main components showed below:

Sensors: Indicate water level inside unit.

Control Panel: The Control System consists of a panel that receives signal from the high-level sensor, it is programed for easy use for the end-user.

Containment Vault: The shell of the unit can be constructed from Precast Concrete, Fiberglass, or Steel. Model names and configurations vary by material.

Coalescing Media Pack: Engineered media designed for oil retention.

OPERATION

The function of the Sand-Oil CMP Separator is to intercept free oils/solids and retain them for periodic removal. The wastewater is treated by the separator in two stages. The initial stage of treatment occurs as the inflow strikes a corrugated diffusion plate. This process is known as the Buffalo-Morse Principle. Solids and oil are separated through velocity reduction and sinusoidal flow patterns. Heavy solids settle and 100 percent oil slugs rise immediately to the surface.

The second stage of treatment occurs as the wastewater flows through the Coalescing Media Pack (CMP). Both the smaller oil droplets and fine solids are progressively separated. Downstream, the oil dam prevents collected oil from entering the outlet piping.

The Coalescing Media Pack™ consists of closely spaced corrugated plates manufactured with an oleophilic (oil attracting) material. The patented plates are an enhanced version of the plates utilizing the Royal Dutch Shell Principle. The corrugated pattern induces a sinusoidal laminar flow of the oily water mixture. Under laminar flow conditions, buoyancy forces cause oil droplets to rise until they adhere themselves to the oleophilic plates. Small oil droplets tend to coalesce into sheets of oil on the underside surfaces of the corrugated plates. The sinusoidal flow path also promotes a high incidence of droplet collision as the fluid flow constantly changes direction from a downward path to a vertical path. The coalescing oil rises to the surface in large globules through weep holes or gutters in the coalescing plate pack.

DESIGN CONSIDERATIONS

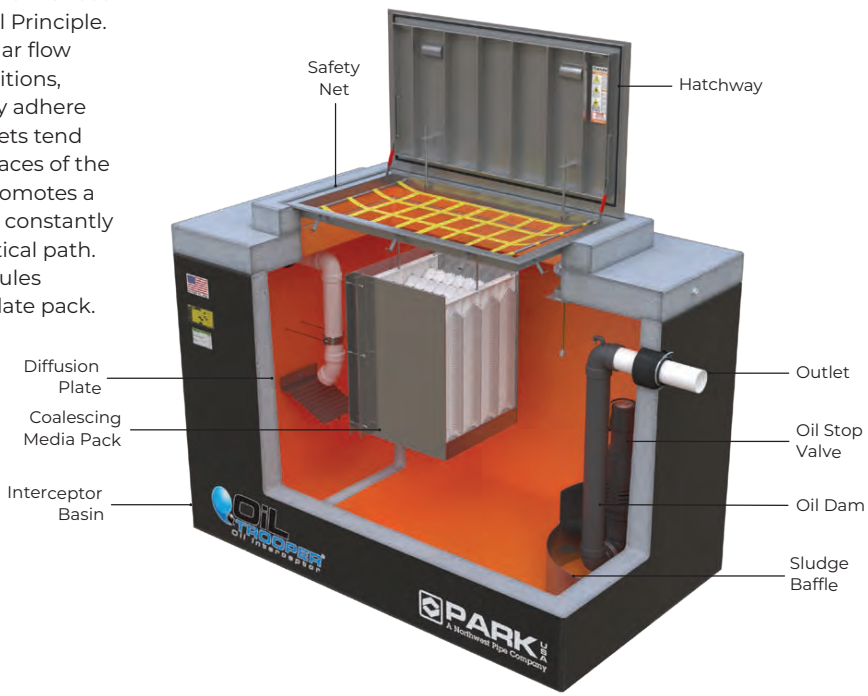
For general commercial applications, the standard Oil/Water CMP Separators are recommended. The parameters used in designing these gravity flow units are: ambient fluid temperatures (40-60F), standard atmospheric conditions, oil/water specific gravity differential of 0.15, pH of 6-8 and an influent oil concentration of 400 ppm or less. The resultant effluent oil concentration of the wastewater should be less than 15 ppm which conforms to EPA regulations.

The oil/water separator should be located so as to intercept the building sewer. The separator should be installed so that it will be easily accessible for inspection, cleaning, and removal of separated waste products. There should be an adequate number of separator access openings to permit cleaning and/or removal of the coalescing plate packs. All access manholes should extend to grade. The separator should be located near the source of the wastewater for maximum protection of the piping system. The inlet and outlet piping shall be a minimum of 4 inches or the size of the building sewer, whichever is greater. Most jurisdictions require a sampling well on the discharging side of the separator so that an inspector can verify proper treatment or maintenance.

MAINTENANCE

The frequency of cleaning at any given installation will vary depending on use. The Sand Oil Separator should be inspected at least bi-annually. The High Oil Alarm system will notify of immediate servicing requirements.

When necessary, the separator should be pumped out by a licensed pumping company familiar with regulations regarding proper disposal.



SIZING

The oil/water separator is selected based on anticipated flow rate (gpm) and type influent discharged through the interceptor.

The flow rate can be estimated by summing up all the fixture units as listed in the plumbing code manual and converting this into flow rate (gpm). Once flow rate is established, ParkUSA uses a Mpak® proprietary computer-modeling program, which utilizes Stoke's Law, droplet size distribution, particle rise, and other relevant input to make accurate performance predictions. This sizing technique assures a "site-specific" custom design for every application.

For example, if the given flow has a 50 GPM value, the SOCMP needed would be a 500 gallons unit. Further design on plates efficiency can be also developed.

SOCMP Sizes Available

MODEL NO	STANDARD SIZE LENGTH X WIDTH	NOMINAL FLOW RATE (GPM)	INTERCEPTOR VOLUME GAL	NOMINAL OIL CAPACITY GAL
SOCMP-500	7'-10" X 4'-4"	50	500	250
SOCMP-750	7'-10" X 4'-4"	75	750	375
SOCMP-1000	8'-8" X 5'-4"	100	1,000	500
SOCMP-1500	9'-0" X 6'-0"	150	1,500	750
SOCMP-2000	9'-0" X 6'-0"	200	2,000	1,000
SOCMP-3000	12'-0" X 6'-0"	300	3,000	1,500
SOCMP-4000	15'-0 X 7'-6"	400	4,000	2,000
SOCMP-5000	15'-0" X 7'-6"	500	5,000	2,500
SOCMP-6000	15'-0" X 7'-6"	600	6,000	3,000
SOCMP-7000	18'-9" X 9'-0"	700	7,000	3,500
SOCMP-8000	18'-9" X 9'-0"	800	8,000	4,000
SOCMP-9000	18'-9" X 9'-0"	900	9,000	4,500
SOCMP-10000	18'-9" X 9'-0"	1,000	10,000	5,000
SOCMP-12000	21'-2" X 11'-2"	1,200	12,000	6,000
SOCMP-15000	21'-2" X 11'-2"	1,500	15,000	7,500

Call for sizes not listed or specific project requirements 888-611-7275.

PARK USA
A Northwest Pipe Company

OilStop™

ParkUSA® OilStop™ Valve (OSV) is a device designed to prevent environmental catastrophe in the event of an oil or hydrocarbon spill. The OilStop meets EPA Spill Control and Counter Measures (SPCC) requirements. The patented, yet simple passive design of the OSV is automatic and requires little maintenance.

The OSV can be used to enhance the operation of oil-water separators, inlets basins, and spill containment vaults and manholes. The OSV is an added assurance of non-oily water discharge.

OilStop Valve is protected by US Patent #9,963,358

Features

- **Standard Sizes from 4" to 14"**
- **Very reliable and long lasting**
- **Only periodic inspections needed**
- **New or retrofit applications environments**
- **Easy installation and maintenance**
- **Can be removed/replaced without entering basin**
- **Corrosion resistant designed for rugged environments**
- **No electric power required**
- **Converts existing drains to secondary containment**

How It Works

The OilStop Valve functions by the buoyancy theory, and a ballasted sphere is the only moving part.

The sphere is weighted with a specific gravity of 0.90 (floats in water; sinks in oil). As long as the sphere is surrounded by water, the sphere will float, opening the valve. However, in the presence of oil or any fluid with a specific gravity less than .90, the sphere will sink, closing the valve.

Normal Condition
Water Surrounds the sphere causing it to float; the valve is OPENED, allowing oil-free water to discharge. As oil starts to accumulate around the sphere, the sphere will sink lower.

Spill/High Oil Condition
Oil Surrounds the sphere causing it to sink; the outlet is CLOSED, preventing oil/water from discharging.

Resetting the valve after an incidental closing due to oil or excessive high flow can be performed by pulling on the reset chord, avoiding the need for Confined Space Entry protocols.

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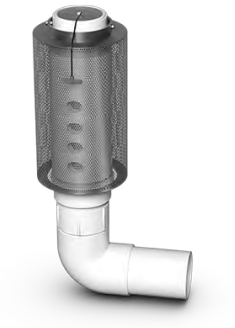
WW | OIL STOP VALVE Standard

LEED® COMPLIANT · NPCA · Steel Tank Institute · ASPE American Society of Plumbing Engineers · ASTM · BMP® BEST MANAGEMENT PRACTICE · IPC® INTERNATIONAL PLUMBING CODE · UPC®

MODELS

Current Oil Stop Valve models includes:



Standard Model: Unit used in most types of separators, it treats low to medium flow rates (up to 400 GPM)

High Flow Model: Unit used for special engineered products, it treats high level flow rates

SYSTEM COMPONENTS

The ParkUSA OSV possesses the following components:

- Float, with design specific gravity of 0.9
- Float compartment, that contain the float and where the gravity-mechanical process takes place
- Piping, where the flow is directed
- Release cable, that holds the float so it can be manually released when needed

OPERATION

The function of the OSV is to stop the flow at the moment oil levels go high. For an optimal operation, the float needs to be completely submerged, to maintain the operable capacity of the device. The valve is designed for easy operation, and it is mostly used in oil/water gravity differential separators and media type separators.

DESIGN CONSIDERATIONS

The valve is designed to properly function at required flows. Devices working at unassigned flow rates will cause the flow obstruction by the float, under-design is never recommended on these devices. At the same time, the outlet center line is required to be below the water level at a distance equal or greater than the expected head loss.

MAINTENANCE

At the time maintenance is needed, the general steps for the process is:

1. Remove solids from bottom of separator as required.
2. With water level in the separator at outlet invert, push the cable downwards, the float will go down.
3. Release the cable. The float should rise up to the original position. If this procedure was successful the valve is working properly.
4. This procedure should be performed at least yearly.

SIZING

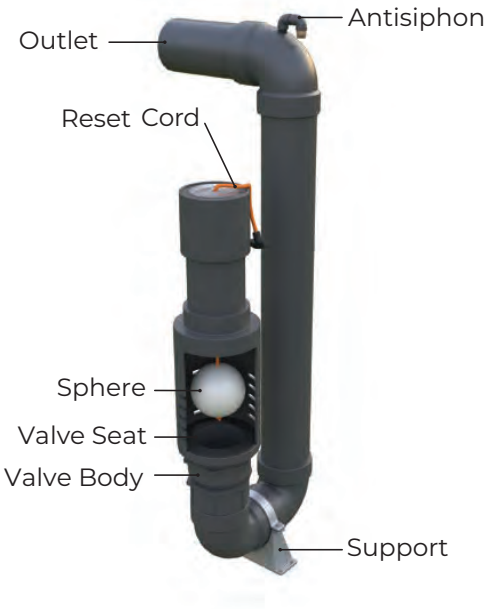
The Oil Stop Valve sizing will depend directly on piping size and on flow rate. See below Table:

OSV Sizes Available

OSV MODEL	PIPING SIZE (INCHES)	FLOW RATE (GPM)
OSV-1	4	150
OSV-2	6	350
OSV-3	8	600

Note: Special case-by-case models are available for configurations of piping and flow rate

Model OSV



OSV Options

- Slave Valve for dry vault applications
- Coalescing and filter media
- Custom designs for specialized fluids
- Complete separator, manhole, or basin assemblies
- Alarm and sensor systems

APPLICATIONS

Good to use in BMPs | Commercial | Truck Terminals Railroads | Municipal | Industrial | Low Impact Development

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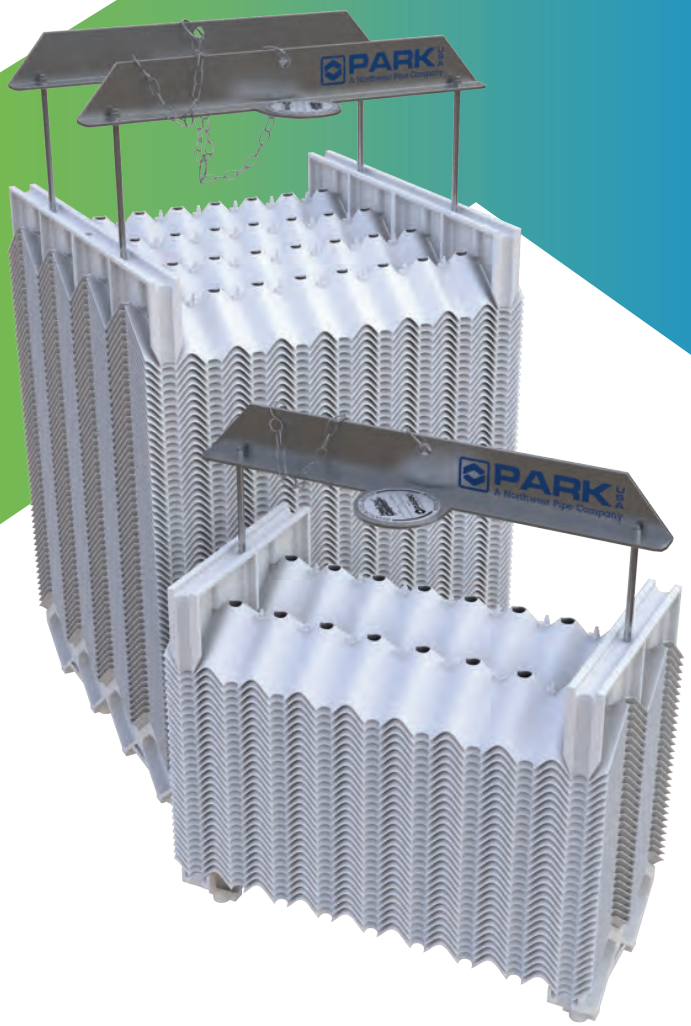
COALESCING MEDIA PACK



Features

- Closely spaced to minimize rise distance required
- Made of oleophilic material which provides years of trouble-free service
- Multiple sizes available
- Made in the USA - CMP are made in America and meet the requirements of the Buy America Act

Coalescing Media Pack

The Coalescing Media Pack is a unique design that provides superior performance in environmental clean-up.

The plates are assembled into compact modular packs that are easy to install and are suitable for use in almost any application. The plates and supports are made of an oleophilic material which provides years of trouble-free service. There are no moving parts to fail or require expensive maintenance. The CMP itself is virtually self-cleaning.

ParkUSA's CMP are designed with dedicated oil removal and solids shedding surfaces. They are provided with separate oil and solids exit ports to ensure maximum separation, thereby preventing the remixing of separated oil droplets and solid particles. The plates are specially designed for high efficiency and high flow applications. They are available with either 1/4" or 1/2" nominal spacings.

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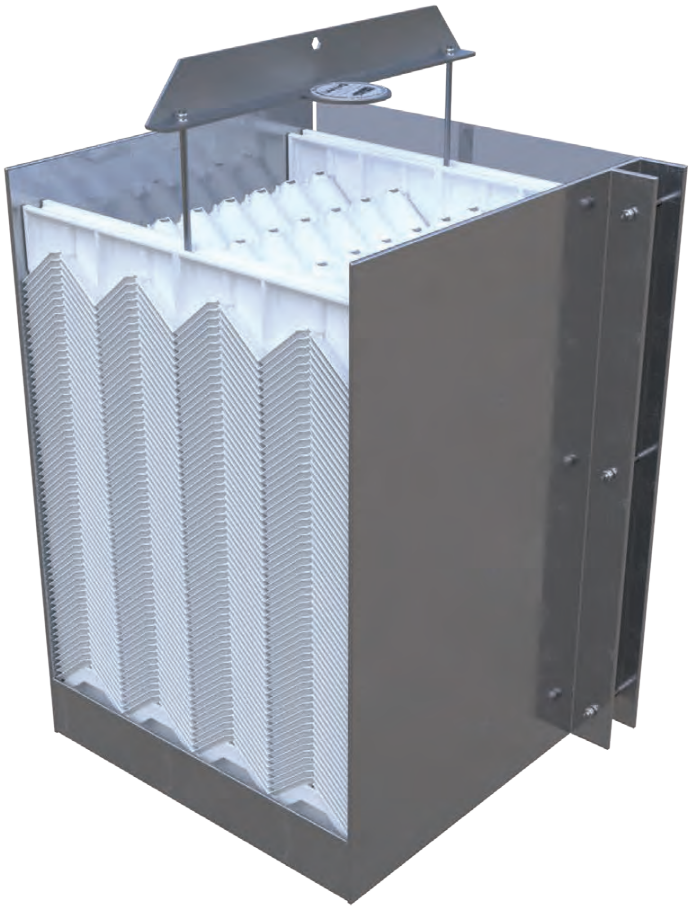
WW | Coalescing Media Pack Standard

COALESCING MEDIA PACK



How It Works

Most physical mixtures of oil and water will separate eventually by gravity because oil has a tower specific gravity than water and will float on its surface. The rate at which solid particles fall in liquids is also governed by Stokes' Law.

Stokes' Law may be used to size an empty vessel separator. As the oily water flows horizontally through the separator, oil droplets rise vertically. A droplet is separated when it rises vertically to the surface before its horizontal movement carries it out in the effluent stream. If the droplets are small, or the specific gravity of the oil is close to that of water, this separation can require a very large vessel.

To request a quote or catalog, visit **request.parkusa.com.**

Maintenance

Because maintenance is very expensive, ParkUSA's CMP are designed to be largely self-cleaning. However, in conditions where large amounts of dirt are found, it may be necessary to access the solids collection area via the riser pipe. The sludge and solids can be removed using a flexible hose coupled to the suction of a pump.

Enhanced Gravity Separation

Droplets entering a separator are in a complex array of sizes and their rise rates vary greatly. The performance calculation is therefore extremely difficult.

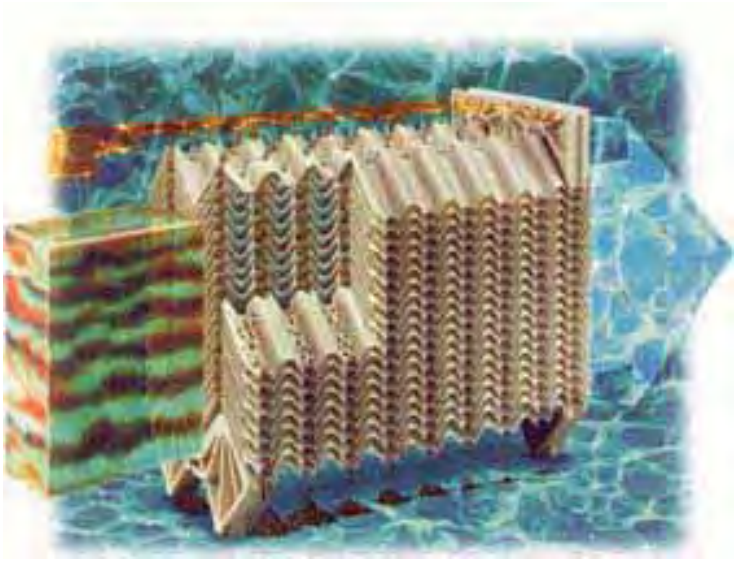
Droplets whose specific gravity vary will also have different rise rates. However, droplets entering a separator may be assumed to be of the same specific gravity and this factor can be ignored.

The CMP substantially reduce the amount of time required for separation. As a result, separator sizes can be greatly reduced because the plates increase droplet size by coalescence, and decrease the distance required for droplet capture.

APPLICATIONS

- Good to use in BMPs
- Municipal
- Commercial
- Industrial
- Medical Facilities

Figure 1: Park® CMP Coalescing Media Pack



As the oil/water/solids mixture travels through the plates, oil rises to the top and solids drop to the bottom through dedicated surfaces and weep holes. Plate supports at the bottom allow for easy removal of the solids that collect beneath the plates. And, because of the steep angles and short travel distances, oils and solids are quickly released, making the media virtually self-cleaning.

Whether you're dealing with rainwater run-off, groundwater remediation, coolant tramp oil removal, or oil and grease removal from wash down and maintenance areas, **Park**® Stormwater Interceptors and **Park**® Oil/Water Separators can meet your needs ranging in size from 1 gpm to as large as 20,000 gpm – or larger as required.

Park® application engineers are available to help you design stormwater and oil/water separator systems that not only meet regulatory requirements, but are cost-effective as well. And, through our proprietary computer simulation process, The "Effluent Quality Prediction Program", we quickly and accurately predict your effluent quality based on your influent conditions - ***Guaranteed!***

STOKE'S LAW

V_R @ 68°F = $9/18\frac{g}{\mu}$ ($\int$ w - $\int$ o) D^2 where:

V_R = rising velocity of the oil droplet in cm/sec

g = gravity constant (980 cm/sec^2)

μ = viscosity of water in poises (about 0.01)

w = densities (gm/cm^3) or specific gravities of water

o = densities (gm/cm^3) or specific gravities of oil

D = diameter of the oil droplet in cm

Like all gravity separators, Park's performance prediction is based on Stoke's Law. The formula on the left represents the physical law governing the rise rate of an oil droplet in a fluid stream.

CAPTURE EFFICIENCY: Oil droplet capture is maximized by the closely spaced (1/4") polypropylene plates. For perspective, a 20-micron oil droplet takes 38 minutes to rise 3" or 9.5 minutes. By rising only ¼" before being captured on the oleophilic (oil attractive) undersurface plate, separation is very efficient in the coalescing media pack compartment (CMP).

CALCULATED PERFORMANCE: Park uses a proprietary computer-modeling program, which utilizes Stoke's Law, droplet size distribution, particle rise (TSS), and other relevant input to make accurate performance predictions.

Tylox® Cobra Boot

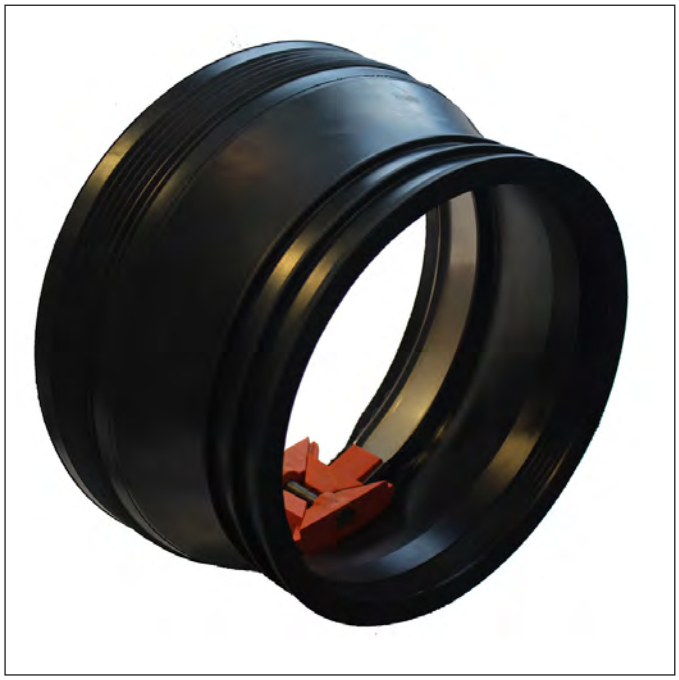
Tylox® Mechanically-Installed Boot Connector

Tylox® Cobra Boot Connectors... flexible enough to meet your most rigid standards.

Updated to provide the best performance during installation into the structure at the precast plant and when installting the pipe in the field.

Designed to provide a watertight seal between a pre-formed hole (cored or cast-in) in a concrete structure and a connecting pipe, all Tylox® Cobra style, flexible, rubber boot connectors:

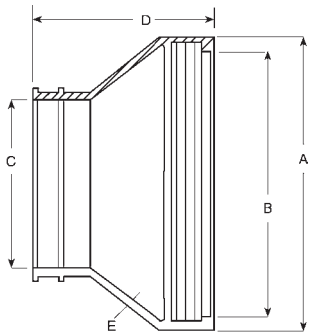
- Are designed and tested to meet or exceed the requirements of ASTM C923: 13 psig watertight sealing in straight alignment and 10 psig watertight sealing at 7° axial deflection.
- Accommodate variation in hole sizes through the use of an adjustable hoop.
- Allow for repeated installation and removal without damaging the connector.
- Are quick and easy to install, using a torque socket wrench.
- Are easily installed and/or removed from either the interior or exterior of the concrete structure.
- Are manufactured in a variety of hole and pipe size combinations to fit most cored/formed hole sizes 7" thru 16", and connecting pipe O.D.'s from 1.80" thru 14.75". (Please refer to Chart on rear of sheet for exact details)
- Are supplied, as standard with high-grade, 304 Series Stainless Steel Shield, Hoop and Clamp for maximum corrosion resistance.
- Are manufactured with high-strength, fiberglass reinforced nylon wedges for enhanced durability.



Hamilton Kent's policy of carrying large inventories of finished product means that you'll find ordering and receiving Tylox® flexible, rubber boot connectors can be the same simple, worry-free experience that you've come to expect on your Hamilton Kent gasket requirements.

