Alexis Coulter
Project Manager
Marketing Business Unit

Chevron Environmental Management Company
6101 Bollinger Canyon Road
San Ramon, CA 94583
Tel (925) 790-6441
acoulter@chevron.com

Alameda County Health Care Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Former Chevron Service Station No. 91153
3135 Gibbons Drive (3126 Fernside Blvd)
Alameda, Cailfornia

I have reviewed the attached report titled *Construction Quality Assurance Plan*.

The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by Conestoga-Rovers & Associates, upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Sincerely,

Alexis Coulter
Project Manager

Attachment: *Construction Quality Assurance Plan*

CONESTOGA-ROVERS
& ASSOCIATES

5900 Hollis Street, Suite A
Emeryville, California 94608
Telephone: (510) 420-0700 Fax: (510) 420-9170
http://www.craworld.com

February 13, 2015 Reference No. 311642

Mr. Mark Detterman
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502 6577

Re: Construction Quality Assurance Plan
Former Chevron Service Station 91153
3135 Gibbons Drive (3126 Fernside Boulevard)
Alameda, California
Fuel Leak Case No. RO0000341

Dear Mr. Mark Detterman:

Conestoga-Rovers & Associates (CRA) prepared this *Construction Quality Assurance Plan* on behalf of Chevron Environmental Management Company (Chevron) for the site referenced above. This was prepared in response to a letter by Alameda County Environmental Health (ACEH) dated December 16, 2014.

CRA contacted Land Science Technologies (LST) of San Clemente, California to request documentation regarding Quality Assurance that the Retro-Coat ™ vapor seal is applied to LST specifications. The LST documentation is provided as Attachment B. LST's quality assurance requires the use of a certified applicator. The certification process includes LST training the applicator in the proper methods to install the Retro-Coat ™. Upon ACEH approval, America Industrial Coatings (AIC) of Esparto, California would be hired to complete the Retro-Coat ™ application. Presented within Attachment B is a letter from LST certifying AIC as a certified Retro-Coat ™ applicator. Also included in Attachment B is a post Retro-Coat ™ application report by AIC for a previous site where AIC performed work. A similar post application report would be provided to ACEH following a Retro-Coat ™ application at this site.

CONESTOGA-ROVERS & ASSOCIATES

February 13, 2015 Reference No. 311642

Please contact Nathan Lee at (925) 849-1003 if you have any questions or require additional information.

Regards,

CONESTOGA-ROVERS & ASSOCIATES

Nathan Lee

Nathan Lee, PG 8486

NL/mws/26
Encl.

Attachment A Agency Letter
Attachment B Quality Assurance Documentation

cc: Mrs. Alexis Coulter, Chevron
Mr. Mark Hom, Property Owner

ATTACHMENT A

AGENCY LETTER

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

December 16, 2014

Ms. Alexis Coulter
Chevron Environmental Management Co.
6101 Bollinger Canyon Road
San Ramon, CA 94583
(sent via electronic mail to acoulter@chevron.com)

Mr. Mark Hom and Anna Cheng
3135 Gibbons Drive
Alameda, CA, 94501-1749
(sent via electronic mail to mark@galvinhom.com)

JL and Jane Bolton
Address Unknown

John Thompson
Address Unknown

Shirley & Ruben Cohen
Address Unknown

Gary & Jerri Fenstermaker
Address Unknown

Claire Cepollina & Fred Martini
Address Unknown

Subject: Request for IRAP Addendum, Data Gap Work Plan, and Updated Draft Feasibility Study / Corrective Action Plan; Fuel Leak Case No. RO0000341; (Global ID # T0600100330); Chevron #9-1153, (3126 Fernside Blvd), 3135 Gibbons Drive, Alameda, CA 94501

Dear Ms. Fischer, Mr. Hom, and Ms. Cheng:

Alameda County Environmental Health (ACEH) staff has reviewed the case file including the *Vapor Mitigation Plan,* dated October 3, 2014, and the *Third Quarter 2014 Groundwater Monitoring and Sampling Report,* dated November 21, 2014. Both reports were prepared and submitted on your behalf by Conestoga-Rovers & Associates (CRA). Thank you for the submittal of the reports.

To further discuss the proposed work and refine the path forward at the site, ACEH requested a meeting with you and CRA, and met on December 11, 2014. Based on the review of the case file and the results of the meeting, ACEH requests that you address the following technical comments and send us the documents requested below.