A variant of the standard boot, the step-boot is designed for field use to fit either a 2", 3" or 4" connecting pipe.

Making Infrastructure Watertight Today for a Greener, Sustainable Tomorrow



Available Models							
Part	Pipe O.D. Range (in)		Hole Size Range (in)		Connector Dimensions		
	Min	*Max*	*Min*	*Max*	*B*	*C*	*D*
Cobra 7" to 4-3-2"	1.80	4.80	7.00	7.12	6.00	*	6.00
Cobra 8" to 4-3-2"	1.80	4.80	7.99	8.12	7.00	*	6.25
Cobra 7" to 4"	4.21	4.80	7.00	7.12	6.00	4.80	6.00
Cobra 8" to 6"	6.00	6.70	7.99	8.12	7.00	6.50	6.00
Cobra 10.5" to 6"	6.00	7.00	10.50	10.60	9.00	6.50	6.00
Cobra 10.5" to 8"	7.50	9.05	10.50	10.60	9.00	8.50	6.00
Cobra 11" to 6"	6.00	7.00	10.99	11.12	9.00	6.50	6.00
Cobra 11" to 8"	7.50	9.05	10.99	11.12	9.00	8.50	6.00
Cobra 12" to 4"	4.21	4.80	11.99	12.12	10.50	4.80	6.00
Cobra 12" to 6"	6.00	7.00	11.99	12.12	10.50	6.50	6.00
Cobra 12" to 8"	7.50	9.05	11.99	12.12	10.50	8.50	6.00
Cobra 13" to 10"	9.00	11.10	12.99	13.12	11.40	10.50	8.00
Cobra 14" to 10"	9.50	11.10	13.99	14.12	12.25	10.50	8.00
Cobra 16" to 10"	9.50	11.10	15.99	16.12	13.87	10.50	8.00
Cobra 16" to 12"	11.75	13.25	15.99	16.12	13.87	12.50	8.00
Cobra 16" to 14"	13.25	14.75	15.99	16.12	13.87	14.00	8.00
* C7-2-432 and C8-2-432 boots - sleeve has optional C Dimensions: C1 @ 2.25", C2 @ 3.60", and C3 @ 4.80"							

Materials and Identification

Tylox™ Cobra connectors are manufactured from virgin, synthetic rubber compounds to meet the material requirements of ASTM C923.

Connectors are available for "Standard" or "Oil-resistant" applications. Oil-resistant connectors will have an orange dot on the rubber molding.

Other materials and specifications may be available as custom order. Please consult your Hamilton Kent representative regarding your specific requirement.

Components

Tylox® flexible, rubber boot connectors consist of 5 main components:

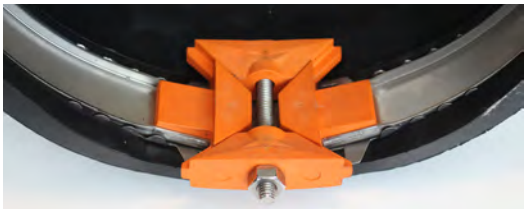
Sleeve: The heart of the boot connector, the sleeve, is designed for flexibility in all dimensions to accept relative movement between the pipe and the structure. Sleeves are manufactured, as standard, in EPDM which provides for protection against ultra-violet degradation while the structure is being stored and/or installed. Optionally, the sleeve is available in Nitrile for use in applications requiring oil-resistance. Sleeves are designed for use with either single or dual take-up clamps.

Hoop: The brawn of the boot connector, the hoop is manufactured from 304 Series, Stainless Steel; and is roll formed for increased radial strength. An expansion mechanism is used to expand the O.D. of the hoop, inside the rubber sleeve, after they have been inserted into the hole in the structure. The force exerted by the expanded hoop both mechanically clamps the sleeve into the structure, and deforms the rubber against the concrete, forming a water-tight seal.

Shield: The 304 Series, Stainless Steel shield provides protection between the rubber sleeve and the hoop expansion mechanism. It also gives an added amount of interference between the hoop and sleeve, at the adjustment point, ensuring full 360 degree sealing between the sleeve and the structure wall.

Clamp: Manufactured from 304 Series, Stainless Steel, the clamp is used to compress the rubber around the connecting pipe, forming a water-tight seal. Clamps are available in either standard or quick adjustment (jet) styles.

Adjustment Mechanism: The Cobra style mechanism expands the hoop by a variable amount.

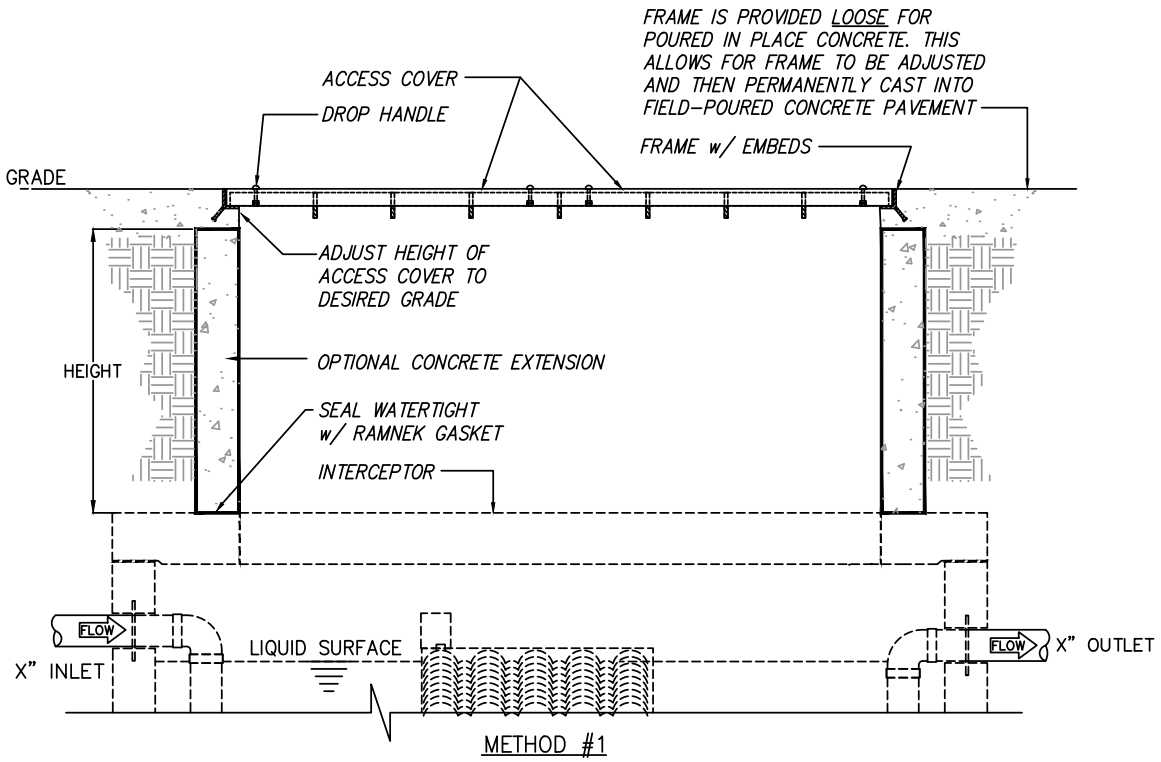


The amount of expansion is adjusted by using a torque wrench to turn the nut on the screw mechanism inwards, which in turn activates the wedge system, expanding the hoop. Note that the bolt head itself is held captive inside a formed hole in the rear wedge, negating the need for a second wrench to hold it steady. Cobra style mechanisms are ideal for the precaster who prefers one style boot for both plant and field installed connectors.

Hamilton Kent
Sealing Your Connection

TEL: (800) 268 8479
FAX: (888) 674 6960
WEB: www.hamiltonkent.com
E-MAIL: information@hamiltonkent.com

Lit_Tylox_Cobra_English_R2

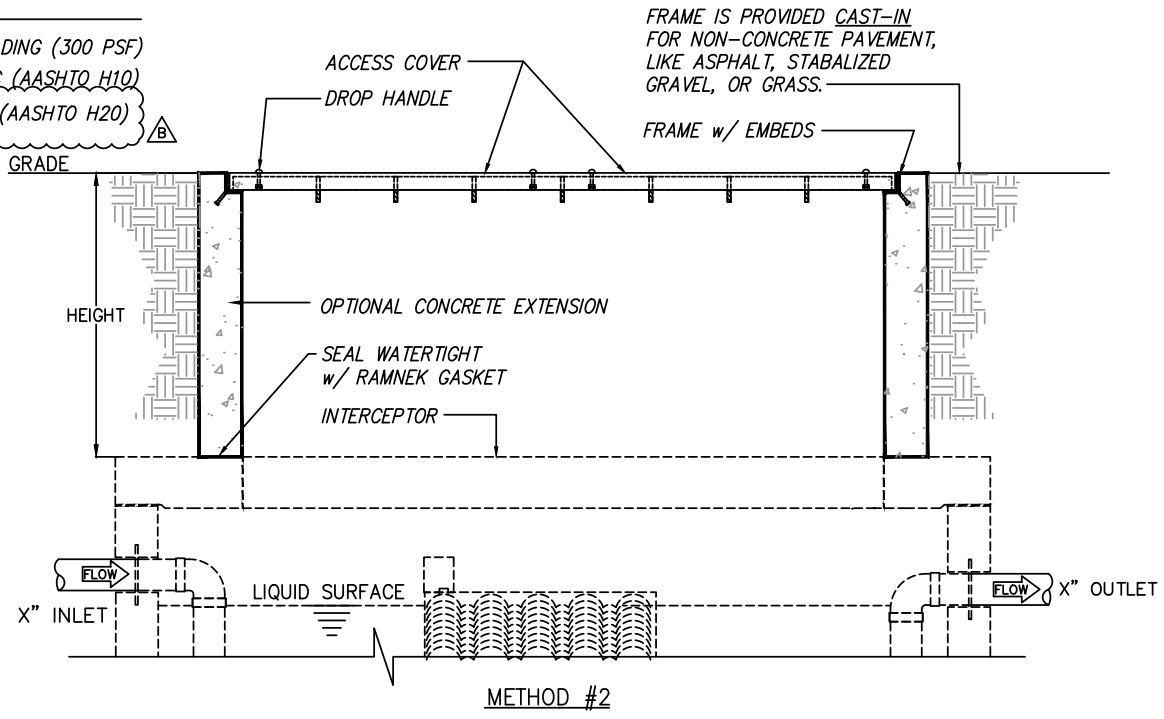


INSTALL TYPE

- ☐ METHOD #1
- ☐ METHOD #2

LOADING

- ☐ PEDESTRIAN LOADING (300 PSF)
- ☐ VEHICLE TRAFFIC (AASHTO H10)
- ☒ TRUCK TRAFFIC (AASHTO H20) (B)



SPECIFICATIONS

CONCRETE :	CLASS I/II CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.
REINFORCEMENT:	GRADE 60 REINFORCED WITH STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.
STEEL COVER	ALL STEEL FABRICATION SHALL BE IN ACCORDANCE TO AWA D1.1. STEEL SHALL BE ASTM A36 CARBON STEEL, AND HOT-DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE TO ASTM A123

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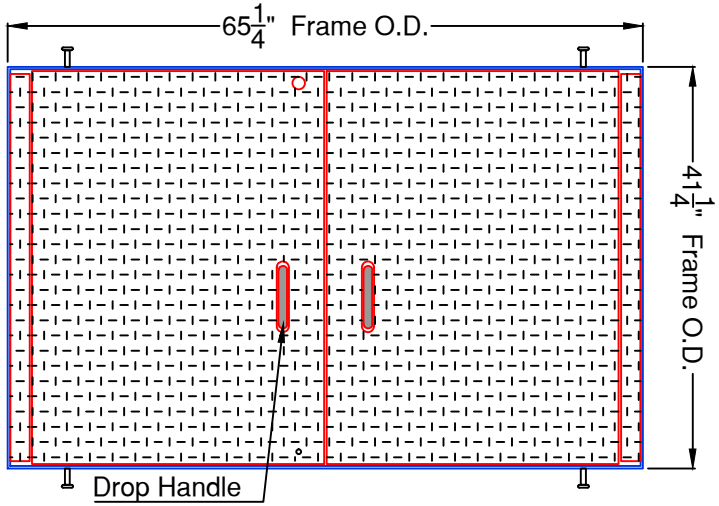
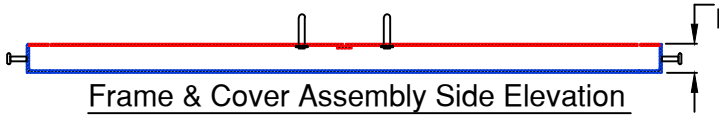
ACCESS COVER PLACEMENT DETAIL

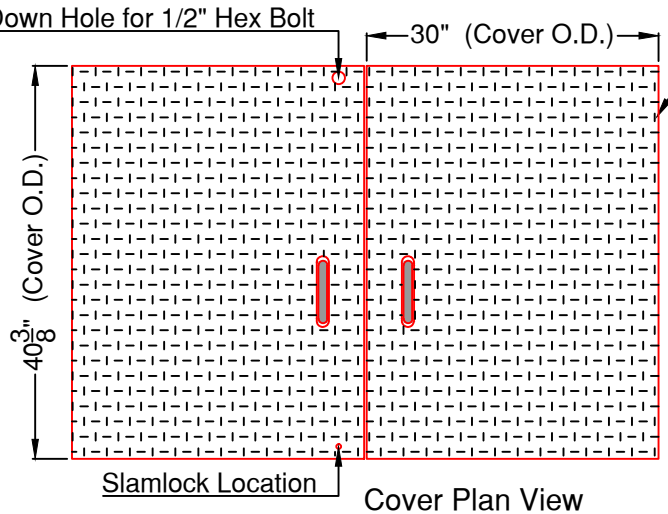
PM	PC	DRN	ENG	DWG. NO.	REV.
.	.	.	.	ACEXT	B
DATE 12/2021					



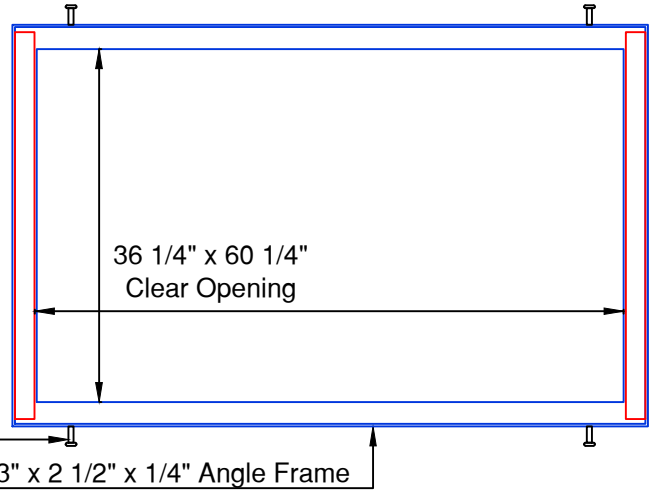
Frame & Cover Assembly Plan View



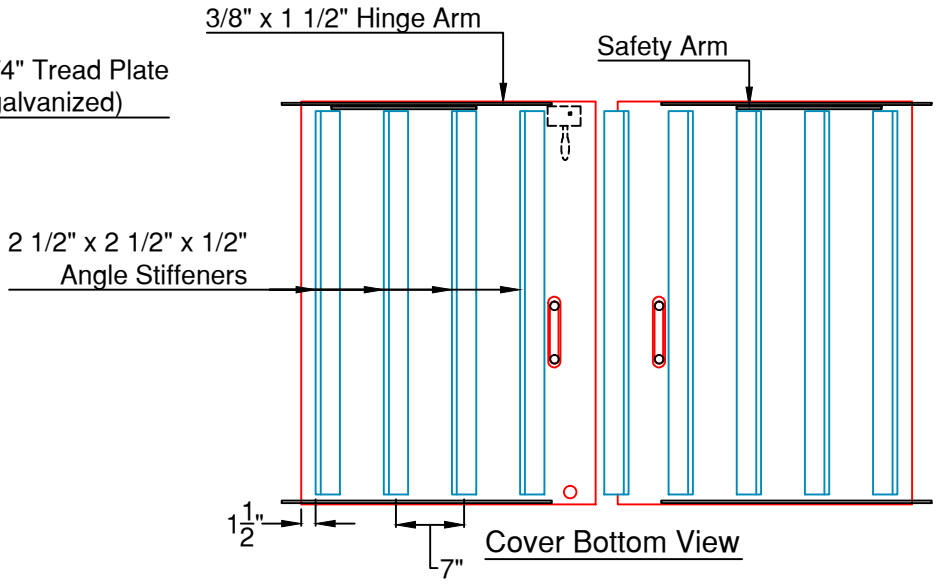
Frame & Cover Assembly Side Elevation



Cover Plan View



Frame Plan View



Cover Bottom View

Note:
1. ASTM A-36
Steel Construction
2. Hot Dip Galvanized
(ASTM A 123/ A)

Galvanized Steel Frame and Cover
36.25 x 60.25 Clear Frame & Cover H20
(3" Frame Height)
K&B Steel
E-Mail: kbsteel@valornet.com
525 Industrial Blvd. Clarksville, Texas 75426
Phone: (903) 427-3980 FAX: (903) 427-5817

(Date: 05-07-18)

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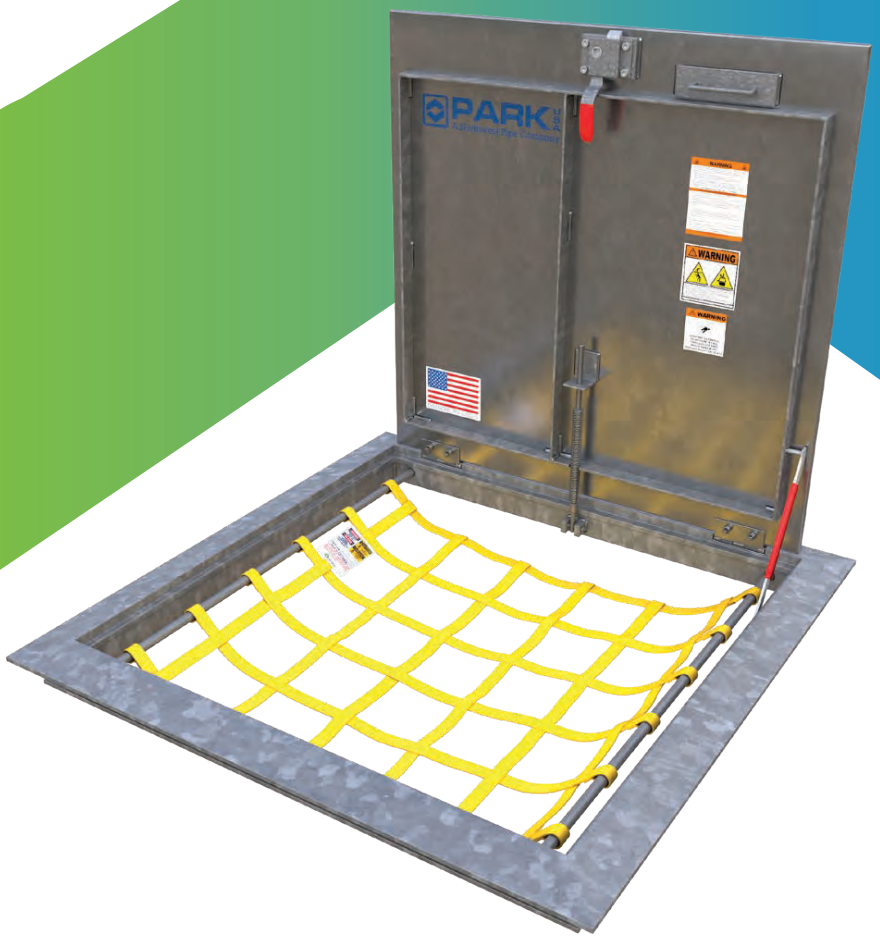
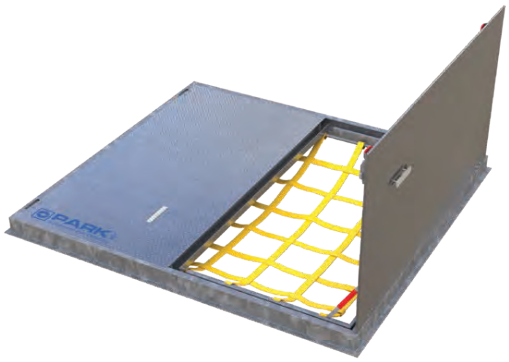
A Northwest Pipe Company

HatchSafe™ FALL PROTECTION



Features

- OSHA Compliant
- Chemical & UV Resistant
- Complete Systems
- Easily Installed in Minutes
- Retracts Easily for Access
- Custom Sizes
- Manufactured of aluminum and stainless steel with a highly visible synthetic netting.
- Custom sizes are manufactured in days at no additional cost.
- Full Five Year Warranty



Hatch Safe Fall Protection

The HatchSafe™ fall protection system is a lightweight net system that will greatly reduce the risk of a fall through. The system is designed to be installed in any type of floor or roof access hatch, for both new and existing applications. The system is compatible with all hatchway manufacturers.

The ParkUSA HatchSafe net system meets or exceeds all current OSHA standards and will greatly reduce the risk of injury or death from fall through accidents in hatchway installations. This protects you from costly law suits, time lost through accidents, and OSHA fines and citations. It can also lower workers compensation and liability costs.

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Inspection

Safety nets should be inspected on a frequent basis. The inspection must cover damage, wear and deterioration. The safety net systems must also be inspected after any incident occurs that could affect the integrity of the net. If any net is found to be defective, it must not be used and must be removed from the safety net system.

Specifications

HatchSafe fall protection systems adhere to OSHA Drop Test Standards. The drop test involves a sandbag that weighs 400 pounds and is between 28 and 32 inches in diameter. The sandbag is dropped from the highest point from where a person could fall. The mesh size of the net cannot be larger than 6 by 6 inches. All of the mesh crossings must be secured so the mesh openings cannot widen more than 6 inches measured from center to center. Each net, or section of net, in a system has to have a perimeter border with a minimum breaking strength of 5,000 pounds. Between safety net panels, connections have to be just as strong as the net components themselves. Connections cannot be spaced more than 6 inches apart from each other.

Installation

HatchSafe fall protection systems can be installed on any standard aluminum or steel floor access, roof hatch or custom sized framed opening. The units are factory assembled and ready for installation.

How it Works

The Occupational Safety and Hazard Association (OSHA) sets standards for workplace safety. One of the OSHA standards states that workers who are exposed to possible vertical drops over six feet must have fall protection. One of the options for fall protection is a safety net system. OSHA has outlined specific guidelines for workplace safety net systems. The OSHA standard classification that covers safety nets is in section 1926.502(c) of the OSHA standards.

The ParkUSA HatchSafe net system meets or exceeds all current OSHA standards and will greatly reduce the risk of injury or death from fall through accidents in hatchway installations. This protects you from costly law suits, time lost through accidents, and OSHA fines and citations. It can also lower workers compensation and liability costs. The HatchSafe net system is a lightweight net system that will greatly reduce the risk of fall through. The system is designed to be installed in any type of floor or roof access hatch, or both new and existing units. The net does not restrict light or visibility needed for inspections, and the net easily slides open to facilitate access. Because 85% of normal procedures can be accomplished with the Hatch Net in place, one person can safely perform most inspections without the need for an additional worker or cumbersome fall protection equipment.

To request a quote or catalog, visit **request.parkusa.com.**

Additional Features

- Manufactured of aluminum and stainless steel with a highly visible synthetic netting.
- Stitched with PTFE Sewing Thread. This thread is manufactured from high strength expanded PTFE. It's not affected by UV (ultraviolet) radiation, acid rain, industrial pollutants or cleaning agents.
- All systems are shipped completely assembled including mounting hardware.
- Easily installed in virtually any floor or roof opening, new or existing application in minutes.
- Retracts easily for access to confined space or to pull pumps and equipment.
- Greatly improves employee safety while allowing freedom of movement and full visibility of area below net for inspections and sampling.
- Custom sizes are manufactured in days at no additional cost.
- Full five (5) year warranty on hardware and net.

Limitations

The HatchSafe net system, after installation, should be maintained in the closed position after each use. The HatchSafe is a fall protection system. At no time is the net to be used as a work platform, lifting mechanism, tool holder, tie off point or to attach any other equipment to it.

APPLICATIONS


Good to use in BMPs


Municipal


Commercial


Industrial


Medical Facilities

Protective & Marine Coatings

TARGUARD®
COAL TAR EPOXY

PART A	B69B60	BLACK
PART A	B69R60	RED
P B —	B69V60	HARDENER

Revised: October 24, 2018

PRODUCT INFORMATION

4.72

PRODUCT DESCRIPTION

TARGUARD COAL TAR EPOXY is a high build, polyamide epoxy coal tar coating.