TECHNICAL COMMENTS

1. **Interim Remedial Action Plan Addendum -** The Interim Remedial Action Plan (IRAP) proposes to mitigate vapor intrusion with the use of the Retro-Coat ™ barrier by Land Science Technologies in order to seal the concert garage floor from subsurface vapors. Because the process requires the filling of slab cracks and the destruction of existing vapor wells, collection of subslab vapors will not be possible after use of the product. As discussed at the meeting, Land Science created the product to mitigate vapor intrusion of Tetrachloroethene (PCE) and Trichloroethene (TCE) through concrete, and has not specifically evaluated the product against vapor intrusion of petroleum hydrocarbon compounds (especially benzene, toluene, ethylbenzene, total xylenes, and etc.). However, CRA has indicated that Land Science Technologies has stated that the product is expected to similarly block petroleum hydrocarbon volatile compounds based on the chemical properties of the compounds.

   ACEH is in general agreement with the proposed use of the product as a mitigation tool; however, requests a Construction Quality Assurance (CQA) Plan (as a IRAP Addendum) by the date identified below. The CQA Plan is intended to guide construction of the barrier in order to ensure the installation of the product is to the manufacture's specifications.

2. **Data Gap Work Plan** – As discussed in the December 11, 2014 meeting, a data gap work plan is required to fill Low Threat Closure Policy (LTCP) data gaps remaining at the site, including those identified in the July 10, 2014 Site Conceptual Model, and those identified in the meeting, including but not limited to:

- **Extent of Free Phase** – To determine if Free Phase (FP) extends offsite with the installation of a well in the vicinity of the existing unused recovery trench. The recovery trench and well RW-1 were discussed in the meeting, and it was agreed are not capable of filling this data gap.
- **Naphthalene and PAH Analytical Data** – A waste oil underground storage tank (UST) was removed from the subject site and analysis for naphthalene and poly-aromatic hydrocarbons (PAHs) have not been conducted in accordance with the LTCP policy. Analysis for naphthalene has additionally not been conducted in association with the former gasoline USTs at the site.

Please submit a work plan by the date identified below. This request can be combined with pilot studies required for the next technical comment.

3. **Updated Draft Feasibility Study / Corrective Action Plan** - As additionally discussed in the December 11, 2014 meeting and several previous letters (March 24, 2014 and August 29, 2014), an updated draft Feasibility Study / Corrective Action Plan (FS/CAP) is requested to address corrective actions required at the site due to the inability of the site to meet the Vapor Intrusion to Indoor Air and the Direct Contact and Outdoor Air Exposure criterions. Please submit a draft FS/CAP by the date identified below.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with the specified file naming convention below, according to the following schedule:

- **February 16, 2015** – Construction Quality Assurance Plan
  File to be named: RO341_IRAP_ADEND_R_yyyy-mm-dd
- **March 16, 2015** – Data Gap Work Plan
  File to be named: RO341_WP_R_yyyy-mm-dd
- **March 16, 2015** – Draft FS/CAP (If appropriate, the Work Plan be combined with the draft FS/CAP)
  File to be named: RO341_FEASSTUD_R_yyyy-mm-dd

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm.

If you have any questions, please call me at (510) 567-6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,

Digitally signed by Mark E. Detterman
DN: cn=Mark E. Detterman, o, ou, email, c=US
Date: 2014.12.16 14:00:59 -08'00'

Mark E. Detterman, PG, CEG
Senior Hazardous Materials Specialist

Enclosures: Attachment 1 – Responsible Party (ies) Legal Requirements / Obligations
Electronic Report Upload (ftp) Instructions

cc: N. Scott MacLeod, Conestoga-Rovers & Assoc., 5900 Hollis Street, Suite A, Emeryville, CA 94608
(sent via electronic mail to smacleod@craworld.com)
Nathan Lee, Conestoga-Rovers & Assoc., 5900 Hollis Street, Suite A, Emeryville, CA 94608
(sent via electronic mail to nlee@craworld.com)

Dilan Roe, ACEH (sent via electronic mail to dilan.roe@acgov.org)
Mark Detterman, ACEH (sent via electronic mail to mark.detterman@acgov.org)
Electronic File, GeoTracker

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**REVISION DATE:** May 15, 2014
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted.**
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to deh.loptoxic@acgov.org
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

ATTACHMENT B

QUALITY ASSURANCE DOCUMENTATION

Vapor Intrusion Coating System for Existing Structures

Product Description

The **Retro-Coat™ (patent pending)** Vapor Intrusion Coating System is a complete product line that consists of chemically resistant materials to properly protect existing structures from the threat of contaminant vapor intrusion without the need for additional concrete protection. Developed by the R&D team of Land Science Technologies™, the Retro-Coat system has been subjected to rigorous testing procedures to prove its ability to combat the most aggressive chemical vapors. The main component of the Retro-Coat system is the **Retro-Coat** coating which is a two part, odorless, no VOC, 100% solids coating.