Meets the following specifications:
- Corps of Engineers Formula C-200a
- SSPC Paint 16 Specification
- AWWA C-210, Non-Potable Water Applications

PRODUCT CHARACTERISTICS

Finish: Semi-Gloss

Color: Black, Red

Volume Solids: 74% ± 2%, mixed

Weight Solids: 82% ± 2%, mixed

VOC (calculated): mixed
Unreduced: <250 g/L; 2.08 lb/gal
Reduced 10%: <300 g/L; 2.5 lb/gal

Mix Ratio: 2 component, premeasured 4:1
5 gallons mixed

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**11.0** (275)	**22.0** (550)
Dry mils (microns)	**8.0*** (200)	**16.0*** (400)
~Coverage sq ft/gal (m^2/L)	**74** (1.8)	**148** (3.6)
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**1184** (29)	

*See Performance Tips section

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 11.0 mils wet (275 microns):

	@ 50°F/10°C	@ 77°F/25°C *50% RH*	@ 100°F/38°C
To touch:	14 hours	8-10 hours	2 hours
To recoat:			
minimum:	48 hours	18 hours	5 hours
maximum:	72 hours	72 hours	12 hours
To cure:	7 days	3-4 days	2 days

If maximum recoat time is exceeded, abrade surface before recoating.
Drying time is temperature, humidity, and film thickness dependent.

Pot Life:	2.5 hours	2 hours	1 hour
Sweat-in-time:	15 minutes	10 minutes	none

Shelf Life: Part A: 8 months, unopened
Part B: 36 months, unopened
Store indoors at 40°F (4.5°C) to 100°F (38°C).

Flash Point: 82°F (28°C), PMCC, mixed

Reducer/Clean Up: Xylene, R2K4

In California: Reducer R7K111 or Oxsol 100

RECOMMENDED USES

For use over prepared substrates such as steel and concrete in industrial environments.
- Penstocks
- Dam gates
- Petroleum storage tanks
- Heavy duty structural coating
- Non-potable water tank and pipe coating
- Acceptable for use with cathodic protection systems
- Liner for clarifiers
- Marine applications
- Offshore drilling rigs

PERFORMANCE CHARACTERISTICS

Substrate*: Steel

Surface Preparation*: SSPC-SP6/NACE 3

System Tested*:
1 ct. TarGuard Coal Tar Epoxy @ 10.0 mils (250 microns) dft
*unless otherwise noted below

Test Name	Test Method	Results
Abrasion Resistance	ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load	137 mg loss
Adhesion	ASTM D4541	1000 psi
Direct Impact Resistance	ASTM D2794	36 in. lb.
Dry Heat Resistance (quench test only)	ASTM D2485	350°F (177°C)
Moisture Condensation Resistance	ASTM D4585, 100°F (38°C), 3000 hours	Excellent
Pencil Hardness	ASTM D3363	F
Salt Fog Resistance	ASTM B117, 3000 hours	Excellent
Thermal Shock	ASTM D2246, 100 cycles	Excellent
Wet Heat Resistance	Non-immersion	120°F (49°C)

Selection & Specification Data

Generic Type Coal Tar Epoxy

Description Renowned high build coal tar epoxy for protection for steel and concrete in single or two-coat applications in a broad variety of aggressive industrial applications.

Features

- Excellent chemical, corrosion and abrasion resistance
- High-build, 16-24 mils (400-610 microns) in a single coat (up to 35 mils with force curing)
- Compatible with controlled cathodic protection
- Suitable for use in exposures as referenced in the following specifications*:
  - **Corp of Engineers C-200, C200a**
  - **AWWA C-210 for exterior**
  - **SSPC-Paint 16**
  - **Steel Tank Institute Corrosion Control System STI-P_3**

Color Black (0900)

Finish Gloss. Will discolor, chalk and lose gloss in sunlight exposure.

Primers Self-priming, Carboguard 888, or others as recommended

Topcoats Not recommended

Dry Film Thickness Normally 16.0 mils (400 microns) in one or two coats.
Total dry film thickness less than 8 mils (200 microns) or in excess of 35 mils (610 microns) is not recommended. Wet-on-wet spray techniques should be used for high thicknesses allowing time for solvents to flash between passes.

Solids Content By Volume: 74% ± 2%

Theoretical Coverage Rate 1187 mil ft^2 (29.1 m^2/l at 25 microns)
Allow for loss in mixing and application

VOC Values
As supplied: 1.85 lbs/gal (222 g/l)
Thinned:
20 oz/gal w/ #10:* 2.6 lbs/gal (309 g/l)
25 oz/gal w/ #10: 2.7 lbs/gal (327 g/l)
These are nominal values.
*Maximum thinning for 250 g/l restricted areas is 6 oz/gal.

Dry Temp. Resistance
Continuous: 350°F (177°C)
Non-Continuous: 370°F (190°C)

Wet Temp. Resistance Immersion temperature should not exceed 120°F (49°C).

Limitations Do not use for potable water requirements

Substrates & Surface Preparation

General Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.

Steel
Immersion: SSPC-SP10
Non-Immersion: SSPC-SP6
SSPC-SP2 or SP3 as minimum requirement.
Surface Profile: 2.0-3.0 mils (50-75 micron)

Concrete Concrete must be cured 28 days at 75°F (24°C) and 50% relative humidity or equivalent. Prepare surfaces in accordance with ASTM D4258 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require surfacing.

Performance Data

Test Method	System	Results	Report #
ASTM D4060 Abrasion	Blasted Steel 2 cts. 300M	130 mg. loss after 1000 cycles. CS17 wheel, 1000 gm load.	02877
ASTM D4541 Adhesion	Blasted Steel 2 cts. 300M	1443 psi (Pneumatic)	02877
ASTM D2794 Impact	Blasted Steel 2 cts. 300M	Impact site diameter. Inches: 3/8, 3/8, ½ 100 in/lbs Gardner Impactor at ½ in. diam.	02877
ASTM B117 Salt Fog	Blasted Steel 2 cts. 300M	No blistering, rusting or delamination. No measurable undercutting at scribe after 2000 hrs.	02938

Test reports and additional data available upon written request.

* Disclaimer: Bitumastic 300M is a proprietary formula that is not necessarily formulated to the exact compositional guidelines set forth in some of these standards. Minor deviations that control and improve application characteristics may be present, but does not have a detrimental effect on the suitability for use outlined therein.

August 2005 replaces March 2003

0165

This is to certify that the quality control procedures of

ParkUSA dba Northwest Pipe Company

7015 Fairbanks N. Houston Road
Houston, TX 77040-4201

were audited during an on-site plant inspection on May 3, 2022 and have met the

Precast Concrete Requirements

stated in the 15th Edition of the NPCA Quality Control Manual for Precast Concrete Plants

Renewal Granted on December 27, 2022

Participation in the NPCA Plant Certification program affirms an ongoing commitment to producing quality precast concrete products to recognized standards of the *American Association of State Highway and Transportation Officials* (AASHTO), the American Concrete Institute (ACI), the ASTM International (ASTM), the American Welding Society (AWS), the Precast Prestressed Concrete Institute (PCI), and the Concrete Reinforcing Steel Institute (CRSI).

This renewal certificate is valid through December 31, 2023.

NPCA CERTIFIED PLANT

ANAB ACCREDITED ISO/IEC 17065 PRODUCT CERTIFICATION BODY

Joel Sheets, Chairman of the Board

Frederick H. Grubbe, NPCA President

Phillip B. Cutler, P.E., Director of Quality Assurance Programs

NPCA | 1320 City Center Drive, Suite 200 | Carmel, IN 46032

K. T. SNYDER COMPANY, INC.
2100 Travis Street • Houston, Texas 77002
Toll-Free (800) 231-4549 • Texas: Call Collect (713) 650-6174

NATIONAL PRECAST CONCRETE ASSOCIATION ASSOCIATE MEMBER

RAM-NEK®

FLEXIBLE PLASTIC GASKETS

american concrete pipe association ASSOCIATE MEMBER

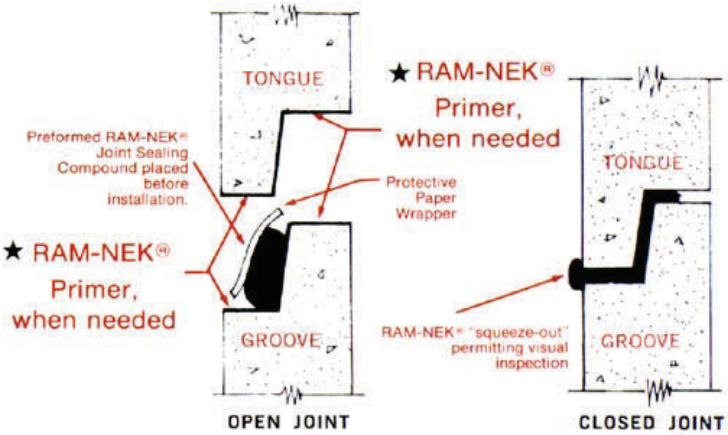
For Sealing PRECAST Sewer and Culvert Manholes, Box Culverts, Utility and Burial Vaults, Septic Tanks, Wet Wells . . . *Plus* all of those other applications where a flexible watertight joint is needed, but precision rubber gaskets are not available.

A "Prefab Manhole" Sealed In Four Minutes — Ready For Immediate Backfill

★ *RAM-NEK Primer is not required under normal installation. Use primer on manholes in wet conditions.*

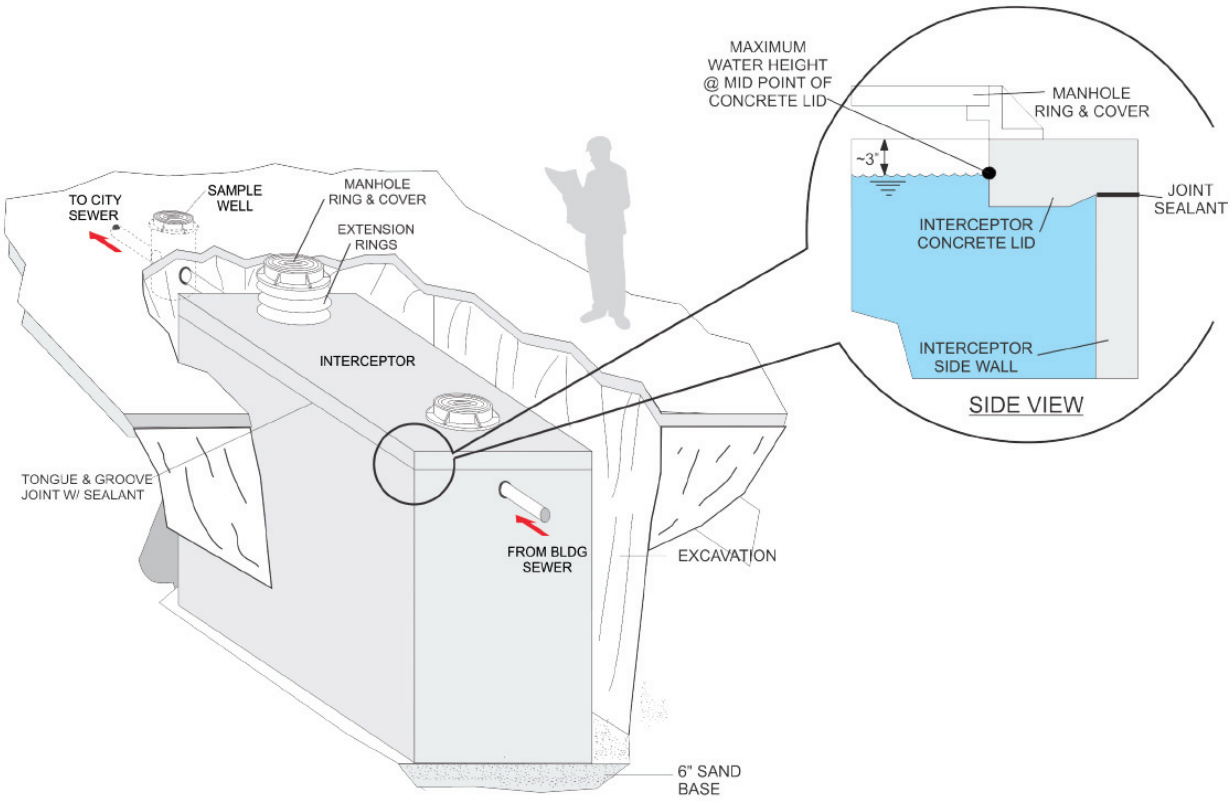
STEP-BY-STEP FABRICATION of Plastic Gasket Joints

1. **ON THE BANK**
   - ★ a. Apply one brush coat of RAM-NEK® Primer to concrete surfaces to be sealed.
   - b. Remove paper wrapper on one side only of preformed RAM-NEK® strip, and press firmly to the dry clean joint surface.
2. **IN THE DITCH—OPEN JOINT**
   - a. Remove paper wrapper from RAM-NEK® gasket joint and set next manhole section. Each manhole unit is forced "home" by its own weight, compressing RAM-NEK® to tightly pack, and immediately sealing the joint. This causes a "squeeze-out", visual proof of a watertight joint.
3. **IN THE DITCH—CLOSED JOINT**
   - a. After last manhole section is set and fully "seated", the manhole installation is complete. Backfilling and compaction can start immediately.



Typical RAM-NEK® Jointing Method For a 96" Concrete Pipe Wet Well, 42' Deep

HYDROSTATIC TESTING FOR INTERCEPTORS



THE FOLLOWING METHOD IS RECOMMENDED FOR HYDROSTATIC TESTING OF INTERCEPTORS. FAILURE TO FOLLOW THIS EXACT PROCEDURE CAN VOID WARRANTY.

WARNING
DO NOT fill tanks with water until the tanks are properly backfilled. Filling tanks prior to backfilling may cause abnormal stresses and may result in leakage and/or damage to the tanks and may void the manufacturer's warranty.

DO NOT fill tanks with water to levels exceeding the top of the basin (prior to backfilling). Exceeding this level could produce excess uplift of the lid section breaking the seal and result in leakage and/or damage to the tanks and may void the manufacturer's warranty.

LID SECTION JOINT TESTING

STEP 1
After tank is set, allow for complete settling of the concrete lid section. The joint sealant should be visible on the exterior of the tank as excess sealant is squeezed out of the joint.

STEP 2
Backfill the tank around all sides to 6" BELOW the joint being tested. The backfill should be compacted as required.

STEP 3
Allow water to enter the tank to a maximum of the midpoint of the concrete lid. Visually inspect the tank exterior for any leaks.

STEP 4
Complete the backfilling and compacting over the top of the tank.

RECEIVING AND INSTALLATION INSTRUCTIONS
For Waste Water Interceptors

Overview
ParkUSA is a leader in pre-engineered environmental products. Products are catalogued with standard features as shown on specification material. However, these products are often furnished to meet specific engineering requirements, and have special features and arrangements. In such cases, handling and installation procedures may vary slightly depending upon the actual type of construction. It is recommended that a company representative be consulted in each unique situation.

Codes and Installation
Local codes and regulations should supersede all recommendations made by ParkUSA and it's representatives, and the appropriate authorities should be consulted before installation is made. Where an apparent conflict of code requirements and manufacturer recommendations or standard design exists, the assistance of a company representative should be requested. In almost every instance, ParkUSA will be able to make modifi cations necessary to comply with local codes, jurisdictions and interpretations, if notified prior to actual fabrication or upon order placement.

Field Preparation
The customer or his contractor shall prepare the excavation to the proper depth using dimensional data and weights from approved submitted drawings.

Call 800-256-8041 to confi rm excavation dimensions and crane requirements.

All excavations should be shored or stepped back in accordance to OSHA recommendations.

A level base within the excavation and a minimum of twelve (12) inches of clearance on all sides of the unit is required. The depth of the base and the material shall meet the specifications and requirements for the type of soil at the setting location (consult with design engineer for base specifications).

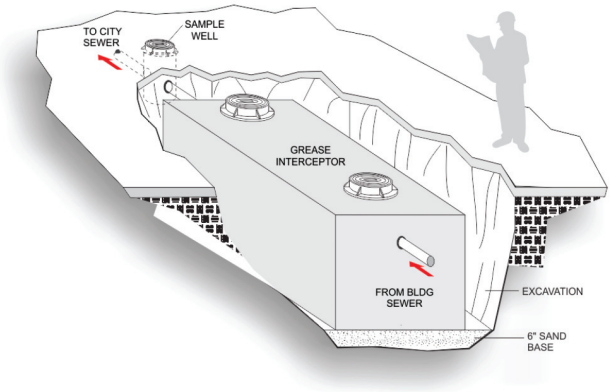
All field excavation and preparation is the sole responsibility of the customer/contractor.

Scheduling
The delivery of the unit should be scheduled at least 48 hours in advance, weather permitting. To reschedule a delivery, a 24 hour notice is required.

Delivery and Placement
Upon arrival of the interceptor, equipment may be needed to unload and set the interceptor in its fi nal installed position. The equipment operator will perform rigging and setting unit. It will be necessary for the customer/contractor to furnish the required labor to install the joint sealant and assist our crane operator with the installation. Backfi ll is the sole responsibility of the owner/contractor.

Venting & Trapping
Each fi xture discharging into the waste water interceptor must be individually trapped and vented.

Fixtures
Wastewater Interceptor must be placed as close as practical to fi xtures they serve and outside the building. Each interceptor will be accompanied with manufacturer's installation instructions.



Backfill
After unit is set, the excavation should be completely backfilled immediately and prior to filling with water. The backfill material shall meet the specifications and requirements for setting location (consult with design engineer for backfill specifications). It is recommended that backfill material be on site at the time of delivery. Two methods of backfill are:

a. With material excavated placed in (1) one foot lifts and compacted and tamped to original density or per owner/engineer's requirements.

b. Bank sand in (2) two foot lifts and compacted or waterjetted per owner/engineer's requirements.

Testing (for tanks)
If project specifications require testing of tanks, follow the following testing procedure. After completing the piping, the unit shall be properly backfilled. Fill the tank with water to the normal operating level. Record this level and let stand for 24 hours. Recheck the water level. A 5% or less variance is generally acceptable. Note that precast concrete tanks are designed for below grade installation with an earthen backfill. DO NOT fill tanks with water until the tanks are properly backfilled. Filling tanks prior to backfilling may cause abnormal stresses and may result in leakage and/or damage to the tanks and may void the manufacturer's warranty.

OPERATIONS & MAINTENANCE MANUAL

1.0 Introduction
The Park Model CMP Oil-Water Separator is a passive gravity flow system for the separation of oil from oil-water mixtures. The design utilizes the difference in specific gravities between oil and water (buoyancy force) enhanced by the use of patented coalescing plates. The separator is designed to receive oily water by gravity flow and to process it on a once-through basis. The separator vessel is constructed of high strength precast concrete. The coalescing plates are manufactured of an oleophilic ("oil-attracting") polypropylene. The oil-water mixture enters the separator through the inlet elbow into the preseparation chamber, proceeds through the plate inlet chamber, and makes a 180 degree turn to enter the coalescing plate pack. The oil in this mixture is usually in the form of droplets of various sizes. As the oil water mixture flows through the plates, the oil droplets tend to rise in the water due to the buoyancy effect. As the droplets rise, they come in contact with the underside of the plates and coalesce, forming a thin film of oil on the underside of the plates. This film flows upward along the plate surface until it reaches the plate peaks. There it accumulates in a thicker oil layer. Holes have been provided in the plates at the peaks so that the oil collected in this manner may "weep" through the holes and eventually come to the top of the separator.

The separated oil will rise and reside at the surface. After flowing through the separator, the treated water gravity flows into the sewer. A sample well may be installed so that water samples can be retrieved.

The plate pack is installed at a small angle to enhance the rise of the coalesced oil and to encourage settled solids particles to migrate against the water flow back into the area directly upstream of the plates. This discourages plugging of the pack by solids particles.

2. System Description and Requirements
2.1 Internal Configuration
A cross-sectional flow schematic of the separator is attached. The separator consists of a pre-separation chamber with a diffusion baffle, a plate inlet chamber directly upstream of the plates, a plate section, a oil removal skimmer (optional), and an outlet underflow/overflow section. The oil removal skimmer is adjustable so that oil level can be set exactly (optional). The oil-water mixture enters the separator through a tangential inlet, turned downward 90 degrees. This inlet pipe is cut at an acute angle and a matching downstream baffle is provided a short distance away. This combination dissipates energy of the incoming fluid in the pre-separation chamber as well as directing the flow gently upward to enhance pre-separation of free oil. Oil separated ahead of the pack will rise directly to the top of the tank, and the remainder of the mixture will flow into the coalescing plate pack. The coalescing plate pack provided in the CMP unit consists of special patented polypropylene coalescing plates held together with stainless hardware. The pack is equipped with convenient handles if it needs to be removed for maintenance. Spacing between the plates is maintained by tabs molded into the plates.

The purpose of these plates is to enhance the coalescing of small droplets. As the oil-water mixture passes through the pack, small droplets are coalesced into larger ones that rise to the surface of the liquid in the tank. The oil then forms a layer in the tank that resides on the water surface level of the tank. For models equipped with external oil storage tank, the oil overflows the oil-skimmer into t e oil holding tank.

2.2 Initial Check and Configuration
Before putting the Park CMP unit in service initially or after maintenance, the following start-up-check procedure should be performed.

a .Remove the access covers and place aside. Be careful to avoid damaging the coating on the cover, especially the underside.

b. Check to ensure that the plate pack has not moved out of place. It should be positioned so that it is firmly against the downstream back support (please see the schematic for this location). Ensure that the flat plastic pressure plates are installed (on multiple packs only).

c. Check operations per Section 3.0 below, replace the cover and install the cover bolts.

d. If provided, verify the inlet sump pump piping and operation. Sump must have water in it before any operation. Verify heights of float switches for ON/OFF operation and high-level alarm (if equipped with an alarm).

2.3 External Configuration:
Dimensions of the separator and connections are shown on the drawing provided. Provisions have been made in the unit supports for bolting the unit to the floor if desired. INLET PIPING (TO BE PROVIDED BY THE USER) MUST BE AT LEAST AS LARGE AS THE INLET CONNECTION FOR 10 PIPE DIAMETERS UPSTREAM OF THE UNIT TO AVOID EXCESS TURBULENCE IN THE INLET PIPING.

Smaller piping could cause emulsification of the oil in the water and could have a negative impact on separator performance. The inlet valve, if provided should also be at least 10 pipe diameters upstream. It is preferred that the piping directly at the separator be straight without valves or fittings.

3.0 Safety and Environmental Considerations
All normal safety precautions should be taken with this equipment to prevent accidents and fires.

Normal fire prevention measures must be taken to prevent fire danger from the separated oil.

3.1 Care should be taken to keep the area around the separator clean to prevent accidents.

3.2 Dispose of the separated oil and sludge properly, preferably by recycling.

3.3 SAFETY AND ENVIRONMENTAL PROTECTION ARE THE RESPONSIBILITY OF THE USER. PARK EQUIPMENT CO. ASSUMES NO LIABILITY FOR MISUSE OF THIS SEPARATOR OR FOR USE OUTSIDE THE PARAMETERS FOR WHICH IT IS DESIGNED.

4.0 System Installation
System flow should be controlled upstream to ensure even steady flow and stable conditions in the separator. Unstable flows tend to reduce efficiency and may cause spills.

The separator tank is atmospheric in design, vented to atmosphere around the cover. It is recommended that if a pump is used to introduce the water/oil mixture into the separator that it be a positive displacement type. This will minimize further emulsification of the mixture so as to minimize the effect on separator performance. To achieve the desired flow, excessive throttling of the input must be avoided, as this will also cause emulsification of the oil, adversely affecting separator performance. Especially avoid the use of globe type or other valves with high-pressure drops.

The separator must be installed as level as possible, preferably within 1/16" per foot. Excessive slope of the unit may adversely affect performance.

It is highly recommended that the water effluent line be gravity flow. The pressure loss for the water effluent pipe shall not exceed the drop in elevation of the customer lines. External piping should be separately supported (on separator above-ground installations). The separator is not designed to support long runs of piping.

To install the separator, follow these steps:
(Please refer to attached cross-sectional flow schematic for diagram)

4.1 Ensure that the source of the water to be treated is properly regulated and not provided with a centrifugal pump or other device that will cause emulsification such as a high-pressure drop vane.

4.2 For above ground installation; Provide a mounting pad or other mounting arrangements to ensure that the separator is securely mounted and level. Holes have been provided in the ends of the channel supports for mounting bolts.

For below ground installation; Provide a suitable excavation with a firm base to ensure that the separator will remain permanently anchored and level. Steps shall be taken to avoid floatation of the separator due to high water.

4.3 Connect the oil-water inlet piping to separator inlet connection (please see attached cross-sectional flow schematic. At the customer's option, a flow regulating device may be installed in the inlet line. Avoid excessive throttling of the flow.

4.4 Connect the water outlet piping to the water outlet connection.

4.5 It is recommended that a sample well be placed on the outlet side of the separator to enable effluent samples be retrieved to verify the performance of the separator.

System Operation and Troubleshooting
5.1 Initial start-up:
This procedure is to be followed after the installation of the separator or after the separator has been drained and is ready to be restarted.

a. Before starting the flow to the unit, remove the cover and ensure that the plate pack has not shifted and that the flat and corrugated plastic plates are in place. The separator should contain at least one plate pack. If several packs are present, a flat plastic sheet will reside in the space between the plate packs.

b. Ensure that there are no obstructions in the water outlet piping and that adequate oil disposal facilities are provided.

c. Fill the tank with clean water to avoid contaminating the downstream end of the separator plates with oil.

d. Open the user supplied valve (if present) to allow the oil water mixture into the tank. Adjust for the desired flow rate and allow unit to stabilize for a few minutes.

e. Check for leaks, both external and internal and remedy any found.

f. Check to ensure that oil is building up on the surface of the water. If oil buildup is very slow, ensure that there is no oil in the outlet water flow. If the outlet water is clean wait for oil to build up on the surface. If outlet contains oil, check for emulsification of oil and upstream conditions. Ensure that emulsifying detergents are not being used in the inlet water.

g. Replace the cover after flow is stabilized and oil is being removed to disposal.

5.2 Normal Operation:
Monitor the flow through the separator. As hydrocarbons are separated from the wastewater, oils will accumulate on the water surface in the separator. The amounts will vary with the concentration of oil in the incoming water.

NOTE: An oil layer will always remain on he surface, until clean.

5.3 Maintenance:
After approximately 250 hours of operation, the inlet area of the separator should be checked to determine if an excessive amount of solids have accumulated. If this happens, a settling tank should be installed upstream of the separator to remove the solids. Otherwise, the solids may accumulate enough to plug the lower part of the packs. In this case, efficiency will be reduced and hydrocarbons in the outlet water may exceed allowable limits.

After approximately the first 1000 hours of operation, the inlet area should be cleaned as follows:

a. Remove cover.

b. Drain or pump accumulated oil from the vessel.

c. Drain or pump the water from the vessel.

d. The plate packs may either be cleaned in place or removed and cleaned. To clean the packs, first stop the flow to the unit, remove the oil, and drain the water.

e. For cleaning in place, connect a pressure water hose (at least 60 psig) to the special plate-cleaning wand (available as an option). Provide a vacuum truck or other means of disposing of the sludge and dirt in the vessel. Turn on the water to produce a spray from the wand and insert slowly into each hole of the plate pack, starting at the upstream end. As the water flushes the dirt out of the plate packs into the inlet chamber, it should be removed by the vacuum hose or to an oily water sewer.

Note: Plates do not need to be cleaned until white. Some oil on the plates will not cause deterioration of performance. It is only necessary to remove all sludge from between the plates and any very heavy oil coating.

f. For cleaning out of the vessel, remove plate pack and plastic sheets. Flush with hose to oily water drain. NOTE: DO NOT DISASSEMBLE PLATE PACKS.

1. Use a hose to flush the tank and sweep all sediment out of the drain connections.

2. A fire hose at 10-15 psi or a standard garden hose at normal domestic pressure are effective cleaning tools. In a similar manner steam hoses can be used to flush plate packs. Take extreme care using steam, as high temperatures will damage the plates.

3. Examine tank interior for damage and repair as required. Inspect all piping, baffles, plates, and skimmer for damage and replace if necessary.

g. To restart unit, reinstall plates. To reinstall plates, follow the following steps:

1. Install plate pack assembly, with the single upper support in the downstream position. Move the plate pack to the side of the plate area next to the oil holding tank. Ensure that the plate bottom supports are flush against the downstream back support.

2. Install the flat plastic pressure sheet in the space between the plate packs and the inlet baffle. Install the corrugated fiberglass sheet between the flat sheet and the inlet baffle.

For start-up, follow steps listed in Section 5.1, Initial Start-up. Note: Two methods can be used to determine the cleaning requirements of the separator. The first method is test the effluent for oil & grease. If the effluent oil & grease concentration exceeds the allowable level, the separator should be serviced.

The second method in determining service is to measure the quantity of sludge and oil found in the separator. If the sludge level in the bottom, or the oil level at the surface exceeds 12" thick, the separator should be cleaned.

Cleaning of all separators should be performed only by a licensed and qualified service company.

IAPMO RESEARCH AND TESTING, INC.

5001 E. Philadelphia Street, Ontario, CA 91761 • Phone (909) 472-4100 • Fax (909) 472-4244 • www.iapmort.org

IAPMO R&T Product Listing

This IAPMO R&T Listing is current as of July 29, 2022

File Number:

13373

Issued To:

PARKUSA

7015 FAIRBANKS N HOUSTON HOUSTON, TX , United States

Product:

Oil/Water Separators and Coalescing Plate Separators

Products are in compliance with the following code(s):

Uniform Plumbing Code (UPC®)

Products are certified to the following standard(s):

IAPMO IGC 183-2016

IAPMO RESEARCH AND TESTING, INC.

CERTIFICATE OF LISTING

Issued To: PARKUSA

File Number: 13373

Product: Oil/Water Separators and Coalescing Plate Separators

This IAPMO R&T Listing is current as of July 29, 2022

Identification:

Oil-water separators and coalescing plate separators shall be permanently and legibly marked with the manufacturer's name and/or trademark, manufacturer's city, state, and telephone number, the model number, and the product capacity (gallons) in a location where it can be found after the separators are installed. Unit shall also bear the UPC® certi cation mark.

Characteristics:

Oil-water separators and coalescing plate separators to be installed in accordance with the manufacturer's instructions and the requirements of the latest edition of the Uniform Plumbing Code.

Products listed on this certificate have been tested by an IAPMO R&T recognized laboratory. This recognition has been granted based upon the laboratory's compliance to the applicable requirements of ISO/IEC 17025.

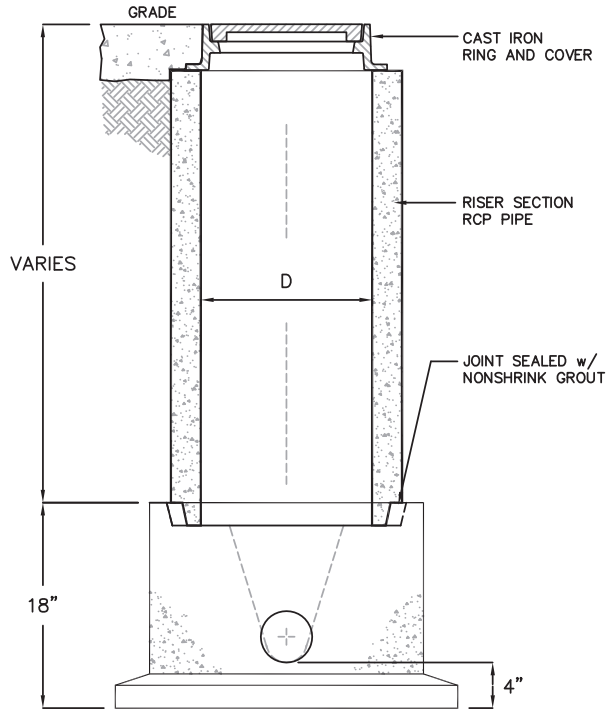
Models

Model Number	Description
SOCMP-500	Gravity Oil Separator
SOCMP-750	Gravity Oil Separator
SOCMP-1000	Gravity Oil Separator
SOCMP-1500	Gravity Oil Separator
SOCMP-2000	Gravity Oil Separator
ELVC-100	Gravity Oil Separator
ELVC-200	Gravity Oil Separator
ELVC-300	Gravity Oil Separator
ELVS-100	Gravity Oil Separator
ELVS-200	Gravity Oil Separator
ELVS-300	Gravity Oil Separator

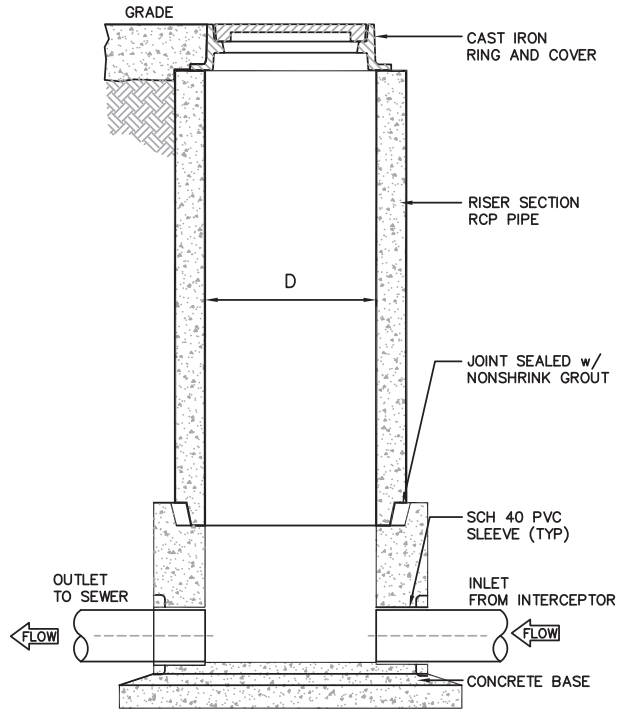
SECTION 2

Sample Well

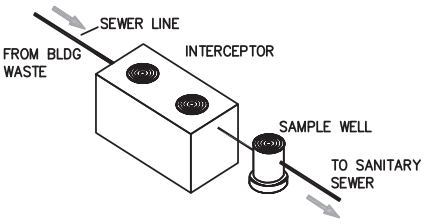
SWB-154



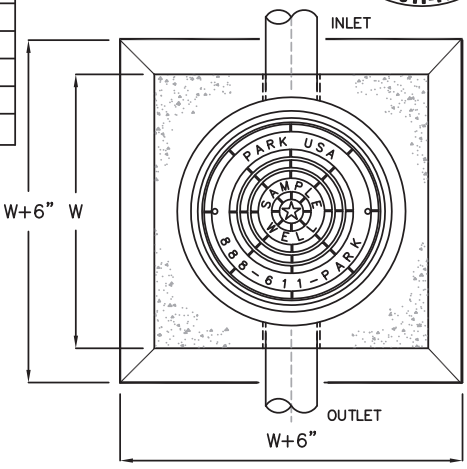
FRONT VIEW



SIDE VIEW



MODEL	DIAMETER "D"	IN & OUT PIPE SIZE	WIDTH "W"
SWB–154	15"	4"	24"
SWB–156	15"	6"	24"
SWB–158	15"	8"	24"
SWB–184	18"	4"	28"
SWB–186	18"	6"	28"
SWB–188	18"	8"	28"
SWB–244	24"	4"	34"
SWB–246	24"	6"	34"
SWB–248	24"	8"	34"



PLAN VIEW

NOTES

1. SAMPLING WELL MUST BE INSTALLED UNDER A SEPARATE PLUMBING PERMIT.
2. USE 15" FOR INSTALLATION 6'–0" DEEP AND LESS.
3. USE 24" FOR INSTALLATION GREATER THAN 6'–0" DEEP. (STD RING AND M.H. COVER REQUIRED)
4. SAMPLING WELL MUST BE SET IN A CIRCULAR OR SQUARE CONCRETE PAD (1'–0" GREATER THAN OUTSIDE DIAMETER OF PIPE.)
5. INSIDE INSTALLATION NOT PERMITTED, WHERE OUTSIDE INSTALLATION IS POSSIBLE.
6. INSTALLATION INSIDE BLDG MUST BE POURED IN PLACE (15"MIN) NO CONCRETE PIPE IS PERMITTED, (AIR–TIGHT COVER REQUIRED.)
7. LAWN INSTALLATION MUST BE 4" ABOVE FINISHED GRADE.
8. DRIVE & SIDEWALK INSTALLATION MUST BE BROUGHT TO FINISHED GRADE
9. TO BE INSTALLED ON PRIVATE PROPERTY, IN AN ACCESSIBLE LOCATION TO CITY PERSONNEL.

PLOTTED ON 12/10/2021 1:51 PM BY Jennifer Ellis, Y:\Parkdwgs\SAMPLE WELL BASIN\STANDARDS\+SWB-1-new

SPECIFICATIONS

CONCRETE: Class I/II concrete with of design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth.

C.I. CASTINGS: Cast iron rings and grates are manufactured of grey cast iron conforming to ASTM A48 Class 30, Heavy–Duty AASHTO H20/HL93

NPCA CERTIFIED PLANT ASPE Member

PARK USA A Northwest Pipe Company

SAMPLE WELL BASIN

SCALE	NONE	DWG. NO.	SWB–1	REV.	A
DATE	10/2021				

CREATED ON 10/22/2021 BY -----
LAST MODIFIED ON 12/10/2021 1:51 PM BY jellis

PARK USA
A Northwest Pipe Company

SAMPLE WELLS

Features

- **Stainless steel or HDPE**
- **Precast concrete well basin**
- **Cast iron frame and cover**

Applications

- Industrial
- Stormwater
- Commercial
- Municipal
- Chemical handling

System Components

- Precast concrete well basin
- Sample wells come in (1) precast, (2) stainless steel and (3) HDPE (high density polyethylene)
- Cast iron frame and cover

Optional Components

- pH probe
- Temperature probe
- Digital data recorder
- Ladder

Sample Wells

Sample wells provide access to fluids downstream of a treatment device and allow effluent samples to be taken for quality testing. They can also house monitoring sensors, such as a pH probe, to provide real-time feedback to a remote alert station. Sample wells are often required for pretreatment devices and are recommended for most applications.

Sample wells can be used in buried or above ground applications.

How it Works

A Sample Well is placed downstream of a treatment device such as Grease/Lint interceptors, Oil/Water Separators or Acid Neutralization Tanks to monitor their performance. Opening the cover to the well allows for capturing a grab sample of the effluent or treated stormwater for sampling.

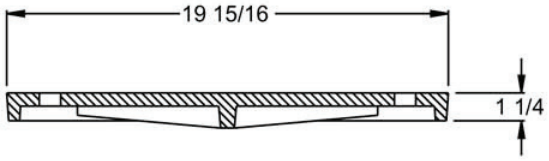
To request a quote or catalog, visit **request.parkusa.com.**

#BUILDING AMERICA

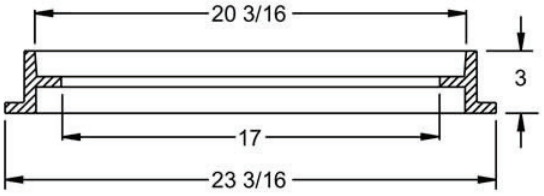
SW | SAMPLE WELLS Standard

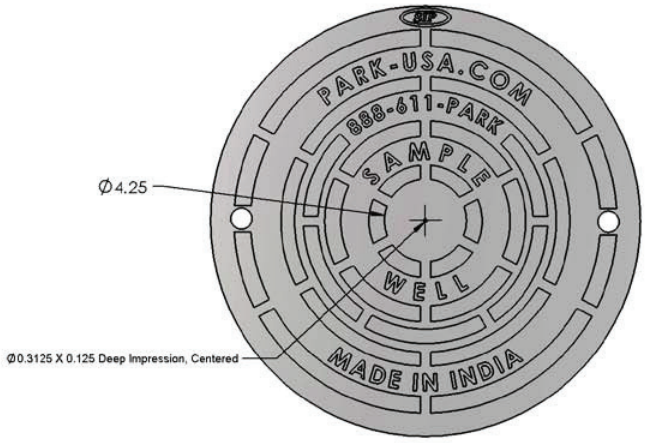
LEED® COMPLIANT · NPCA · Steel Tank Institute · ASPE American Society of Plumbing Engineers · ASTM · BMP® BEST MANAGEMENT PRACTICE · IPC® INTERNATIONAL PLUMBING CODE · UPC®

ITEM NO. : 2310-2321



2310





2320

DESCRIPTION : EQ. V-1815 SAMPLE WELL REV. R&C.
MATERIAL : Cast Iron, ASTM A48, Class 30B.

This is to certify that the quality control procedures of

ParkUSA dba Northwest Pipe Company

7015 Fairbanks N. Houston Road
Houston, TX 77040-4201

were audited during an on-site plant inspection on May 3, 2022 and have met the

Precast Concrete Requirements

stated in the 15th Edition of the NPCA Quality Control Manual for Precast Concrete Plants

Renewal Granted on December 27, 2022

Participation in the NPCA Plant Certification program affirms an ongoing commitment to producing quality precast concrete products to recognized standards of the *American Association of State Highway and Transportation Officials* (AASHTO), the American Concrete Institute (ACI), the ASTM International (ASTM), the American Welding Society (AWS), the Precast Prestressed Concrete Institute (PCI), and the Concrete Reinforcing Steel Institute (CRSI).

This renewal certificate is valid through December 31, 2023.

NPCA CERTIFIED PLANT

ANAB ACCREDITED ISO/IEC 17065 PRODUCT CERTIFICATION BODY

Joel Sheets, Chairman of the Board

Frederick H. Grubbe, NPCA President

Phillip B. Cutler, P.E., Director of Quality Assurance Programs

NPCA | 1320 City Center Drive, Suite 200 | Carmel, IN 46032

ATTACHMENT B

ITEM	PART NO	QTY	DESCRIPTION
1	A-226201	1	SENSOR, LEAK
2	GM115336	1	WOOD BASE, 500 REOZVB
3	GM115337	1	WOOD BASE, 500 REOZVB
4	SA21079	1	VENT, NORMAL 2" W/15" RISER
5	SA22448	1	KIT, SECONDARY CONTAINMENT TANK LABELS
6	SA24291-22	1	GAUGE, ADJ. FUEL LEVEL
7	SA35527	1	CAP, EMERGENCY VENT (5 IN. NPT)
8	SA35528	1	CAP, EMERGENCY VENT (6 IN. NPT)
9	SA37289	1	FILL CAP, 2" LOCKABLE, 12" PIPE RISER
10	SA37615	1	TANK, FINAL WELDMENT
11	X-75-28	1	PLUG, PIPE (1/2"NPTF)
12	X-75-44	2	PLUG, PIPE (2"NPTF)

THIS IS AN AUTOMATED TABLE. ALL UPDATES MUST BE MADE IN THE ASSEMBLY.

TANK FITTINGS:

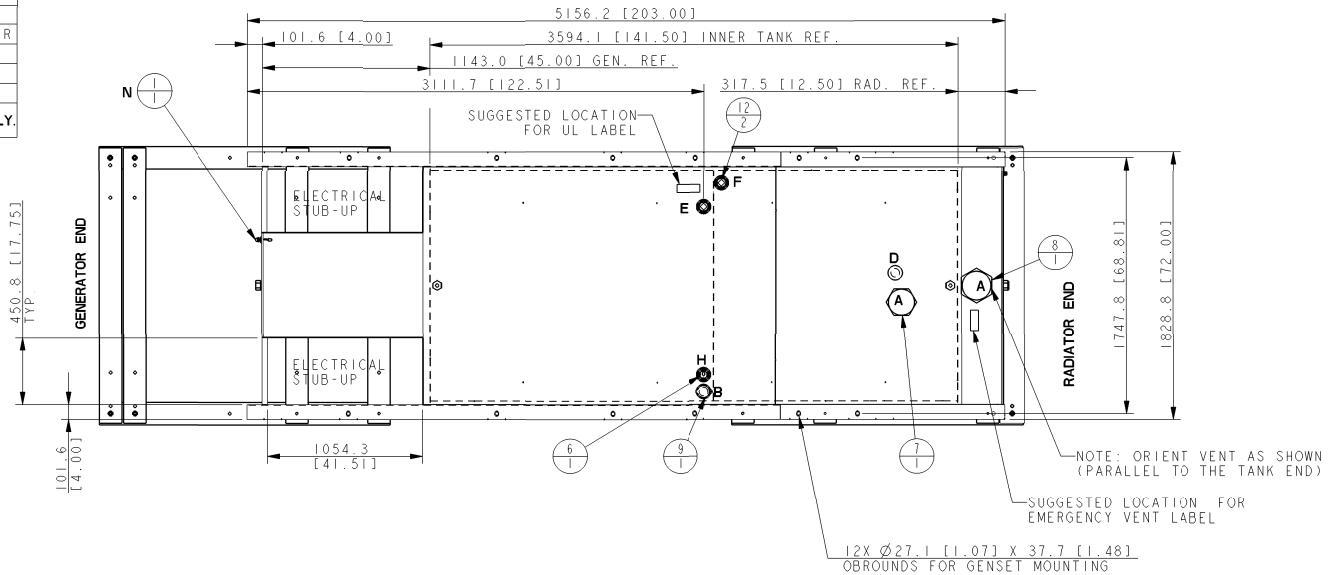
A. 5" / 6" NPT ACCORDINGLY EMERGENCY VENT FITTING PER NFPA 30 WITH VENT CAPS.
B. 2" NPT FUEL FILL FITTING WITH LOCKABLE CAP.
D. 2" NPT NORMAL VENT FITTING WITH MUSHROOM VENT CAP.
E. 2" NPT FITTING FOR REMOVABLE ENGINE SUPPLY DIP TUBE (INSTALL 2" NPT PIPE PLUG).
F. 2" NPT FITTING FOR REMOVABLE FUEL RETURN DIP TUBE (INSTALL 2" NPT PIPE PLUG).
H. 2" NPT FOR FUEL LEVEL GAUGE W/ SENDER
N. 1/2" NPT FOR FUEL IN BASIN SWITCH
M. 1/2" NPT BASIN DRAIN (INSTALL 1/2" NPT PIPE PLUG)
ALL FITTINGS INSTALLED BY SUPPLIER.

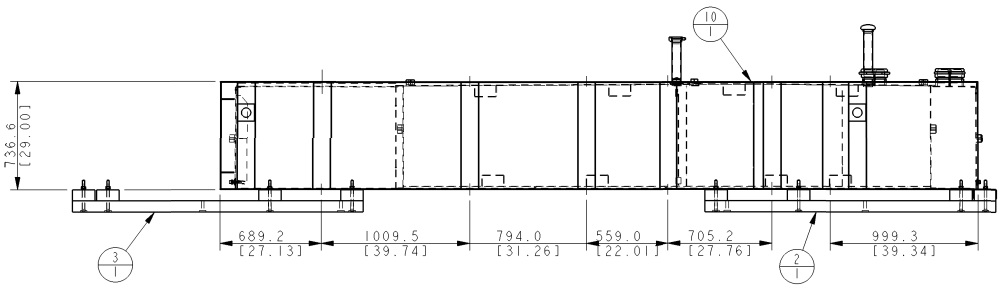
NOTES:

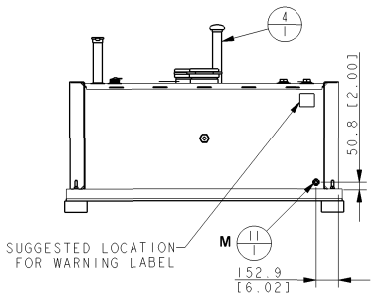
1. BAFFLE TO SEPARATE HOT AND COLD SIDE OF TANK.
2. MATERIAL:
   COVER: 7 GA.
   INNER TANK (ENDS, SIDES/BOTTOM, BAFFLE), 10GA
   RAILS, END CHANNELS & GUSSETS, 7 GA
   OUTER TANK BOTTOM, 7GA
3. EXTERIOR: PRIME OR PAINT BLACK PER G-057.
4. TANK WEIGHT.....1674 KG [3691 LBS]
5. THIS FUEL TANK IS DESIGNED TO SUPPORT A GENERATOR SET.
6. FITTINGS "E" & "F" TO BE PLUGGED WITH PLASTIC SHIPPING PLUGS.
7. EACH TANK TO BE PACKAGED AS A SEPARATE UNIT.
8. LABELS AS REQUIRED PER ORDER:
   -UL OR cUL LABEL
   -"GENERAL" SERIAL NO. LABEL (WITH SERIAL NO. AND KOHLER PART NO.)
   -ATMOSPHERIC TANK WARNING LABEL
   -EMERGENCY VENT LABEL
   -PORT IDENTIFICATION LABELS
   -ADDITIONAL cUL LABELS WHEN REQUIRED
9. TANK CAPACITY.....3910 L [1033 GAL]
10. CONTAINMENT:.....135%
11. TANK EMERGENCY VENTING CAPACITY....149,551 CFH
12. THIS ASSEMBLY OR PART MUST COMPLY WITH PEP-RML-001.

WELD SPEC:

WELD PER WELD SPECIFICATION
WEL 7.5.1-36 WELDING OF PRODUCTS







REV	DATE	ON COMPOSITE DWGS, SEE PART NO. FOR REVISION LEVEL	BY
G	10-20-15	(C-1,2) ITEM 5: ORIENTATION NOTE ADDED. (D-8) ITEM 4: QTY: 1 WAS 2 AND ITEM 5: SA35528 (6" NPT) ADDED. (C-8) TANK FITTING: A: 6" NPT ACCORDINGLY ADDED AND (QTY 2) REMOVED. (B-8) NOTES: 11; 149,551 CFH WAS 147,718 CFH. [CT127707]	GFR
H	6-26-18	(D-8) SA22448 (1) ADDED [CT188655]	PAS
J	28AUG2020	(D-8) GM115336 (1), GM115337 (1) ADDED;	
		(B-8) "G-057 WAS G-57, "PEP-RML-001" NOTE	
		ADDED [CT206331]	PAS

UNLESS OTHERWISE SPECIFIED - 11 DIMENSIONS ARE IN MILLIMETERS 21 TOLERANCES ARE: X.XX ± 0.25, X.X ± 1.0, X ± 1.5, ANGLES ± 0° 30' SURFACE FINISH MAX. THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN JB2	4-1-11
CHECKED JB2	4-1-11
APPROVED AJD	4-1-11

KOHLER CO. METRIC PRO-E

POWER SYSTEMS, KOHLER, WI 53044 U.S.A.

TITLE: **TANK ASSY, FUEL, UCTSC, SECONDARY CONT.**

SCALE 0.06 | CAD NO. | SHEET 1 of 1

DWG NO: **GM79789-2** D

500 REOZVB
550-600 REOZV

4/7/2022

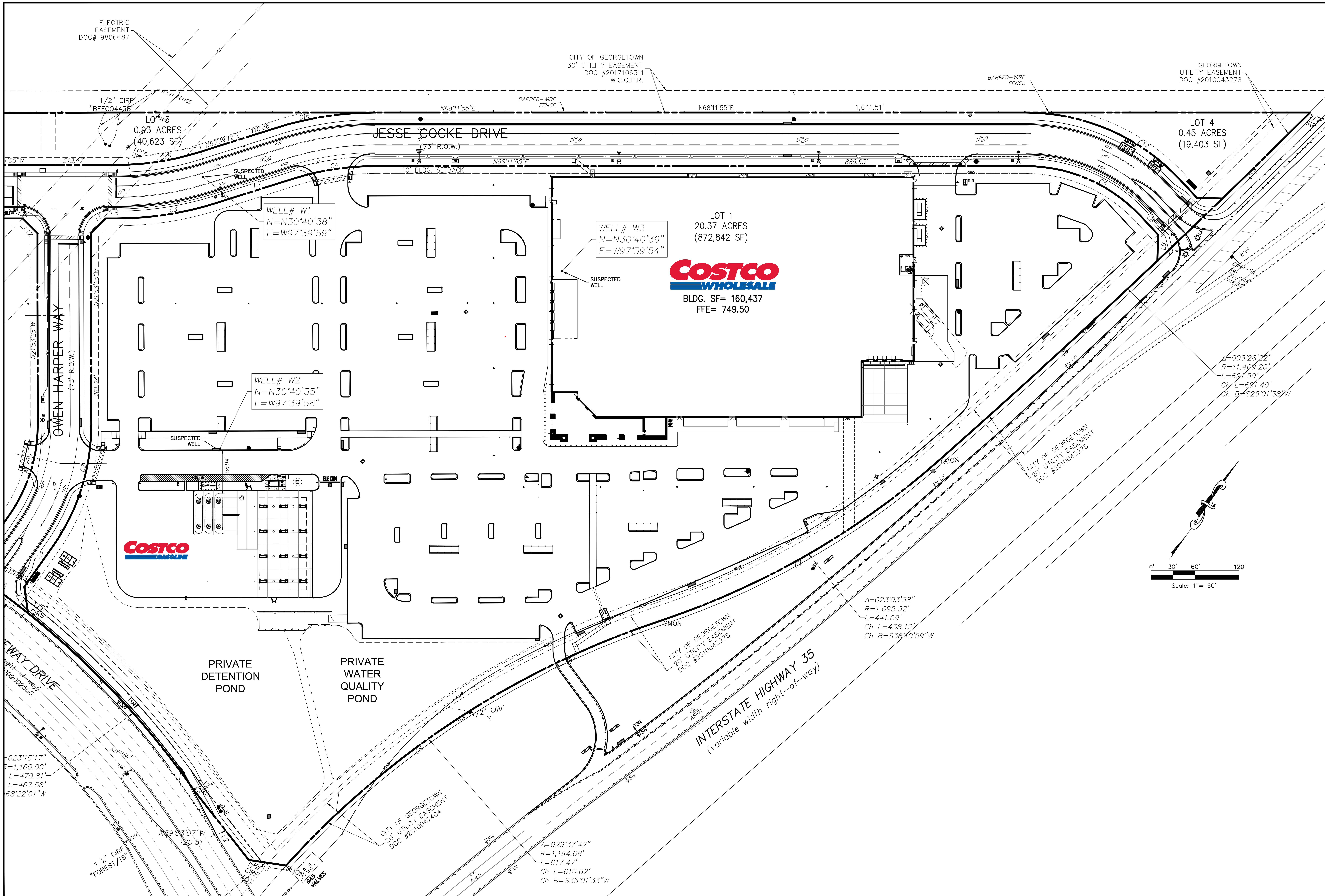
Notes to be aware of while using this chart:

All stick reading measurements are populated from the internal tank height of the corresponding 3D model. Actual height may vary due to manufacturing tolerances. The volume of fuel compared to the stick reading may not always be a linear relationship as it is displayed here. This chart is not emperical data and should only be used as a guide, not for exact measurement.

The highest stick reading in inches is rounded to the nearest inch.

All fuel volumes are rounded to the nearest whole number.

GM79789-2, 1033 Gal			
Stick Reading (mm)	*Stick Reading (inches)*	*Remaining Fuel (gallons)*	*Remaining Fuel (liters)*
691	27	1033	3910
660	26	987	3737
635	25	949	3593
610	24	911	3450
584	23	873	3306
559	22	835	3162
533	21	797	3018
508	20	759	2875
483	19	721	2731
457	18	683	2587
432	17	646	2444
406	16	608	2300
381	15	570	2156
356	14	532	2012
330	13	494	1869
305	12	456	1725
279	11	418	1581
254	10	380	1437
229	9	342	1294
203	8	304	1150
178	7	266	1006
152	6	228	862
127	5	190	719
102	4	152	575
76	3	114	431
51	2	76	287
25	1	38	144
0	0	0	0


ELECTRIC EASEMENT DOC# 9806687
CITY OF GEORGETOWN 30' UTILITY EASEMENT DOC #2017106311 W.C.O.P.R.
GEORGETOWN UTILITY EASEMENT DOC #2010043278
BARBED-WIRE FENCE
1/2" CIRF "BEFCO4438"
IRON FENCE
LOT 3
0.93 ACRES
(40,623 SF)
N68°11'55"E
1,641.51'
JESSE COCKE DRIVE
(73' R.O.W.)
LOT 4
0.45 ACRES
(19,403 SF)
10' BLDG. SETBACK
886.63'
SUSPECTED WELL
WELL# W1
N=N30°40'38"
E=W97°39'59"
WELL# W3
N=N30°40'39"
E=W97°39'54"
LOT 1
20.37 ACRES
(872,842 SF)
COSTCO WHOLESALE
BLDG. SF= 160,437
FFE= 749.50
OWEN HARPER WAY
(73' R.O.W.)
N21°53'25"W
261.24'
WELL# W2
N=N30°40'35"
E=W97°39'58"
COSTCO GASOLINE
Δ=003°28'22"
R=11,409.20'
L=691.50'
Ch L=691.40'
Ch B=S25°01'38"W
CITY OF GEORGETOWN 20' UTILITY EASEMENT DOC #2010043278
0' 30' 60' 120'
Scale: 1"= 60'
Δ=023°03'38"
R=1,095.92'
L=441.09'
Ch L=438.12'
Ch B=S38°10'59"W
PRIVATE DETENTION POND
PRIVATE WATER QUALITY POND
INTERSTATE HIGHWAY 35
(variable width right-of-way)
CITY OF GEORGETOWN 20' UTILITY EASEMENT DOC #2010047404
Δ=029°37'42"
R=1,194.08'
L=617.47'
Ch L=610.62'
Ch B=S35°01'33"W
Δ=023°15'17"
R=1,160.00'
L=470.81'
L=467.58'
68°22'01"W
N59°53'07"W
120.81'
1/2" CIRF "FOREST/18"
GAS VALVES
ASPHALT

Winkelmann & Associates, Inc.

CONSULTING CIVIL ENGINEERS ■ SURVEYORS

No. | DATE | REVISION | APPROV.

01-26-2023

WELL LOCATION EXHIBIT 1

COSTCO WHOLESALE
GEORGETOWN, TEXAS

01-31-2023

1 of 2

STATE OF TEXAS PLUGGING REPORT for Tracking #225452

Owner:	**Costco Wholesale**	Owner Well #:	**W3**
Address:	**999 Lake Drive Issaquah, WA 98027**	Grid #:	**58-19-6**
Well Location:	**2201A North IH 35 Georgetown, TX 78628**	Latitude:	**30° 40' 38.42" N**
		Longitude:	**097° 39' 53.78" W**
	Middle of property about 150-feet south of the northern fence line	Elevation:	**747**
Well County:	**Williamson**		

Well Type: **Monitor**

Drilling Information

Company: **Unknown** Date Drilled: **No Data**

Driller: **Unknown** License Number: **Unknown**

Borehole:

Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
2	0	20

Plugging Information

Date Plugged: **10/14/2022** Plugger: **Hamilton L. McRae**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	Top (ft.)	Bottom (ft.)
2	0	0

Plug(s) Placed in Well:

Top (ft.)	Bottom (ft.)	Description (number of sacks & material)
0	2	**Concrete 1 Bags/Sacks**
2	20	**Bentonite 2 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Austin Geo-Logic**
1316 Ridgefield Loop
Round Rock, TX 78665

Driller Name: **Hamilton L. McRae** License Number: **59656**

Comments: **No Data**

STATE OF TEXAS PLUGGING REPORT for Tracking #225451

Owner:	**Costco Wholesale**	Owner Well #:	**W2**
Address:	**999 Lake Drive Issaquah, WA 98027**	Grid #:	**58-19-6**
Well Location:	**2201A North IH 35 Georgetown, TX 78628**	Latitude:	**30° 40' 34.54" N**
		Longitude:	**097° 39' 57.82" W**
	North of the radius fence just west of the existing driveway on Lakeway Drive	Elevation:	**746**
Well County:	**Williamson**		

Well Type: **Monitor**

Drilling Information

Company: **Unknown** Date Drilled: **No Data**

Driller: **Unknown** License Number: **Unknown**

Borehole:

Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
2	0	25

Plugging Information

Date Plugged: **10/14/2022** Plugger: **Hamilton L. McRae**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	Top (ft.)	Bottom (ft.)
2	0	0

Plug(s) Placed in Well:

Top (ft.)	Bottom (ft.)	Description (number of sacks & material)
0	2	**Concrete 1 Bags/Sacks**
2	25	**Bentonite 2 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Austin Geo-Logic**
1316 Ridgefield Loop
Round Rock, TX 78665

Driller Name: **Hamilton L. McRae** License Number: **59656**

Comments: **No Data**

STATE OF TEXAS PLUGGING REPORT for Tracking #225450

Owner:	**Costco Wholesale**	Owner Well #:	**W1**
Address:	**999 Lake Drive Issaquah, WA 98027**	Grid #:	**58-19-6**
Well Location:	**2201A North IH 35 Georgetown, TX 78628**	Latitude:	**30° 40' 37.92" N**
		Longitude:	**097° 39' 59.54" W**
	Northwest Corner of Field near the LCRA Easement	Elevation:	**750**
Well County:	**Williamson**		

Well Type: **Unknown**

Drilling Information

Company: **Unknown** Date Drilled: **No Data**

Driller: **Unknown** License Number: **Unknown**

Borehole:

Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
6	0	120

Plugging Information

Date Plugged: **10/13/2022** Plugger: **Hamilton L. McRae**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	Top (ft.)	Bottom (ft.)
6	0	0

Plug(s) Placed in Well:

Top (ft.)	Bottom (ft.)	Description (number of sacks & material)
0	2	**Concrete 2 Bags/Sacks**
2	120	**Bentonite 30 Bags/Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Austin Geo-Logic**
1316 Ridgefield Loop
Round Rock, TX 78665

Driller Name: **Hamilton L. McRae** License Number: **59656**

Comments: **No Data**

APPROV. | REVISION | DATE | No.

LAST SAVED BY: LOKEN January 31, 2023

Winkelmann & Associates, Inc.
CONSULTING CIVIL ENGINEERS ■ SURVEYORS
6750 HILLCREST PLAZA DRIVE, SUITE 325
DALLAS, TEXAS (972) 490-7090
Texas Engineers Registration No. 89 (972) 490-7099 FAX
Texas Surveyors Registration No. 100866-00

01-26-2023

WELL LOCATION EXHIBIT 2

COSTCO WHOLESALE
GEORGETOWN, TEXAS

01-31-2023

G:\588\27\ENGINEERING\Exhibits\WELL EXHIBIT.dwg

588.27(20)

ELECTRIC EASEMENT DOC# 9806687

CITY OF GEORGETOWN 30' UTILITY EASEMENT DOC #2017106311 W.C.O.P.R.

GEORGETOWN UTILITY EASEMENT DOC #2010043278

EXISTING FRONTI BURIED CAB

1/2" CIRF "BEFC04435"

N68°11'55"E 1,641.51'

BARBED-WIRE FENCE

IRON FENCE

SS MH

WV

FH

LCRA TWR

SUSPECTED WELL

EXISTING WELL TO BE CAPPED PER TCEQ STANDARDS.

Capped / Report #1

Approximate location of found well. Capped / Report #3

N01°55'10"W 520.50'

Capped / Report #2

EXISTING WELL TO BE CAPPED PER TCEQ STANDARDS.

EXPLORED AREA - NEVER FOUND

SUSPECTED WELL

EXISTING DRIVEWAY TO BE CLOSED

CONCRETE

ASPHALT

Y DRIVE

1/2" CIRS

1/2" CIRF Y

1/2" CIRF "FOREST/18"

N69°53'07"W 130.81'

CMON

CITY OF GEORGETOWN 20' UTILITY EASEMENT DOC #2010043278

CITY OF GEORGETOWN 20' UTILITY EASEMENT DOC #2010047404

EXISTING FRONTIER BURIED CABLE

EXISTING FRONTIER OVERHEAD FIBER/ CABLE

INTERSTATE HIGHWA (variable width right-of

Δ=029°37'42" R=1,194.08' L=617.47' Ch L=610.62' Ch B=S35°01'33"W

Δ=023°03'38" R=1,095.92' L=441.09' Ch L=438.12' Ch B=S38°10'59"W

Δ=003°28'22" R=11,409.20' L=691.50' Ch L=691.40' Ch B=S25°01'38"W

REFER TO TXDOT PLANS, SHTS. TX-1 THRU TX-21 FOR DEMO & WORK IN IH35 RIGHT-OF-WAY.

REFER TO TXDOT PLANS, SHTS. TX-1 THRU TX-21 FOR DEMO & WORK IN IH35 RIGHT-OF-WAY.

0' 30' 60' 120'

Scale: 1"= 60'

BEFORE YOU DIG TEXAS 811

NOTICES TO CONTRACTOR

EXISTING UNDERGROUND/BURIED PUBLIC, PRIVATE, AND FRANCHISE UTILITIES/FACILITIES AFFECT THIS SITE, AND ARE DEPICTED ON THE PLANS PER THE BEST AVAILABLE INFORMATION AT THE TIME THE PLANS WERE PRODUCED. WINKELMANN & ASSOC., INC. SHALL NOT BE RESPONSIBLE FOR KNOWING THE EXACT LOCATION OF ALL FACILITIES OR DEPICTING EXACT LOCATIONS OF SAID FACILITIES ON THE PLANS BEYOND WHAT IS STATED ABOVE.

CONTRACTOR(S) SHALL CALL "811" A MINIMUM OF 48 HOURS PRIOR TO BEGINNING WORK ON THE SITE, AND SHALL NOT BEGIN ANY EXCAVATION OR DEMOLITION ACTIVITES UNTIL AFTER SAID FACILITIES HAVE BEEN MARKED AND/OR FLAGGED PER "811" OR THE FACILITY OWNERS.

CONTRACTOR(S) SHALL BE WHOLLY RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR TO SAID FACILITIES DUE TO WORK BEING DONE WITHOUT FOLLOWING THE PROCEDURES ABOVE.

TREE LEGEND

- Existing Tree to Remain
- Existing Tree to Remove

ABREVIATION LEGEND

PP	Power Pole	IRF	Iron Rod Found
GW	Guy Wire	IRS	Iron Rod Set
MH	Manhole	CIRS	Iron Rod Set w/ cap "WAI"
WV	Water Valve	CIRF	Iron Rod Found w/ cap
TP	Telephone Pedestal	XCS	"X" Cut in Concrete Set
WM	Water Meter	XCF	"X" Cut in Concrete Found
FH	Fire Hydrant	PKS	PK Nail Set
LP	Light Pole	PKF	PK Nail Found
IV	Irrigation Valve	SS	Sanitary Sewer
CO	Clean Out	SW	Storm Sewer
AC	Air Conditioner	TF	Transformer pad
TV	Cable Box	GM	Gas Meter
SB	Signal Box	GMK	Gas Marker
SP	Signal Pole	TSN	Traffic Sign
SN	Sign	UGC	Underground Cable Marker
CM	Control Monument	EB	Electric Box
		EM	Electric Meter

BENCH MARKS:

BM#1 – Square cut, top of headwall at the centerline, ±84.0 feet northeast of the centerline of Airport Drive and ±84.9 feet northwest of the centerline of the south bound service road to I.H. 35.

ELEVATION – 742.14 feet

BM#2 – Square cut top of curb, north end, median on the south bound service road to I.H. 35, ±212.7 feet southwest of the northeast property corner and ±65.3 feet southeast of the southeast property line.

ELEVATION – 746.60 feet

No.	DATE	REVISION	APPROV.
	01/17/2023	PR-07	MDC
	09/30/2022	IFC/PR-01	MDC
	07/14/2022	BID SET	MDC
2	05/13/2022	PERMIT REVISIONS	MDC
1	11/18/2021	PERMIT ISSUE	TCY

LAST SAVED BY: LOKEN January 13, 2023

Winkelmann & Associates, Inc.
CONSULTING CIVIL ENGINEERS ▪ SURVEYORS
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Texas Engineers Registration No. 89 (972) 490-7099 FAX
Texas Surveyors Registration No. 100866-00

STATE OF TEXAS
MICHAEL D. CLARK
63290
REGISTERED PROFESSIONAL ENGINEER

01-17-2023
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MICHAEL D. CLARK P.E. # 63290

CONSTRUCTION SET

EX. CONDITIONS DEMOLITION PLAN EAST

COSTCO WHOLESALE
GEORGETOWN, TEXAS

08-02-2021

C-4.1

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588.27(20)

4.0 EMERGENCY PROCEDURES – (§112.7(a)(3)(iv)(v), (4), (5))

The following procedures describe countermeasures for discharge discovery, response, and cleanup of oil spills. The facility may expedite cleanup procedures using spill response equipment to contain oil spills and to keep oil from entering navigable waters. Facility safety and response equipment includes, but is not limited to:

- Absorbents (Socks, Pads, Booms)
- Shovels and/or Brooms
- Personal Protective Equipment (Gloves, Goggles)
- Fire Extinguisher
- First Aid Station
- Eyewash Station and Safety Shower

Larger spills that require response capabilities beyond those of the facility may require the assistance of emergency contractors. Emergency Coordinators are responsible for determining when emergency response services are warranted and must contact the appropriate service. There have been no reportable discharges of oil within the past twelve months.

4.1 Spill Response Procedures

In the event of an oil spill, regardless of volume, immediate action must be taken to protect the safety of human lives, protect the environment and contain the material and prevent it from leaving the facility property. Spill response procedures will depend on the amount and type of discharged oil. The following actions must be taken in the event of an oil discharge:

- Immediately report the oil discharge to the Emergency Coordinator at the facility to expedite spill response activities and reporting.
- Keep non-response personnel away, isolate the hazard area and deny personnel further entry.
- If a flammable oil product is spilled, shut off ignition and do not allow heat sources near spill.
- Use spill response equipment to contain oil spills and to keep oil from entering navigable waters.
- Contact emergency response contractors to contain and/or clean-up spilled product.
- Record spill notification information on the form in Appendix D.
- Dispose of contaminated soil and material in an environmentally acceptable manner. If the disposal of contaminated materials does become necessary, 3E should be consulted before disposal of such materials in order to comply with all applicable federal, state and local regulations.

4.2 State Spill Notification Procedures

Costco requires that handlers, employees, authorized representatives, agents or designees of handlers, shall, upon discovery, immediately report any release or threatened release of hazardous materials to 3E. All significant releases or threatened releases of a hazardous material, including oil, require notification to 3E. 3E will be responsible for notifying appropriate agencies of the United States Government in accordance with Public Law 96-510 and Public Law 92-500 (CERLA).

Notification to 3E must be conducted for the following:

- Discharges or threatened discharges of oil in marine waters
- Any spill or other release of petroleum product or used oil exceeding 25 gallons which threatens to go off-property or down a drain or discharges of non-petroleum oil exceeding 210 gallons
- Discharges of any hazardous substances or sewage, into or on any waters of the state
- Discharges that may threaten or impact water quality
- Discharges of oil or petroleum products, into or on any waters of the state

Report the following information:

1. Name, address, and telephone number of reporting person
2. Name, address, and telephone number of person responsible for the discharge or release, if known
3. Date and time of the discharge or release
4. Type or name of substance discharged or released
5. Estimated amount of the discharge or release
6. Location of address of discharge or release
7. Source and cause of the discharge or release
8. Size and characteristics of area affected by the discharge or release
9. Containment and cleanup actions taken to date
10. Other persons or agencies contacted

4.3 Federal Spill Notification Procedures

Notification to 3E must be contacted for the following:

1. The facility discharges more than 1,000 gallons of oil into or upon the navigable waters of the United States or adjoining shorelines in a single spill event; or
2. The facility discharges oil in quantities greater than 42 gallons in each of two spill events within any twelve-month period.

Report the following information to 3E within 60 days if either of the above thresholds is reached.

1. Name of the facility.
2. Name of the individual submitting the information.
3. Location of the facility.
4. Maximum storage or handling capacity of the facility and normal daily throughputs.
5. The corrective actions and/or countermeasures taken, including adequate description of equipment repairs and/or replacement.
6. Description of the facility including maps, flow diagrams, and topographical maps.
7. The cause(s) of the spill, including a failure analysis of system or subsystem in which failure occurred.
8. Additional measures taken or contemplated to minimize the possibility of recurrence.
9. Such other information as the RA may reasonably require that is pertinent to the plan or spill event(s).

14.6 Overfill Protection [§112.8(c)(8) & §112.12(c)(8)]

The diesel fuel ASTs are equipped with visual gauges to determine fill level.

The used cooking oil AST is equipped with an electronic monitoring system for when the tank is approaching capacity.
The waste fuel drum is visually monitored during the filling operation to determine fill level. Prior to filling, the filler verifies that the container has sufficient capacity for the transfer.

Personnel are present during loading transfers to prevent any oil from reaching navigable waters.

14.7 Containment of Oil During Transfer – [§112.8(c)(9-11) & §112.12(c)(9-11)]

Any oil spills associated with the loading or unloading of the USTs would be contained with spill response equipment. Oil is pumped in accordance with all applicable regulations. Designated oil-handling personnel shall promptly correct any visible discharges which result in a loss of oil from a container. Accumulations of oil in transfer areas are removed promptly. Spill kits are in close proximity during any oil transfer operations. Any spill shall be cleaned up and removed as soon as possible with spill response equipment.

Transfer operations for the cooking oil AST are completed by Darling International. Costco employees notify Darling when the indicator light flashes at 90% capacity. Darling pumps out the tank contents from outside the Costco building without any interaction with Costco employees. At the time of transfer, Darling personnel are present and have appropriate spill response equipment on hand. Transfer operations are often completed outside of warehouse operational hours.

14.8 Mobile and Portable Container Positioning – [§112.8(c)(11) & §112.12(c)(11)]

Mobile and portable oil containers are positioned in such a way that prevents spilled oil from reaching a navigable waterway. All portable containers have sufficient secondary containment to contain the capacity of the single largest container plus freeboard to contain precipitation.

15.0 TRANSFER OPERATIONS, PUMPING AND PROCESS – [§112.8(d) & §112.12(d)]

utilizes aboveground and underground piping for petroleum-based oil transfer; all buried piping at the facility is associated with the underground storage tanks and is regulated under 40 CFR part 280. Above ground piping is located so as not accessible to vehicular traffic. Pipe supports are constructed of steel and are adequately supported. Pipe supports have been designed to minimize abrasion and corrosion to allow for expansion and contraction. The transfer connections of oil pipelines are capped when not in service or when in standby service for an extended amount of time.

All aboveground pipelines and valves are inspected monthly including flange joints, valve glands and bodies, catch pans, and locking valves.

JESSE COCKE DRIVE
(73' R.O.W.)

OWEN HARPER WAY
(73' R.O.W.)

LAKEWAY DRIVE
(variable width right-of-way)
DOC #2009080250O

INTERSTATE HIGHWAY 35
(variable width right-of-way)

LOT 3
0.94 ACRES
(40,849 SF)

LOT 1
20.04 ACRES
(873,048 SF)

LOT 4
0.45 ACRES
(19,664 SF)

BLDG. SF= 160,437
FFE= 749.50

TOTAL DISTURBED AREA= 21.43 ACRES
THE ENTIRE SITE IS DISTURBED

PRIVATE DETENTION POND

PRIVATE WATER QUALITY POND

GENERATOR & ABOVE GROUND FUEL TANK LOCATIONS

FDC

SUSPECTED WELL

DRAINAGE WEIR STRUCTURE

EROSION CONTROL MATTING

BARBED-WIRE FENCE

IRON FENCE

10' BLDG. SETBACK

CITY OF GEORGETOWN
30' UTILITY EASEMENT
DOC #2017106311
W.C.O.P.R.

GEORGETOWN
UTILITY EASEMENT
DOC #2010043278

CITY OF GEORGETOWN
20' UTILITY EASEMENT
DOC #2010047404

EXISTING FRONTIER
OVERHEAD FIBER/
CABLE

EXISTING FRONTIER
BURIED CABLE

GAS VALVES

EASEMENT
DOC# 9806687

N68°11'55"E 935.59'

S68°11'55"W 91.33'

S68°11'55"W 213.47'

N50°39'12"E 110.86'

N21°53'25"W 261.24'

S20°02'42"E 35.52'

S76°39'17"W 51.32'

Line Table		
Line #	Direction	Length
L1	N30°11'10"W	36.23'
L2	N13°22'29"E	67.85'
L3	N23°09'15"E	28.26'
L4	S68°11'55"W	15.37'
L5	N50°39'12"E	110.86'
L6	S64°46'34"E	35.08'
L7	S20°02'42"E	35.52'
L8	S76°39'17"W	51.32'

CURVE TABLE					
No.	Delta	Radius	Length	CH. B	CH. L
C1	35°15'54"	286.50'	176.34'	N4°15'28"W	173.57'
C2	17°32'42"	444.00'	135.96'	N59°25'34"E	135.43'
C3	17°32'42"	371.00'	113.61'	N59°25'34"E	113.16'
C4	47°01'31"	213.50'	175.23'	N88°17'20"W	170.35'
C5	2°00'58"	11409.20'	401.45'	N25°45'20"E	401.43'
C6	23°03'38"	1095.92'	441.09'	N38°10'59"E	438.12'
C7	29°37'42"	1194.08'	617.47'	S35°01'33"W	610.62'
C8	45°19'42"	1160.00'	917.71'	N79°24'13"W	893.96'

No.	DATE	REVISION	APPROV.
		BID SET	MDC
2	05/13/2022	PERMIT REVISIONS	MDC
1	11/18/2021	PERMIT ISSUE	TCY
	07/14/2022		

LAST SAVED BY: LOKEN November 14, 2022

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Texas Engineers Registration No. 89
Texas Surveyors Registration No. 100866-00

GENERATOR SITE PLAN

COSTCO WHOLESALE
GEORGETOWN, TEXAS

588.27(20)

11-11-2022

01

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TEMPORARY STORMWATER SECTION

Temporary Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

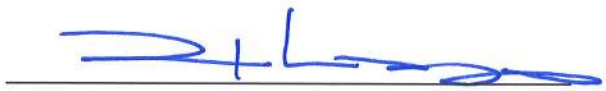
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Temporary Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: M. Alexia Inigues, Authorized Agent for Costco Wholesale

Date: 4/28/2023

Signature of Customer/Agent:



Regulated Entity Name: Costco Warehouse (Loc. No. 1385)

Project Information

Potential Sources of Contamination

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:

   ☐ The following fuels and/or hazardous substances will be stored on the site: _____

   These fuels and/or hazardous substances will be stored in:

   ☐ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.

☒ Fuels and hazardous substances will not be stored on the site.

2. ☒ **Attachment A - Spill Response Actions**. A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

3. ☒ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. ☒ **Attachment B - Potential Sources of Contamination**. A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

5. ☒ **Attachment C - Sequence of Major Activities**. A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

   ☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.

   ☐ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: San Gabriel/North Fork San Gabriel River

Temporary Best Management Practices (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. All structural BMPs must be shown on the site plan.

7. ☒ **Attachment D – Temporary Best Management Practices and Measures**. TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information is attached:

[X] A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

[X] A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

[X] A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

[X] A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

8. [X] The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

   [ ] **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

   [X] There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. [X] **Attachment F - Structural Practices**. A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.

10. [X] **Attachment G - Drainage Area Map**. A drainage area map supporting the following requirements is attached:

    [X] For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

    [ ] For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

    [ ] For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

    [ ] There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.

11. ☐ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations.** Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.

☒ N/A

12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.

13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

15. ☒ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.

16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. ☒ **Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices.** A schedule of the interim and permanent soil stabilization practices for the site is attached.

18. [X] Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

19. [X] Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

20. [X] All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.

21. [X] If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.

22. [X] Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

4.2 Plan for Spills and Releases

A spill is any incident in which oil, hazardous substances, industrial waste, or "other substances" contaminate or may contaminate surface water or ground water in the state of Texas.

Kind of spill	Where discharged	Reportable Quantity	Rule, statute, or responsible agency
Hazardous Substance	onto land	"Final RQ" in Table 302.4 in 40 CFR 302.4 (PDF)	30 TAC 327
	into water	"Final RQ" or 100 lbs, whichever is less	30 TAC 327
Any oil	coastal waters	as required by the Texas General Land Office	Texas General Land Office
Crude oil, neither a petroleum product nor used oil	onto land	210 gallons (five barrels)	30 TAC 327
	directly into water	enough to create a sheen	30 TAC 327
Petroleum product, used oil	onto land, from an exempt PST facility	210 gallons (five barrels)	30 TAC 327
	onto land, or onto land from a non-exempt PST facility	25 gallons	30 TAC 327
	directly into water	enough to create a sheen	30 TAC 327
Associated with the exploration, development and production of oil,	under the jurisdiction of the	as required by the Railroad	Railroad Commission

gas, or geothermal resources	Railroad Commission of Texas	Commission of Texas	of Texas
Industrial solid waste or other substances	into water	100 lbs	30 TAC 327
From petroleum storage tanks, underground or aboveground	into water	enough to create a sheen on water	30 TAC 334 .75-81
	onto land	25 gallons or equal to the RQ under 40 CFR 302	30 TAC 327
Other substances that may be useful or valuable and are not ordinarily considered to be waste, but will cause pollution if discharged into water in the state	into water	100 lbs	30 TAC 327

The following steps must be taken if spills or releases occur of reportable quantities as defined under TNRCC/TCEQ regulations in Appendix N:

1. Notify the National Response Center (800.424.8802), if required by applicable law, and the Construction Manager as soon as you have knowledge of the spill. The TCEQ should also be notified, if required, within 24 hours at 1.800.832.8224 or 512.339.2929 as required by applicable law. Local city officials should also be notified as required.
2. Take corrective actions as appropriate to contain and cleanup the spill and minimize contamination of the site. These actions may include the following as appropriate:

    - Assess the spill - Immediately determine the character, exact source, and amount of any released materials. Response personnel will determine the need for notification of authorities and regulatory agencies and make a determination regarding steps required to safeguard personnel (i.e., evacuation, personal protection, etc.).
    - Stop the flow at the source - After all required safety-related measures have been implemented, and if the potential for a further release still exists, then steps will be implemented to prevent further releases to the extent possible by cutting off the flow at the source. This may simply require the shutting of a valve or the righting of a drum. In some instances, more extensive repairs may be necessary in which case outside contractors may be contacted to stop the flow.

- Spill containment - Immediately after determination of what safety precautions and containment equipment are required, then containment procedures will be implemented. Containment points include those perimeter outfalls that may be affected by the spill. In addition, portable booms, sandbags, and absorbent material may be place around storm drains to prevent contaminants from entering storm sewers.
- Spill cleanup - To the extent practicable, spilled material should be retrieved and stored in leak-proof containers until proper disposal may be accomplished. Cleanup equipment includes pads, booms, and absorbent material. Contaminated equipment should be properly decontaminated of properly disposed. Depending upon the nature and extent of the release, the following procedures will be utilized: Whenever possible, dry clean-up methods, such as sweeping and absorbents awill be utilized. When dry clean-up methods are not practicable or when the spilled substance is a liquid, booms will be used to prevent the release of the substance to the storm sewer system. If appropriate, liquids generated by spills and clean-up activities will divert to the sanitary sewer system. If the substance is inappropriate for the sanitary sewer system, a contractor will be employed to remove the substance.
- Dispose of contaminated material - Contaminated material shall be disposed of in accordance with all federal, state, and local regulations. Exact means of disposal will depend upon the nature & volume of the contaminated material.
- Record spill event information - Ensure that a record of the spill event is made as soon as practicable after the event in order to recall as much detail as possible. The record should include the location of the spill, spill time, date, weather conditions, and duration of the incident. Also, a description of the type and amount of material spilled and recovered, a brief description of the cause of the spill and any environmental damage, a list of parties notified, and a description of response procedures will be kept. In addition, an evaluation should be conducted to determine measures that can be implemented to prevent a repeat of the incident.

- Replace used spill equipment - Following each spill event, the inventory of spill response equipment will be assessed and restocked as necessary.

3. The SWPPP must be updated within the 7 days to provide a description of the release, the circumstances leading to the release, the date of release and the corrective action taken. The plan also will be revised to reflect any changes in facility modifications or operating procedures resulting from the evaluation of the incident.

2.3 Potential Contamination Sources

Potential Pollutant	Source and Management of Potential Pollutants
Sediment/Total Suspended Solids	Erosion from areas within the construction project where soil is disturbed. Will be controlled with a combination of erosion control and sediment control measures.
Vehicle Fluids, including but not limited to fuel, oils, grease	Pollutant sources from vehicles performing related construction activities. Secondary Containment will be used around tanks to contain leaks and spills. Drip pans will be used if oil changes are required. Vehicle washing and oil changes will be discouraged while onsite.

Paints and Stains	Used by painting contractors. These items can be stored onsite, but under cover and away from exposure to stormwater. These items must be removed from the jobsite by the contractor.
Glue/Sealant/ Adhesives/Bonding agents	Glues, adhesives, sealants, and binding agents are used in a variety of areas in the construction cycle. Store in sealed containers away from the potential for exposure to stormwater. Waste products should be removed by the contractor.
Concrete Wash Water	Ready mix and concrete pump trucks will wash out their vehicles at the designated wash out areas described in the SWPPP.
Paving	Any paving activities will not be performed immediately before an anticipated storm event. Excess materials will be removed properly and quickly from the jobsite by the contractor.
Portable toilets/Sanitary waste	Portable toilets will be placed in strategic locations around the jobsite. This requires placement behind approved BMP measures and away from potential impact to the Storm Sewer system. Licensed sanitary contractors will maintain toilets, and ensure that they are in good working order at all times.
General Litter	Trash and associated waste will be properly contained and removed on regular intervals by an approved contractor.
Soil Stabilization Measures (e.g. Lime applications, emulsions)	Sources should be contained on site in sealed containment away from exposure to stormwater until needed. Measures will not be applied just before a storm event.
Refrigerants	Refrigerants result from AC unit operation. Any HVAC maintenance and repair will be performed by a trained HVAC technician.
Fertilizers/Pesticides	Fertilizers and Pesticides are rarely used on the jobsite, but do risk a potential impact to stormwater quality. Store inside sealed containers, away from exposure to stormwater. If used, application will not be applied just before an anticipated storm event.
Landscaping materials	Any landscaping materials brought to the jobsite will be stored behind structural BMPs until materials are used. Landscaping materials used as permanent stabilization measures, once placed, will be permitted to be used without BMP support.

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& Associates, Inc.
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DALLAS, TX 75230 (972) 490-7090 FAX (972) 490-7099
TEXAS ENGINEERING FIRM REGISTRATION No. 89
TEXAS SURVEYOR FIRM REGISTRATION No. 10086600

Attachment C: Sequence of Major Activities

1. The environmental project manager or site supervisor must contact the development services department, environmental inspection, at 512-930-3575, 72 hours prior to the scheduled date of the required onsite pre-construction meeting (no site acreage disturbed).
2. Send Notice of Intent to the Texas Commission on Environmental Quality (TCEQ) at least 48 hours prior to commencement of construction (no site acreage disturbed).
3. The contractor shall post site notice at the project site and install erosion/sedimentation controls (rock berms, sediment traps, silt fences, a stabilized construction entrance/exit, etc.), tree/natural area protective fencing, and conduct "pre-construction" tree fertilization (if applicable) prior to any site preparation work (no site acreage disturbed).
4. The erosion sedimentation control plan (ESC) and stormwater pollution prevention plan (SWPPP) will be followed by the environmental project manager, site supervisor, the designated responsible party, and the general contractor. The temporary erosion and sedimentation controls will be revised (if needed) to comply with City inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan (no site acreage disturbed).
5. The pond(s) will be rough graded at 100% proposed capacity (approximately 5.56 acres disturbed). The permanent outlet or a temporary outlet must be constructed prior to the development of embankment or excavation that leads to ponding. The outlet system will contain a sump, outlet (a surface outlet during the construction phase), and an emergency spillway. The outlet system shall be protected from erosion and will be maintained throughout the course of construction until installation of the permanent water quality pond.
6. The ROW will be cleared for each roadway. This Total area is 4.46 acres.
7. Rough grading of the roadway will commerce after clearing. Thia is the identical acreage.
8. Following rough grading, utilities will be installed within the already cleared ROW.
9. Storm Trooper units will be installed with utilities in the previously cleared ROW.
10. Following utilitiy work the subgrade will be lime stabilized once again with the already cleared ROW.
11. Following lime stabilization pavement and inlet tops will be completed.
12. Inspect and maintain the temporary erosion and sedimentation controls (no site acreage disturbed).
13. Begin site clearing/construction activities (no more than 10 acres will be disturbed at any time).
14. In the Granger Lake-San Gabriel River Watershed, the environmental project manager/site supervisor will coordinate a mid-construction conference to coordinate changes in the construction schedule and to evaluate the effectiveness of the erosion control plan (no site acreage disturbed).
15. Storm Trooper will be cleaned out and filter media will be installed prior to/concurrently with revegetation on site (no additional acreage disturbed).
16. Upon complete and paving begin revegetating the site (ROW) and start the installation of landscaping (no additional acreage disturbed).
17. Upon completion of the site construction and revegetation, the design engineer will submit an engineer's letter of concurrence bearing their engineer's seal, their signature, and date to the development services department indicating that construction and revegetation is complete and in substantial compliance with the approved plans. A final inspection will be scheduled by the appropriate city inspector (no additional acreage disturbed).
18. After landscape installation, the landscape architect will submit a letter of concurrence to the development services department indicating that the landscaping is complete and in substantial conformity with the approved plans. A final inspection will be scheduled by the appropriate city inspector (no additional acreage disturbed).

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TEXAS SURVEYOR FIRM REGISTRATION No. 10086600

19. After the final inspections have been conducted and approved by the appropriate city inspector, the temporary erosion and sedimentation controls will be removed. Any necessary revegetation resulting from the removal pf the control will be completed. Maintenance and rehabilitation of the water quality pond is to be performed (no additional acreage disturbed).

3. Best Management Practices

3.1 General Best Management Practices (BMPs)

A number of baseline BMPs will be utilized. The following sections present descriptions of procedures that are to be implemented throughout the Project. All BMPs shall conform to NCTCOG standards, Appendix N, and the City of Georgetown standards unless otherwise shown on the construction plans prepared by the Civil Engineer.

3.1.1 Good Housekeeping/Pollution Prevention Measures

- Vehicles and equipment should be washed down when and if excess sediment accumulates on the vehicles to prevent the tracking of sediment onto the streets, if the construction entrance is not effective. Discharges from wash waters should be minimized and treated in a sedimentation basin or alternative control.
- Garbage, trash, and waste materials are to be collected for temporary storage in dedicated containers on a regular basis. Wastes are to be regularly collected from these containers and transferred to a covered container for transport to an approved disposal facility. Waste containers are to be covered during non-working hours and rain events.
- Material delivery and storage should be delivered and stored in a specific area to limit the amount of disturbed ground. The BMP map(s) should be modified as required to show the location of the Material Storage Area (MSA).
- A site shall be designated for concrete washout on the map(s) to limit the chance of the concrete washout coming into contact with stormwater runoff if needed.
- Construction materials will be covered or stored in a covered area if practical.
- Products will be kept in their original containers with the original manufacturer's label.
- Whenever possible, all of a product will be used up before disposing of the container.
- Manufacture's recommendations for proper use and disposal will be followed.

- Sediment shall be removed from sediment traps/sedimentation ponds before design capacity is reduced by 50%.
- Accumulations of sediment (if escaping the site) shall be removed at a frequency to minimize further negative effects and prior to the next rain event (when feasible).
- Pumped water shall be filtered if it is not retained on site.

3.1.2 Preventative Maintenance

- If equipment is fueled on site, fueling should be done in a way that would limit the chance of fuel spillage.
- In the event a spill or release is detected, the Construction Manager shall be notified.
- Frequent inspections of parked heavy equipment will be performed to identify and repair any leaks.
- All drums, tanks, and other containers are to be properly sealed and clearly labeled to help prevent spills to the stormwater and to expedite clean up procedures.
- Sensitive areas (eg. wetlands) of the site, if any, will be marked in order that access to these areas will be limited to prevent intentional or accidental intrusions.

3.1.3 Prohibited Discharges

- Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited, unless managed by appropriate controls.
- Wastewater from wash out of concrete trucks, unless managed by appropriate controls.
- Wastewater from wash out and cleanout of stucco, pain, form release oils, curing compounds and other construction materials.
- Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.
- Soaps or solvents used in vehicle and equipment washing.

- Contaminated liquids should not be dumped onto pavements or gravel areas of the site where they would discharge along with stormwater.

In addition to the overall plan baseline BMPs outlined in the previous section, the following additional BMPs will be utilized. The BMP Map(s) is located in Appendix J.

3.2 Sediment and Erosion Control

Erosion and sediment controls will be maintained to minimize erosion and the discharge of pollutants by:

- Controlling stormwater volume and velocity.
- Controlling stormwater discharges, including peak flows and total stormwater volume.
- Minimizing the amount of soil exposed during construction.
- Minimizing the disturbance of steep slopes.
- Minimizing sediment discharges from the site.
- Providing and maintaining buffers in areas that are in close proximity to a surface water in the state.
- Preserving native topsoil.
- Minimizing compaction in post-construction areas.

3.2.1 Interim Stabilization Practices/Erosion Control (Structural BMPs)

Interim stabilization practices/ erosion controls (structural BMPs) will be implemented to prevent erosion and sedimentation from rainfall events at construction sites. The temporary controls expected to be used in the following chart will be utilized prior to construction activity commences and until the area affecting the control has been stabilized.

	Best Management Practice	Expected Use? Yes	Expected Use? No	If **Yes**, describe **where** it will be utilized. If **No**, explain **why** it will not be utilized.
1.	Silt Fence	☒	☐	See BMP map(s) for location(s)
2.	Inlet Protection	☒	☐	See BMP map(s) for location(s)
3.	Stabilized Construction Entrance(s)	☒	☐	See BMP map(s) for location(s)
4.	Rock Berm	☐	☒	Not currently scheduled
5.	Check Dam / Stone Overflow Structure	☒	☐	See BMP map(s) for location(s)
6.	Earth Dikes / Diversion Berm	☐	☒	Not currently scheduled
7.	Sediment Trap	☐	☒	Not currently scheduled
8.	Temporary Basin	☐	☒	Not currently scheduled
9.	Curb Cut Back	☐	☒	Not currently scheduled
10.	Geotextiles / Grass Mesh / Curlex/Erosion Control Matting	☒	☐	See BMP map(s) for location(s)
11.	Tree Protection	☐	☒	Not currently scheduled
12.	Vegetation Filter/Buffer Strips	☐	☒	Not currently scheduled
13.	Rock Rip Rap	☒	☐	See BMP map(s) for location(s)
14.	Wattle/Mulch Berm/Filter Tube	☒	☐	See BMP map(s) for location(s)
15.	Straw/Hay Bale	☐	☒	Not currently scheduled
16.	Wind Fence/Orange Mesh Fence	☐	☒	Not currently scheduled
17.	Other:	☐	☐	

1. **Silt Fence –** consists of filter fabric stretched between support posts to catch sheet flow drainage from disturbed areas. Silt fence, typically used around the perimeter of the site, prevents sediment discharges. (See engineer plans for specific dimensions.)
2. **Inlet Protection** – include a variety of methods to prevent soil and debris from entering the storm sewer. Inlet protection techniques provide detention or filtration of particulates by intercepting sediment using stone, concrete blocks, filter fabric and/or wire mesh. (See engineer plans for specific dimensions.)
3. **Stabilized Construction Entrance –** is used to facilitate the removal of sediment and other debris from construction equipment prior to exiting the construction site or when exiting an access area within the site. This method consists of a pad of bull rock typically on top of geotextile material. (See engineer plans for specific dimensions.)
4. **Rock Berm –** is used to treat concentrated amounts of stormwater and act as a filter reducing the velocity of the discharge. Sediment settles out on the receiving side of the rock berm. Rock berms consist of different size rock bound by wire mesh. (See engineer plans for specific dimensions.)
5. **Check Dam / Stone Overflow Structure –** are small barriers placed across a drainage swale or ditch that reduce the velocity of stormwater flows thereby reducing potential erosion. Check dams can be made from a variety of materials including rock, earthen berms, or silt fence. (See engineer plans for specific dimensions.) Stone overflow structures is an outlet device that is installed at low points along the silt fence.
6. **Earthen Dikes/Diversion Berms –** are used to direct or contain flows on construction sites to sediment basins or stabilized areas for filtration thereby preventing soil loss. Earthen Dikes and Diversion Berms consist of elevated compacted soil.
7. **Sediment Traps –** are small impoundments that detain sediment from runoff water to protect receiving areas downstream. They are formed by excavating an area or by placing an earthen berm across a low-lying area in a drainage easement.
8. **Temporary Basin –** is an excavated or natural depression which allows for a shallow pool of stormwater to promote settling of suspended solids. Water can be released in a controlled manner by dewatering.

9. **Curb Cut Back –** is a sediment trap located at the back of curb. Its function is to allow sediment to settle out of stormwater discharging off a disturbed lot. This technique can be utilized if the slopes are minimal.
10. **Geotextile/Grass Mesh/Curlex/Erosion Control Matting –** are porous fabrics placed over disturbed areas to limit the effect of erosion and runoff by providing immediate protection. They come in a wide variety and can be constructed from synthetic or organic material. Geotextiles can aid plant growth by holding seeds, fertilizers, and topsoil in place.
11. **Tree Protection –** usually consists of a fence located around the tree's drip line. Protecting existing vegetation prevents erosion and protects wildlife habitat. Tree protection typically needs to be installed and maintained during all phases of construction. (See engineer plans and local regulations for specific dimensions.)
12. **Vegetation Filter / Buffer Strips –** are designed to intercept upstream flow and decrease the velocity, diffuse water as sheet flow, promote filtration and infiltration by the vegetation.
13. **Rock Rip Rap –** an erosion control technique that consists of a permanent erosion-resistant layer, which is typically constructed of stones. The purpose of the rock rip rap is to protect soil from erosion in areas of concentrated runoff. The rock rip rap can also be utilized to stabilize slopes. (See engineer plans for specific dimensions.)
14. **Straw Wattle / Mulch Berm / Filter Tube** – consist of a biodegradable tube filled with mulch or straw which slow, filter, and spread overland water. This type of control can be used to aid re-vegetation and slope stabilization by preventing rill and gully erosion.
15. **Straw or Hay Bale** – can be used to temporarily stabilize the sediment and also as a filter in some drainage areas. (Note: Some local regulations may prohibit use of hay bales onsite.)
16. **Wind Fence / Orange Mesh Fence –** can be used for multiple reasons. Fencing materials can slow the velocity of wind across disturbed soils allowing sediment to be settled out. Fencing can also be used to protect special critical features onsite and to delineate the project boundary to prevent construction vehicles from working outside the limits of construction.
17. **Other -**

In addition to the above, if applicable, the following interim stabilization practices may potentially be used:

Interim Practices	When	Where	Why
Maintain grassy areas	At the beginning of the project.	Grassed areas that may not be disturbed until a later phase of construction.	To help filter runoff and reduce sediment discharges.
Mulching, seeding, sodding or hydromulch	To be determined by the General Contractor.	Where soil has been disturbed.	To control erosion.

Accumulations of sediment (if escaping the site) shall be removed at a frequency to minimize further negative effects and prior to the next rain event (when feasible).

Once final stabilization is achieved, all interim structural controls shall be removed.

3.2.2 Permanent Stabilization Practices/Post Construction Controls

The following permanent stabilization practices and post construction controls will be utilized:

Contractor shall seed all disturbed areas and provide temporary irrigation, if needed, until growth of vegetation achieves 100% coverage with a 70% density to prevent erosion.

	Best Management Practice	Expected Use? Yes	No	If **Yes**, describe **where** it will be utilized. If **No**, explain **why** it will not be utilized.
1.	Water Quality Pond	☒	☐	See BMP map(s) for location(s)
2.	Sedimentation Basin	☒	☐	See BMP map(s) for location(s)
3.	Baffle Blocks	☒	☐	See BMP map(s) for location(s)
4.	Level Spreader	☐	☒	Not currently scheduled
5.	Gabion	☐	☒	Not currently scheduled
6.	Concrete - Drainage Channel / Flexamat	☒	☐	See BMP map(s) for location(s)
7.	Natural Veg. - Drainage Channel / Swale	☐	☒	Not currently scheduled
8.	Sequential Systems	☒	☐	Curb, gutter, inlet and storm sewer
9.	Outfall Protection	☐	☒	Not currently scheduled
10.	Retaining Wall	☐	☒	Not currently scheduled
11.	Buildings / Permanent Structures	☒	☐	See BMP map(s) for location(s)
12.	Rip Rap	☒	☐	See BMP map(s) for location(s)
13.	Underground Detention	☒	☐	See BMP map(s) for location(s)
14.	Other:	☐	☐	Not currently scheduled

1. **Water Quality Pond –** Wet ponds are constructed basins that treat incoming storm water runoff by algal uptake and settling. These ponds have a constant pool of water at least through the wet season if not the entire year. Water quality ponds are also known as retention ponds or wet ponds. (See engineer plans for specific dimensions.)
2. **Sedimentation Basin –** constructed basin which provides pollutant removal by detaining storm water runoff for some defined period of time to allow sediments to settle. (See engineer plans for specific dimensions.)
3. **Velocity Dissipaters –** Slows the velocity of discharge from an outlet or outfall

structure to reduce erosion downstream. Velocity dissipaters usually consist of concrete blocks on the concrete pad of headwalls or other discharge structures. (See engineer plans for specific dimensions.)

4. **Level Spreaders –** convert concentrated storm water runoff to sheet flow and releases it uniformly over a stabilized slope to prevent erosion. Level spreaders are usually located at the overflow structure of a pond. (See engineer plans for specific dimensions.)
5. **Gabion –** constructed of rock or stone material bound by heavy wire or fencing material. They are used in areas where there is a high potential for erosion to treat water and allow sediment to settle out of the storm water.
6. **Concrete Drainage Channel –** Impervious channel used to channel large quantities of water without causing erosion.
7. **Natural Vegetation Drainage Channel –** Pervious channel consisting of native vegetation used to channel large quantities of water while promoting infiltration and slowing the velocity of the runoff.
8. **Sequential Systems –** System of drainage patterns consisting of, but not limited to, storm sewers, drainage channels, a pond, and outlet protection to facilitate storm water treatment prior to discharging offsite.
9. **Outfall Protection –** can be constructed of many different materials and forms. Outfall protection consists of concrete structures designed to withstand impacts of storm water runoff and thereby preventing erosion.
10. **Retaining Walls –** hold sediment in place on steep slopes when stabilization is not feasible and erosion is probable. Retaining walls are used to retain sediment onsite and prevent erosion.
11. **Buildings / Permanent Structures –** buildings and other permanent structures
12. **Rock Rip Rap –** an erosion control technique that consists of a permanent erosion-resistant layer, which is typically constructed of stones. The purpose of the rock rip rap is to protect soil from erosion in areas of concentrated runoff. The rock rip rap can also be utilized to stabilize slopes. (See engineer plans for specific dimensions.)
13. **Underground Detention –** underground structure designed to manage excess stormwater runoff.
14. **Other -**

Legend

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- OP — Outfall Structure/ Protection
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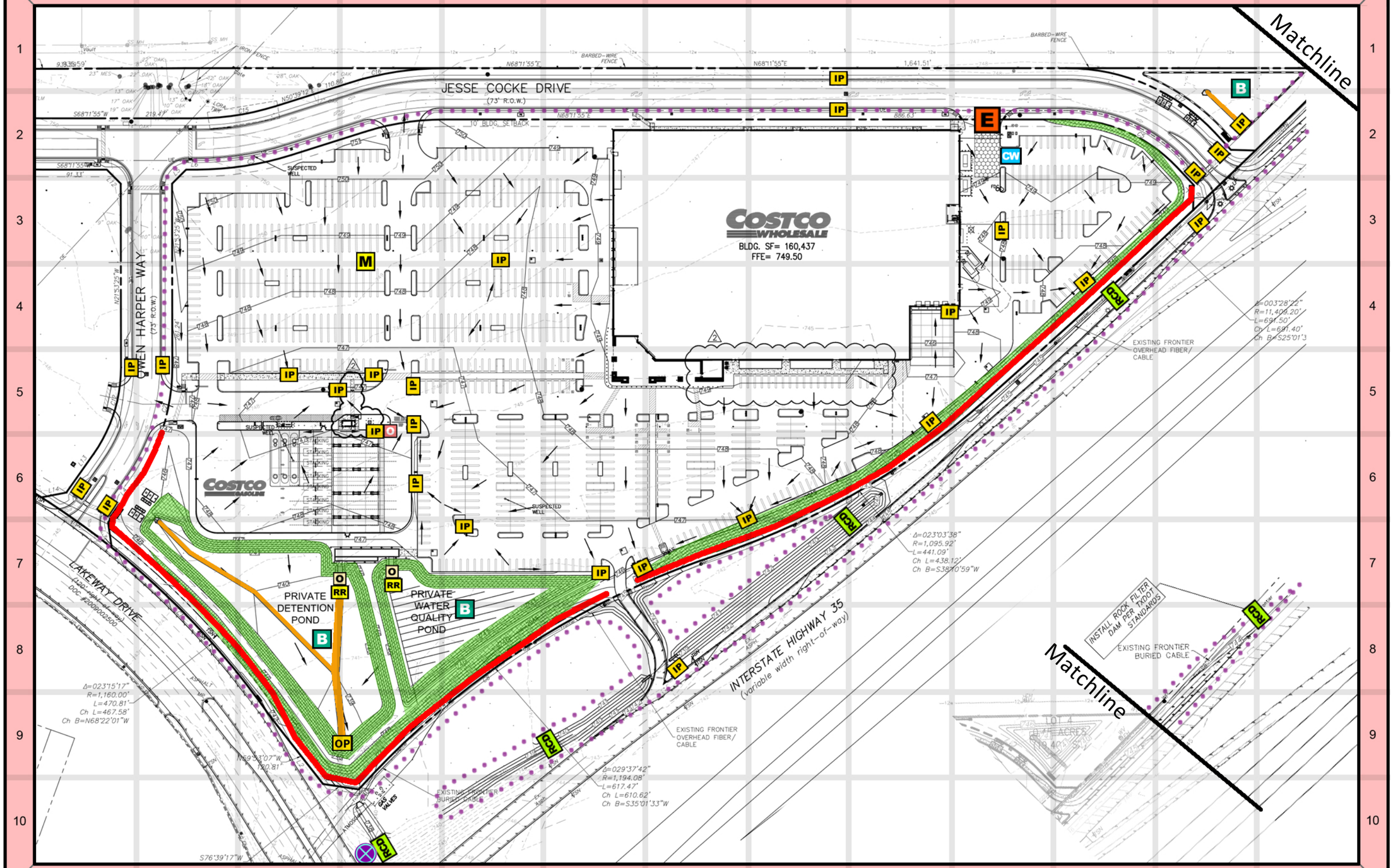
- Erosion Control Blanket
- Protective Fence
- Area of Disturbance
- Creek
- Earth Berm



All BMPs shall conform to the NCTCOG and City of Georgetown standards unless otherwise indicated in the Civil Plans.

All water flows are between 0-3% unless otherwise indicated.

Receiving stream: City of Georgetown storm drain system thence to San Gabriel/North Fork San Gabriel River.

Lat: 30.678559 Long: -97.664333

BMP MAP
COSTCO WHOLESALE CW# 17-0183
GEORGETOWN, TX

Created: 09/12/2022

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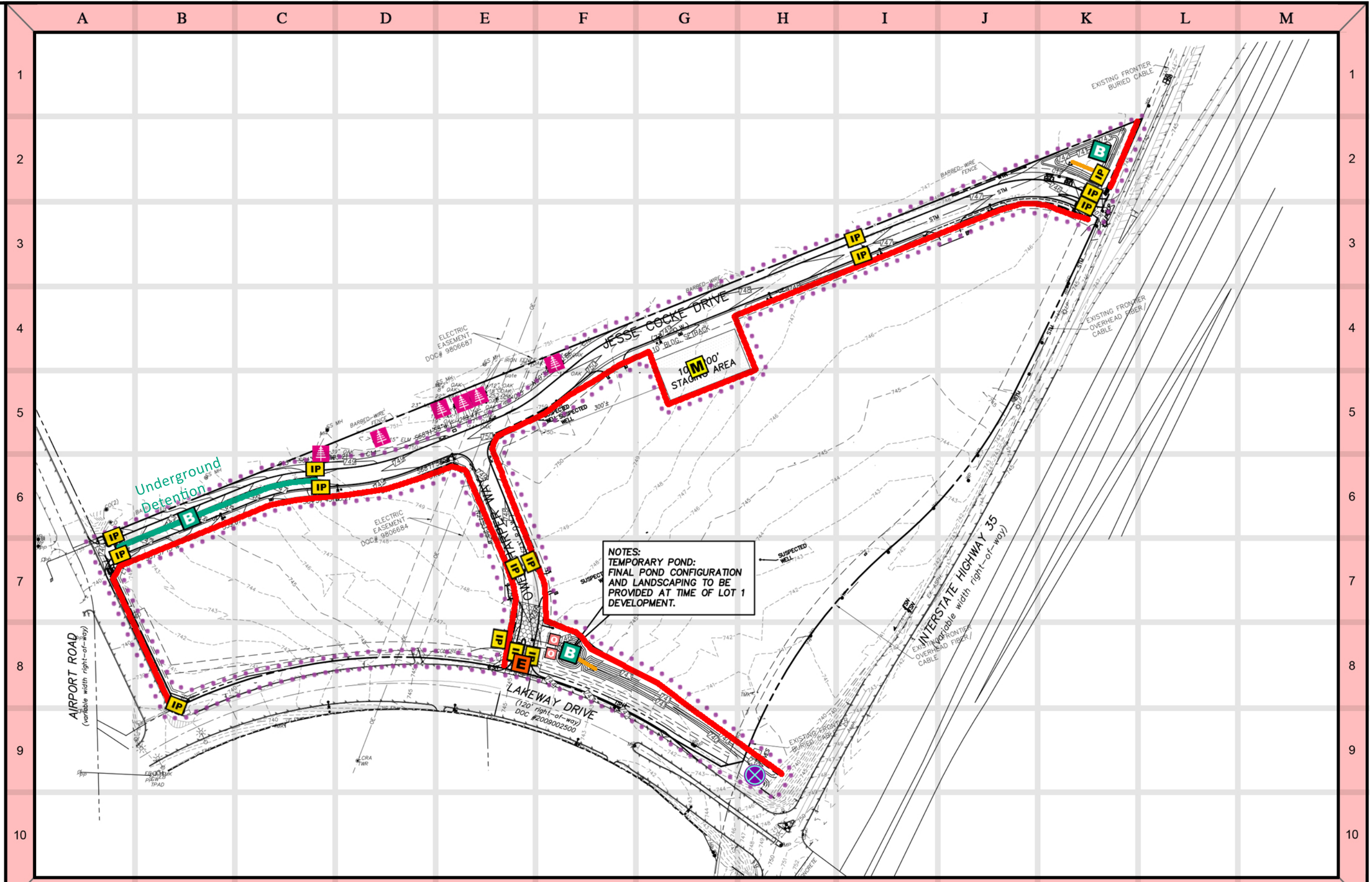

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BMP MAP
JESSE COCKE DRIVE &
OWEN HARPER WAY
GEORGETOWN, TX
Created: 09/12/2022

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3.2.1 Interim Stabilization Practices/Erosion Control (Structural BMPs)

Interim stabilization practices/ erosion controls (structural BMPs) will be implemented to prevent erosion and sedimentation from rainfall events at construction sites. The temporary controls expected to be used in the following chart will be utilized prior to construction activity commences and until the area affecting the control has been stabilized.

	Best Management Practice	Expected Use? Yes	Expected Use? No	If **Yes**, describe **where** it will be utilized. If **No**, explain **why** it will not be utilized.
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Once final stabilization is achieved, all interim structural controls shall be removed.

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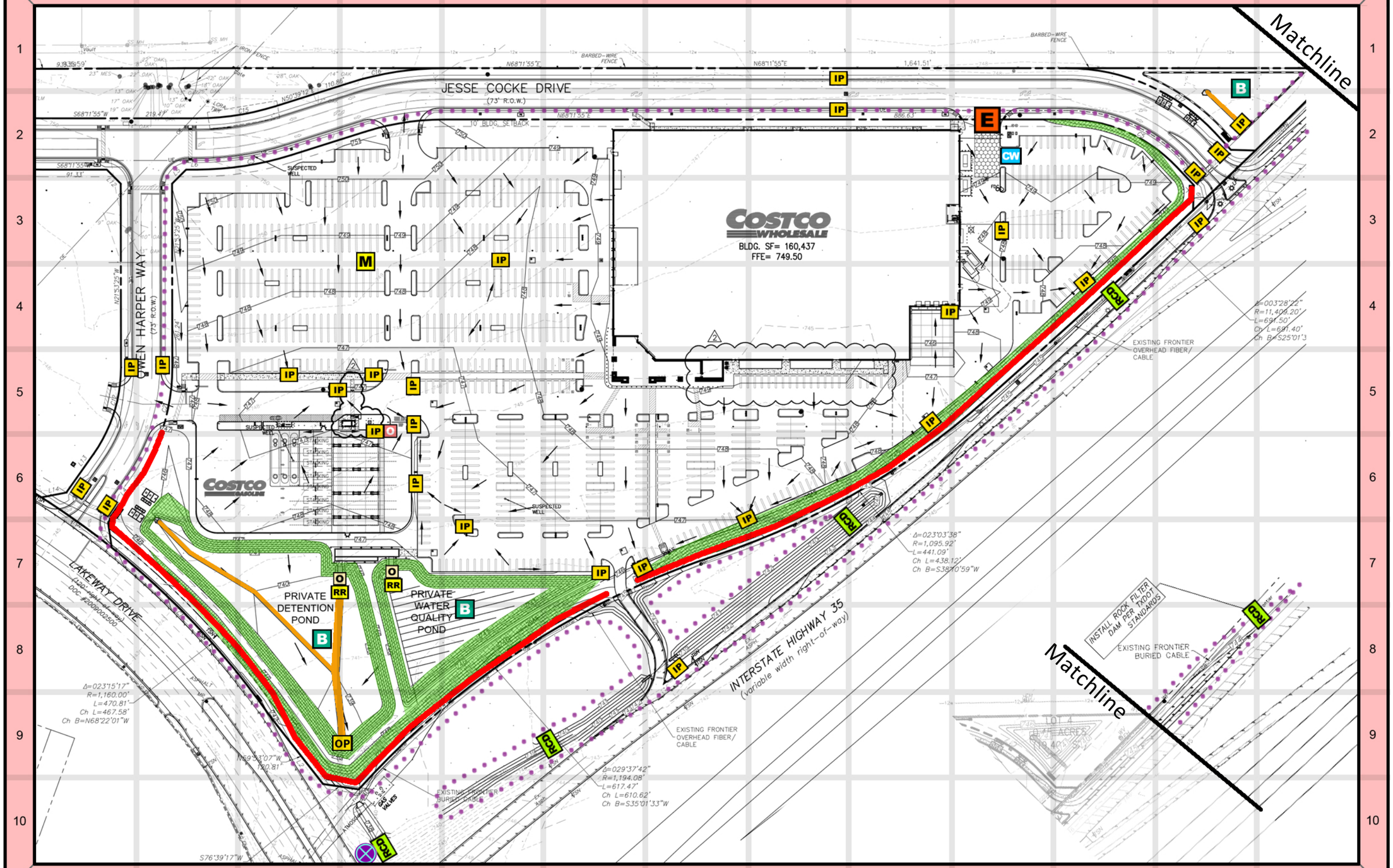

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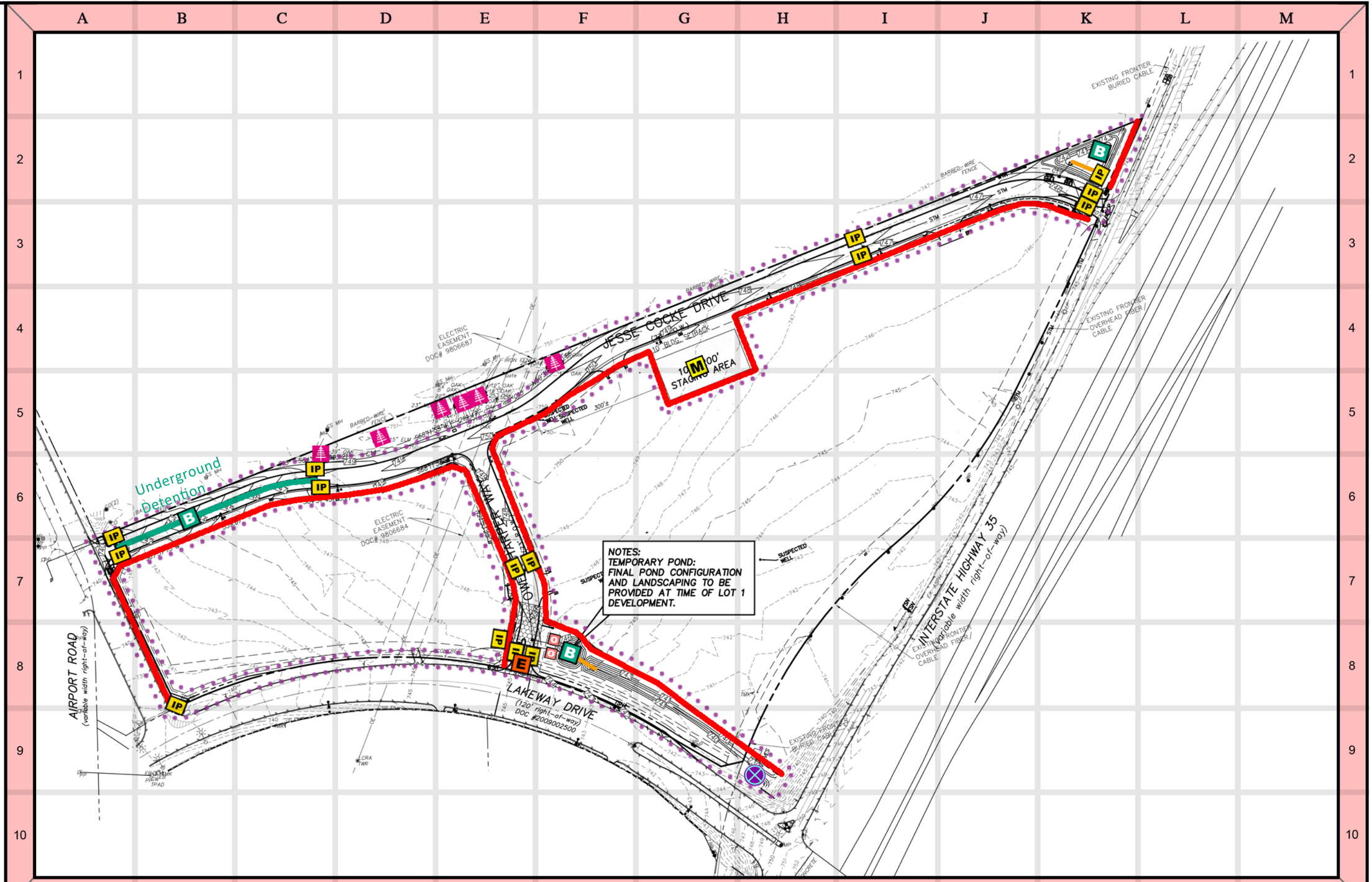
- O — Baffle Blocks
- OP — Outfall Structure/ Protection
- Wattle / Filter Tube Sorb Sox
- Silt Fence
- Erosion Control Blanket
- Protective Fence
- Area of Disturbance
- Creek
- Earth Berm



N

All BMPs shall conform to the NCTCOG and City of Georgetown standards unless otherwise indicated in the Civil Plans.

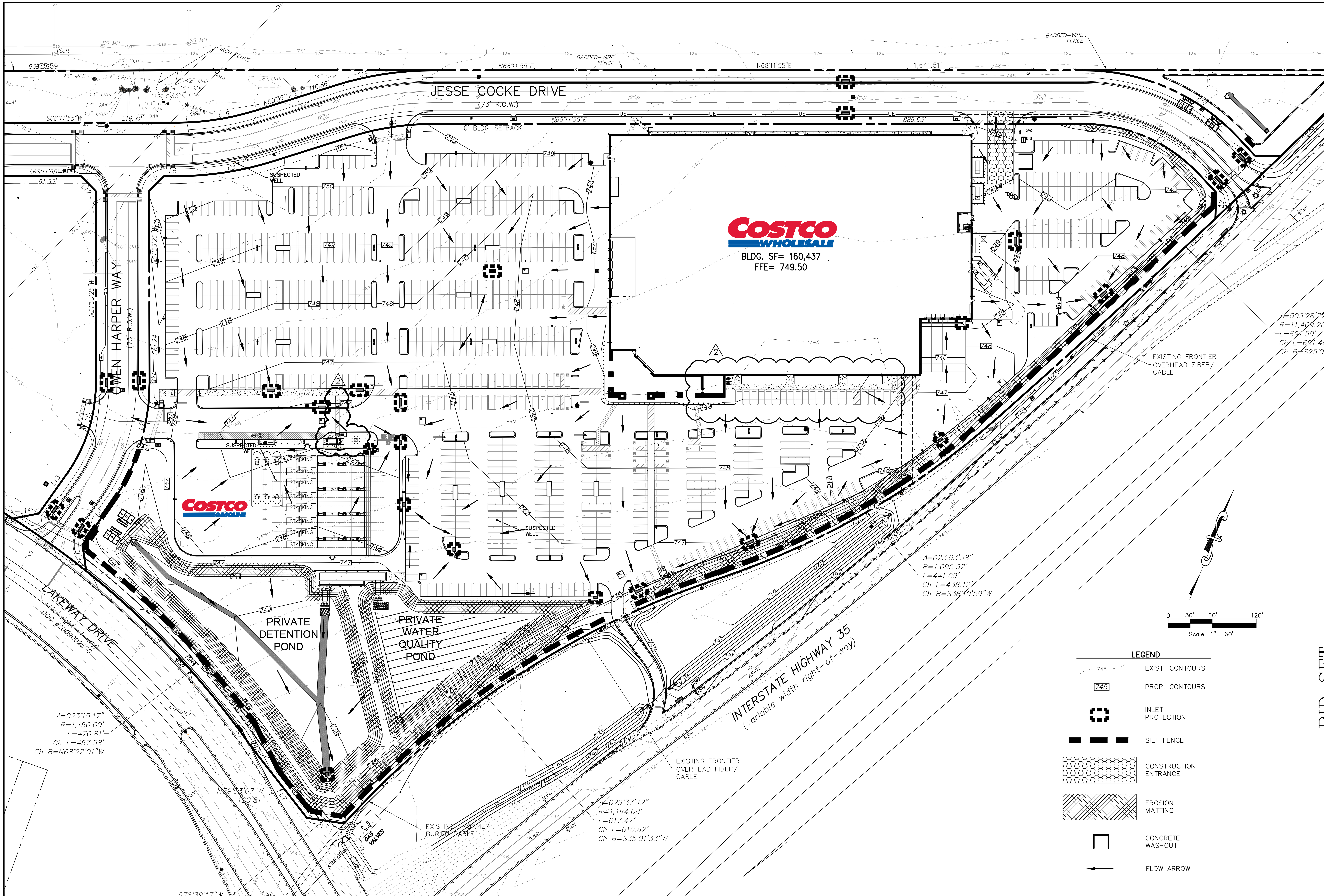
All water flows are between 0-3% unless otherwise indicated.

Receiving stream: City of Georgetown storm drain system thence to San Gabriel/North Fork San Gabriel River.

Lat: 30.678559 Long: -97.664333

BMP MAP
JESSE COCKE DRIVE &
OWEN HARPER WAY
GEORGETOWN, TX
Created: 09/12/2022

CARDINAL STRATEGIES
2770 Capital Street
Wylie, TX 75098
(469) 547-1281
www.cardinalstrategies.com



JESSE COCKE DRIVE
(73' R.O.W.)
OWEN HARPER WAY
(73' R.O.W.)
LAKEWAY DRIVE
INTERSTATE HIGHWAY 35
(variable width right-of-way)
COSTCO WHOLESALE
BLDG. SF= 160,437
FFE= 749.50
COSTCO GASOLINE
PRIVATE DETENTION POND
PRIVATE WATER QUALITY POND
SUSPECTED WELL
10' BLDG. SETBACK
EXISTING FRONTIER OVERHEAD FIBER/ CABLE
EXISTING FRONTIER BURIED CABLE
GAS VALVES
Δ=003°28'22"
R=11,409.20'
L=691.50'
Ch L=691.40'
Δ=023°03'38"
R=1,095.92'
L=441.09'
Ch L=438.12'
Ch B=S38°10'59"W
Δ=029°37'42"
R=1,194.08'
L=617.47'
Ch L=610.62'
Ch B=S35°01'33"W
Δ=023°15'17"
R=1,160.00'
L=470.81'
Ch L=467.58'
Ch B=N68°22'01"W
N68°11'55"E
1,641.51'
886.63'
S68°11'55"W
S76°39'17"W
N59°53'07"W
0' 30' 60' 120'
Scale: 1"= 60'

LEGEND

745 (dashed)	EXIST. CONTOURS
745 (solid)	PROP. CONTOURS
	INLET PROTECTION
	SILT FENCE
	CONSTRUCTION ENTRANCE
	EROSION MATTING
	CONCRETE WASHOUT
	FLOW ARROW

No.	DATE	REVISION	APPROV.
	07/14/2022	BID SET	MDC
2	05/13/2022	PERMIT REVISIONS	MDC
1	11/18/2021	PERMIT ISSUE	TCY

LAST SAVED BY: LOKEN May 11, 2022

Winkelmann & Associates, Inc.
CONSULTING CIVIL ENGINEERS ■ SURVEYORS
6750 HILLCREST PLAZA DRIVE, SUITE 325
DALLAS, TEXAS 75230
(972) 490-7090
(972) 490-7099 FAX
Texas Engineers Registration No. 89
Texas Surveyors Registration No. 100866-00

STATE OF TEXAS
MICHAEL D. CLARK
63290
REGISTERED PROFESSIONAL ENGINEER
05-13-22
THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MICHAEL D. CLARK P.E. # 63290

BID SET

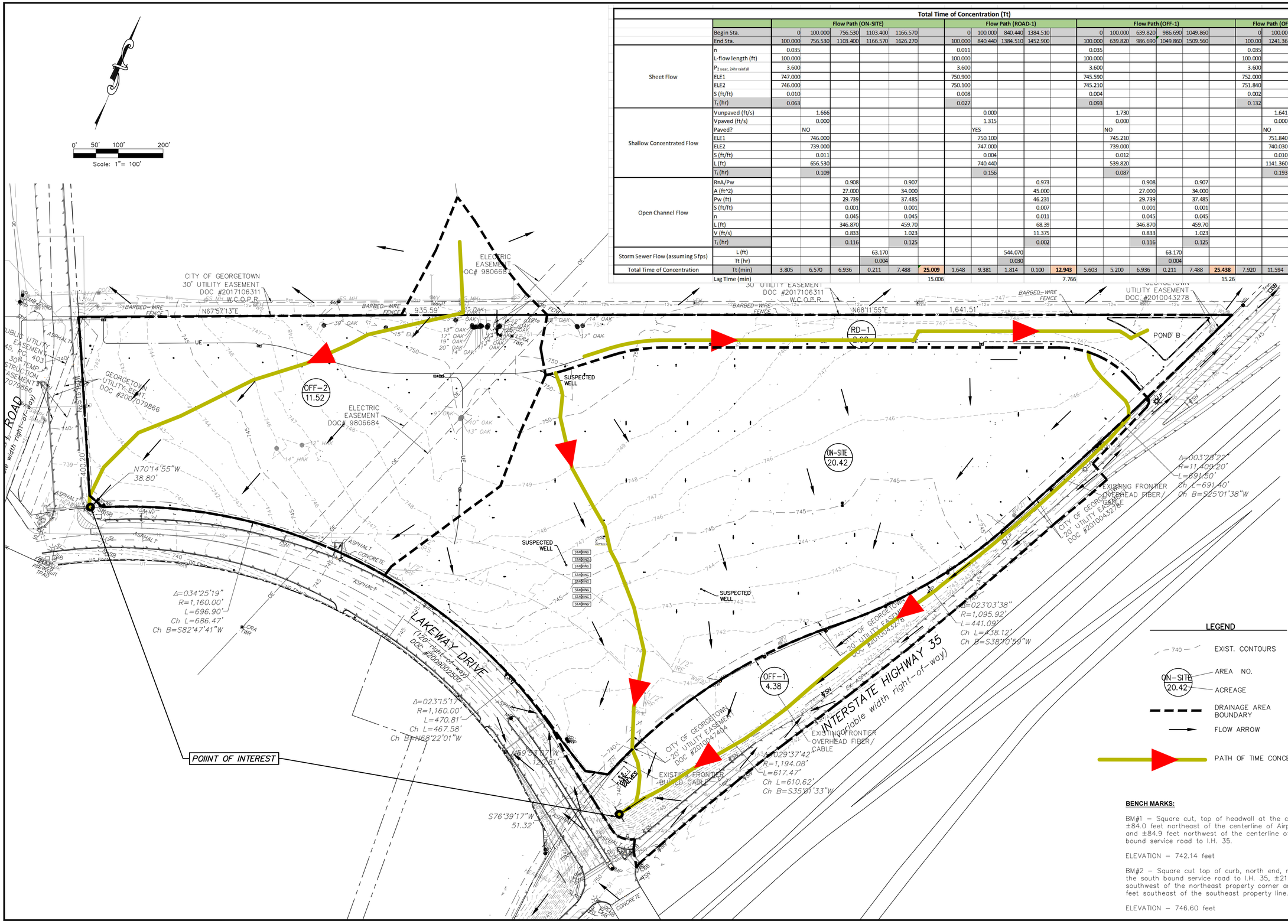
EROSION CONTROL PLAN

COSTCO WHOLESALE
GEORGETOWN, TEXAS

08-02-2021

C-9

Total Time of Concentration (Tt)																							
		Flow Path (ON-SITE)						Flow Path (ROAD-1)					Flow Path (OFF-1)						Flow Path (OFF-2)				
	Begin Sta.	0	100.000	756.530	1103.400	1166.570		0	100.000	840.440	1384.510		0	100.000	639.820	986.690	1049.860		0	100.00			
	End Sta.	100.000	756.530	1103.400	1166.570	1626.270		100.000	840.440	1384.510	1452.900		100.000	639.820	986.690	1049.860	1509.560		100.00	1241.36			
Sheet Flow	n	0.035						0.011					0.035						0.035				
	L-flow length (ft)	100.000						100.000					100.000						100.000				
	$P_{2\ year,\ 24hr\ rainfall}$	3.600						3.600					3.600						3.600				
	ELE1	747.000						750.900					745.590						752.000				
	ELE2	746.000						750.100					745.210						751.840				
	S (ft/ft)	0.010						0.008					0.004						0.002				
	T_t (hr)	0.063						0.027					0.093						0.132				
Shallow Concentrated Flow	Vunpaved (ft/s)		1.666						0.000					1.730						1.641			
	Vpaved (ft/s)		0.000						1.315					0.000						0.000			
	Paved?		NO						YES					NO						NO			
	ELE1		746.000						750.100					745.210						751.840			
	ELE2		739.000						747.000					739.000						740.030			
	S (ft/ft)		0.011						0.004					0.012						0.010			
	L (ft)		656.530						740.440					539.820						1141.360			
	T_t (hr)		0.109						0.156					0.087						0.193			
Open Channel Flow	R=A/Pw			0.908		0.907					0.973					0.908		0.907					
	A (ft^2)			27.000		34.000					45.000					27.000		34.000					
	Pw (ft)			29.739		37.485					46.231					29.739		37.485					
	S (ft/ft)			0.001		0.001					0.007					0.001		0.001					
	n			0.045		0.045					0.011					0.045		0.045					
	L (ft)			346.870		459.70					68.39					346.870		459.70					
	V (ft/s)			0.833		1.023					11.375					0.833		1.023					
	T_t (hr)			0.116		0.125					0.002					0.116		0.125					
Storm Sewer Flow (assuming 5 fps)	L (ft)				63.170					544.070							63.170						
	Tt (hr)				0.004					0.030							0.004						
Total Time of Concentration	Tt (min)	3.805	6.570	6.936	0.211	7.488	**25.009**	1.648	9.381	1.814	0.100	**12.943**	5.603	5.200	6.936	0.211	7.488	**25.438**	7.920	11.594	**19.513**		
	Lag Time (min)						15.006					7.766						15.26				11.708	



BENCH MARKS:

BM#1 – Square cut, top of headwall at the centerline, ±84.0 feet northeast of the centerline of Airport Drive and ±84.9 feet northwest of the centerline of the south bound service road to I.H. 35.

ELEVATION – 742.14 feet

BM#2 – Square cut top of curb, north end, median on the south bound service road to I.H. 35, ±212.7 feet southwest of the northeast property corner and ±65.3 feet southeast of the southeast property line.

ELEVATION – 746.60 feet

No.	DATE	REVISION
		BID SET
	07/14/2022	PERMIT REVISIONS
2	05/13/2022	PERMIT ISSUE
1	11/18/2021	

APPROV. MDC MDC TCY

LAST SAVED BY: LOKEN May 11, 2022

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05-13-22
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BID SET

EXISTING DRAINAGE AREA MAP

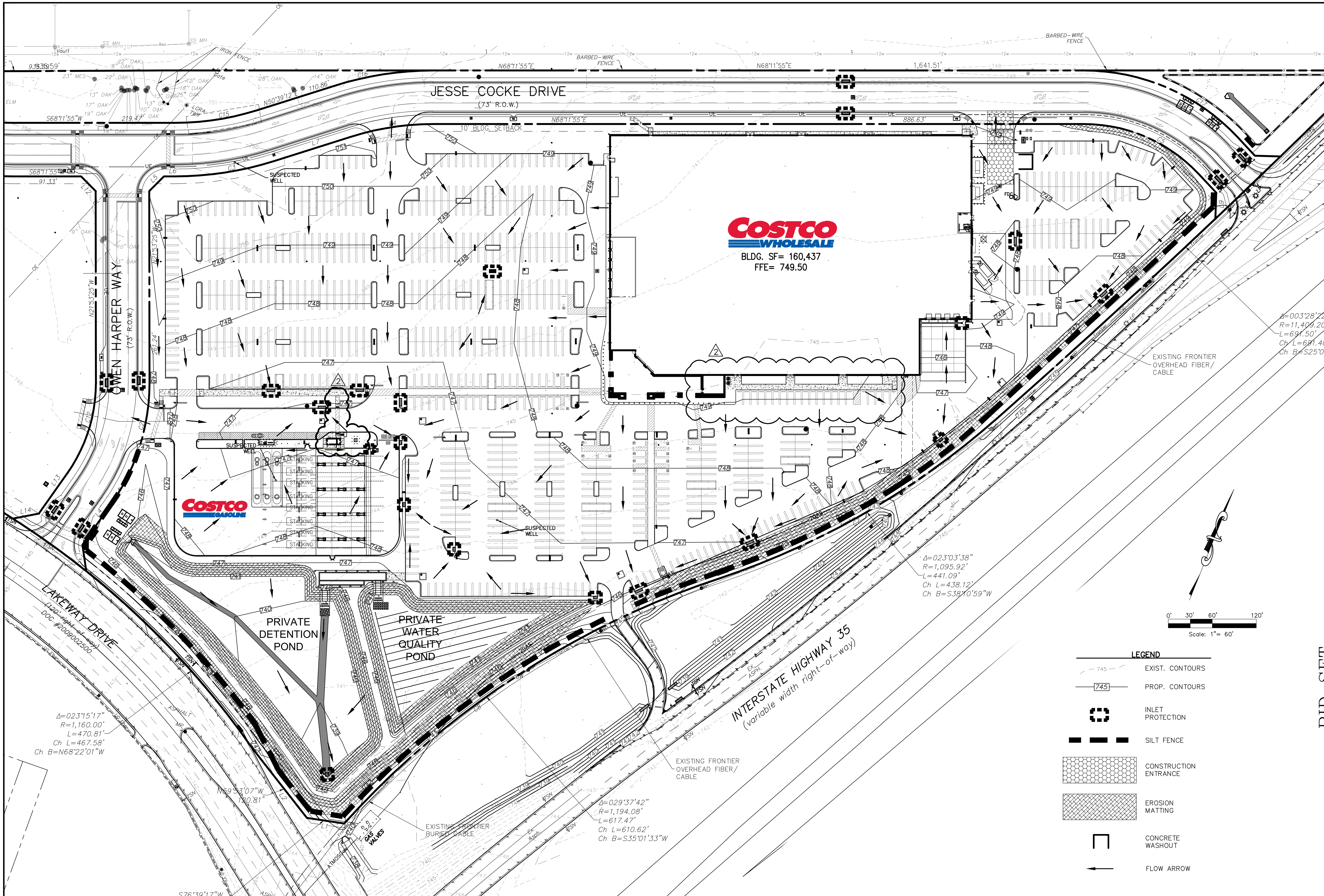
COSTCO WHOLESALE
GEORGETOWN, TEXAS

08-02-2021

C-8.1

588.27(20)

G:\588\27\ENGINEERING\Construction Plans\58827-DAM.dwg



JESSE COCKE DRIVE
(73' R.O.W.)
OWEN HARPER WAY
(73' R.O.W.)
LAKEWAY DRIVE
(120' right-of-way)
DOC #2009002500
INTERSTATE HIGHWAY 35
(variable width right-of-way)
COSTCO WHOLESALE
BLDG. SF= 160,437
FFE= 749.50
COSTCO GASOLINE
PRIVATE DETENTION POND
PRIVATE WATER QUALITY POND
SUSPECTED WELL
10' BLDG. SETBACK
N68°11'55"E
1,641.51'
886.63'
EXISTING FRONTIER OVERHEAD FIBER/ CABLE
EXISTING FRONTIER BURIED CABLE
GAS VALVES
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0' 30' 60' 120'
LEGEND
EXIST. CONTOURS
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INLET PROTECTION
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BID SET

EROSION CONTROL PLAN

COSTCO WHOLESALE
GEORGETOWN, TEXAS

08-02-2021

C-9

4.1 Inspection and Maintenance Procedures

Until the site is stabilized or until the Project is turned over to the owner, the following inspection frequency guidelines shall be followed, and the inspection frequency will be specified in Appendix F:

- Inspections of construction sites must be conducted at least once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater, or, as an alternative, the SWPPP may be developed to require that these inspections will occur at least once every seven (7) calendar days.
- Inspections must be conducted at least once every month in areas of the construction site that meet final stabilization or have been temporarily stabilized.
- Inspections of construction sites located in the Edwards Aquifer sites must be conducted at least once every seven (7) calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.
- Inspection where runoff is unlikely due to the occurrence of frozen conditions at the site, must be conducted at least once every month until thawing conditions begin to occur (See definitions for thawing conditions in Part I.B). The SWPPP must also contain a record of the approximate beginning and ending dates of when frozen conditions occurred at the site, which resulted in inspections being conducted monthly, while those conditions persisted, instead of at the interval of once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.
- In arid, semi-arid, or drought-stricken areas, inspections must be conducted at least once every month and within 24 hours after the end of a storm event of 0.5 inches or greater. The SWPPP must also contain a record of the total rainfall measured, as well as the approximate beginning and ending dates of when drought conditions occurred at the site, which resulted in inspections being conducted monthly, while those conditions persisted, instead of at the interval of once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

- The inspection procedures described in Part III.F.7.(c).i. – v of the CGP can be performed at the frequencies and under the applicable conditions indicated for each schedule option, provided that the SWPPP reflects the current schedule and that any changes to the schedule are made in accordance with the following provisions: the inspection frequency schedule can only be changed a maximum of one time each month; the schedule change must be implemented at the beginning of a calendar month; and the reason for the schedule change documented in the SWPPP (e.g., end of "dry" season and beginning of "wet" season).

MS4's may have more frequent inspection requirements.

The inspectors shall use the SWPPP Construction Inspection Checklist in Appendix F, at a minimum. Incidents of non-compliance will be indicated on this checklist. If no incidents of non-compliance are noted, then the report must certify that the site is in compliance with the SWPPP and the permit. Periodic inspections are required to ensure that all BMPs are working correctly, do not need repair and that additional BMPs are not needed. All records shall be retained for a period of three (3) years from the date the NOT is filed.

Periodic inspections will be conducted to maintain the BMPs as described in the Plan. Areas of the site to be inspected include such things as: disturbed areas that have not been finally stabilized, areas used for material storage that are exposed to precipitation, all interim-temporary-permanent stabilization practices, offsite support areas (if any), etc.

If an inspection is performed when discharges from the construction site are occurring: identify all discharge points at the site, observe and document the visual quality of the discharge (i.e., color, odor, floating, settled, or suspended solids, foam, oil sheen, and other such indicators of pollutants in stormwater).

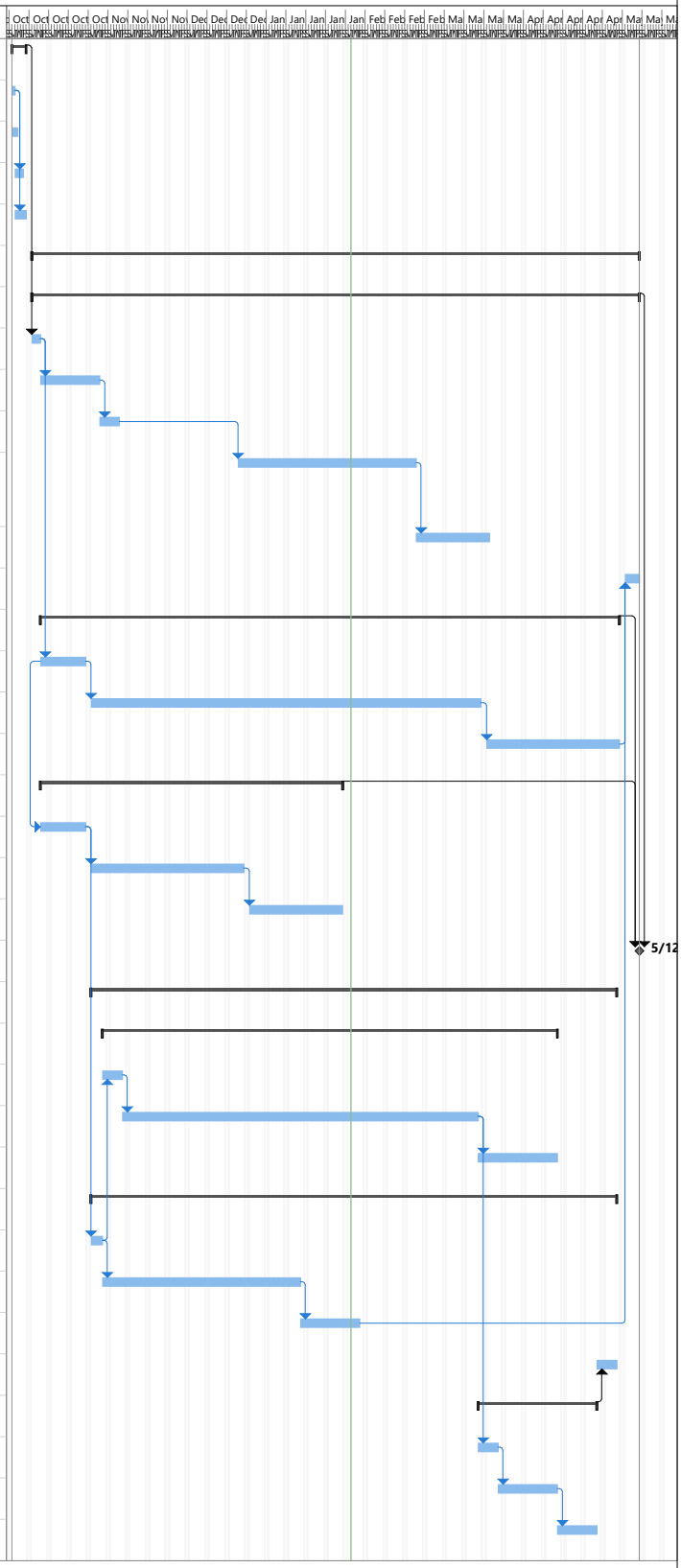
If an inspection requires modification of an existing BMP, an additional BMP or other changes to better control pollutants in runoff, the modification will be recorded on the Update Form to this SWPPP in Appendix G, no less than 7 days after the inspection.

Maintenance, corrections, or repairs to the structural controls shall be completed prior to the next anticipated storm event. If this is not possible, then it shall be scheduled as soon as practicable. Controls that have been intentionally disabled, run-over, removed, or otherwise rendered ineffective shall be replaced or corrected immediately upon discovery.

The inspections are to be completed and signed by authorized, qualified personnel. Such personnel shall be familiar with the SWPPP, the requirements of the permit in Appendix K and sediment and erosion control practices. The qualifications and experience of the inspector will be recorded in Appendix F.

Costco Georgetown, TX
Schedule of Interim and Permanent Soil Stabilization Practices

ID	Task Mode	Task Name	Duration	Start	Finish
1		**Initial BMP Install**	**5 days**	**Mon 10/3/22**	**Fri 10/7/22**
2		Existing Inlet Protection Install	1 day	Mon 10/3/22	Mon 10/3/22
3		Site Entrance Installation	2 days	Mon 10/3/22	Tue 10/4/22
4		Rock Check Dam Install	3 days	Tue 10/4/22	Thu 10/6/22
5		Silt Fence Install	4 days	Tue 10/4/22	Fri 10/7/22
6		**Costco Property**	**155 days**	**Mon 10/10/22**	**Fri 5/12/23**
7		**Detention & Filtration Ponds**	**155 days**	**Mon 10/10/22**	**Fri 5/12/23**
8		Clearing	3 days	Mon 10/10/22	Wed 10/12/22
9		Rough Grade	15 days	Thu 10/13/22	Wed 11/2/22
10		Temp Seeding/Stabilization	5 days	Thu 11/3/22	Wed 11/9/22
11		Restart Grading Following Utility Install	45 days	Thu 12/22/22	Wed 2/22/23
12		Stabilization	18 days	Thu 2/23/23	Mon 3/20/23
13		Remove BMPs and Activate Storm	5 days	Mon 5/8/23	Fri 5/12/23
14		**Parking Lot**	**147 days**	**Thu 10/13/22**	**Fri 5/5/23**
15		Clearing	12 days	Thu 10/13/22	Fri 10/28/22
16		Grading Activities	100 days	Mon 10/31/22	Fri 3/17/23
17		Stabilization	35 days	Mon 3/20/23	Fri 5/5/23
18		**Building**	**77 days**	**Thu 10/13/22**	**Fri 1/27/23**
19		Clearing	12 days	Thu 10/13/22	Fri 10/28/22
20		Grading Activities	40 days	Mon 10/31/22	Fri 12/23/22
21		Stabilization	25 days	Mon 12/26/22	Fri 1/27/23
22		Final Stabilization - Costco Property	0 days	Fri 5/12/23	Fri 5/12/23
23		**Public Road Work**	**134 days**	**Mon 10/31/22**	**Thu 5/4/23**
24		**Jesse Cocke Drive**	**115 days**	**Fri 11/4/22**	**Thu 4/13/23**
25		Clearing	5 days	Fri 11/4/22	Thu 11/10/22
26		Grading Activities	90 days	Fri 11/11/22	Thu 3/16/23
27		Final Stabilization - Jesse Cocke	20 days	Fri 3/17/23	Thu 4/13/23
28		**Owen Harper Way**	**134 days**	**Mon 10/31/22**	**Thu 5/4/23**
29		Clearing	4 days	Mon 10/31/22	Thu 11/3/22
30		Grading Activities	50 days	Fri 11/4/22	Thu 1/12/23
31		Final Stabilization - Owen Harper	15 days	Fri 1/13/23	Thu 2/2/23
32		Remove BMPs and Activate Storm	5 days	Fri 4/28/23	Thu 5/4/23
33		**TxDOT ROW**	**30 days**	**Fri 3/17/23**	**Thu 4/27/23**
34		Demo/Clearing	5 days	Fri 3/17/23	Thu 3/23/23
35		Grading Activities	15 days	Fri 3/24/23	Thu 4/13/23
36		Final Stabilization - TxDOT	10 days	Fri 4/14/23	Thu 4/27/23



Note: Bare soils are be seeded or otherwise stabilized within 14 calendar days after final grading or where construction activity has temporarily ceased for more than 21 days

TABLE 1 - Major Grading Activities and BMP Installation Schedule

Phasing	Proposed Start Date	Proposed End Date	Actual Start Date	Actual End Date	Comments
Silt Fence					
Construction Entrance(s)					
Inlet Protection					
Site Grading					
Rock Check Dam					
Rip Rap					
Detention Pond/Sedimentation Basin					
Drainage & Utility Installations					
Underground Detention					
Paving					
Erosion Control Matting					
Baffle Blocks					
Wattle					
Building Construction					
Landscaping					
Site Stabilization					
Other:					

Note: Bare soils are be seeded or otherwise stabilized within 14 calendar days after final grading or where construction activity has temporarily ceased for more than 21 days

AGENT AUTHORIZATION FORM

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Dwight Larsen,
Print Name

AVP, Gasoline Operations and Compliance,
Title - Owner/President/Other

of Costco Wholesale,
Corporation/Partnership/Entity Name

have authorized Jay Grubb, M. Alexia Inigues, Chealsea Biggs, Jennifer Manning, and Jacqueline Choe
Print Name of Agent/Engineer

of Barghausen Consulting Engineers, Inc.
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

10-10-22
Date

THE STATE OF WA §

County of KING §

BEFORE ME, the undersigned authority, on this day personally appeared Dwight Larsen known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 10th day of October, 2022.

STEPHANIE A GRANT NOTARY PUBLIC 209083 COMMISSION EXPIRES 8-19-23 STATE OF WASHINGTON

Stephanie A Grant
NOTARY PUBLIC

Stephanie A. Grant
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 8-19-23

APPLICATION FEE FORM

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Costco Warehouse (Loc. No. 1385)
Regulated Entity Location: 2201A North Interstate Highway 35, Georgetown, TX 78628
Name of Customer: M. Alexia Inigues, Authorized Agent for Costco Wholesale
Contact Person: M. Alexia Inigues Phone: (425) 251-6222
Customer Reference Number (if issued):CN _____
Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays ☐ Travis ☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment**. This payment is being submitted to:

☒ Austin Regional Office
☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	*Size*	*Fee Due*
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	2 Tanks	$ 1,300
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____ Date: 4/28/2023

TCEQ-0574 (Rev. 02-24-15)

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

Project	*Project Area in Acres*	*Fee*
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

TCEQ CORE DATA FORM

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided.)*

☒ New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application.)*

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN		RN

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	

☒ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
Costco Wholesale	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
		91-1223280	103391843

11. Type of Customer:	☒ Corporation	☐ Individual	Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other		☐ Sole Proprietorship	☐ Other:

12. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☒ 501 and higher

13. Independently Owned and Operated?
☐ Yes ☒ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:	c/o Barghausen Consulting Engineers, Inc.						
	18215 72nd Avenue South						
	City	Kent	State	WA	ZIP	98032	ZIP + 4

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	costco@barghausen.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(425) 251-6222		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected below this form should be accompanied by a permit application)*

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Costco Warehouse (Loc. No. 1385)

23. Street Address of the Regulated Entity: *(No PO Boxes)*								
	2201A N IH 35							
	City	Georgetown	State	TX	ZIP	78628	ZIP + 4	
24. County	Williamson							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:					
26. Nearest City			State	Nearest ZIP Code	
27. Latitude (N) In Decimal:		28. Longitude (W) In Decimal:			
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)	31. Primary NAICS Code (5 or 6 digits)	32. Secondary NAICS Code (5 or 6 digits)
5331		452311	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Members-only wholesale grocery and homegoods sales

34. Mailing Address:	c/o Barghausen Consulting Engineers, Inc.						
	18215 72nd Avenue South						
	City	Kent	State	WA	ZIP	98032	ZIP + 4

35. E-Mail Address:	costco@barghausen.com

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(425) 251-6222		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☒ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Steven Nelson	41. Title:	Project Coordinator

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(425) 251-6222		( ) -	snelson@barghausen.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Barghausen Consulting Engineers, Inc.	Job Title:	Authorized Agent for Costco Wholesale
Name *(In Print)*:	M. Alexia Inigues	Phone:	(425) 251- 6222
Signature:		Date:	4/28/2023