Retro-Coat finishes to a high gloss, easy-to-clean surface that is impervious to vapor and moisture transmission. Available in a variety of colors, **Retro-Coat** can be applied on damp as well as dry concrete, concrete masonry units, tile, brick and metal. For enhanced slip resistance, a suitable aggregate can be added. In addition, other additives or materials can be utilized to achieve a desired performance or aesthetic look.

Typical Application

Retro-Coat is suitable as a barrier to block contaminated vapors from entering existing structures. Particular uses include coating the horizontal surfaces of existing structures where contamination under, or adjacent to, a structure can potentially migrate inside the structure and create a vapor encroachment condition. This condition is most commonly found when the existing structure was operated as a dry cleaner, gas station, manufacturing facility or located in close proximity to any structure where carcinogenic chemicals were utilized.

A typical application consists of a minimum 20 mil thick system; consisting of two 10 mil coats of **Retro-Coat** at 160 SF/gallon per coat and is recommended along with a 6 mil coat of **Retro-Coat PRIMER.** The typical 20 mil application can withstand forklift traffic, other machinery and even act as secondary containment. However, if **Retro-Coat** may be exposed to more harsh conditions over a longer period of time, thicker applications ranging from 60 mil to ¼ -inch may be more suitable.

In either application, **Retro-Coat** is a traffic bearing surface and does not need a protective course placed over it.

Retro-Coat Advantages

- ***Our R&D team developed all of the Retro-Coat system components specifically for vapor intrusion protection in existing structures***
- ***Retro-Coat is resistant to both TCE and PCE, the vast majority of coatings cringe at such aggressive chemicals***
- ***Retro-Coat is a wearing surface, meaning no additional concrete protection is necessary***
- ***No odor and fast cure time reduce building downtime***
- ***Carpet, tile, linoleum or other floor coverings can be applied directly over Retro-Coat, if desired***
- ***Eliminates the need to remove the existing slab and when combined with in-situ treatment, lowers overall remediation cost***
- ***Retro-Coat can increase the performance of an existing active sub-slab depressurization system***
- ***Retro-Coat can aid in the retiring of existing active systems***
- ***Available and installed by Land Science Technologies certified contractors***

Completed surface preparation consisting of shot blasting, Retro-Coat PREP to fill joints and cracks and a 6 mil application of Retro-Coat PRIMER

Application of Retro-Coat SEALANT to a 20 mil total thickness

Installation

Particular care must be taken to follow those instructions precisely to assure proper installation. These instructions pertain to a standard 20 mil application; please contact us if the desired application is different.

1. New concrete should be allowed to cure a minimum of 28 days and/or be checked with a rubber mat or plastic sheet to ensure adequate curing time has occurred.
2. All surfaces to be covered should be power washed, shot blasted, acid etched, scarified or sanded to present a clean, sound substrate to which to bond to. The prepared surface should have a ph of 7.
3. Any bugholes and cracks wider than 1/8" should be filled with **Retro-Coat PREP** and allowed to dry before coating. More severely damaged concrete or other special conditions will require the proper **Retro-Coat** product.
4. When installing the standard 20 mil application of **Retro-Coat**, apply a 6 mil coat of **Retro-Coat PRIMER** and allow to dry prior to applying the initial coat of **Retro-Coat**. Priming may not be necessary when **Retro-Coat** is applied to a thickness greater than 20 mils. On new concrete or old concrete with an open porosity and on wood surfaces apply **Retro-Coat PRIMER** and allow to dry.
5. The two **Retro-Coat** ingredients should be mixed in the prescribed ratios, using a low speed "jiffy-style" mixer, (maximum 750 rpm). Mix Part A for about 1 minute then, add Part B and mix until uniform in color and consistency (at least one additional minute.)
6. Do not mix less than the prescribed amount of any ingredient or add any solvent to the mix.
7. Apply the mixed **Retro-Coat** material with a short nap roller, a squeegee or a brush. Apply approximately 160 SF per gallon per coat to achieve 10 mils of coating.
8. Apply a second coat while the first coat is still tacky if using spike shoes or dry enough to walk on, but before 7 hours at 75^{o}F. If the first coat has set and is no longer tacky then the first coat should be sanded before recoating.
9. A suitable aggregate may be broadcast onto the surface after backrolling to provide more anti-slip profile to the finished surface. It is advisable to test various types and sizes of aggregate to achieve the desired finished profile.

Product Specification

The specified area shall receive an application of **Retro-Coat** as manufactured by **Land Science Technologies, San Clemente, California.** The material shall be installed by precisely following the manufacturer's published recommendations pertaining to surface preparation, mixing and application. The material shall be a low odor, two part, solvent free 100% solids, high gloss flexibilized system with good resilience to resist thermal and mechanical shock. It should be able to be roller applied at a minimum of 10 mils thickness per coat on vertical surfaces without sagging (at ambient conditions). The system must adhere to damp as well as dry concrete, wood, metal tile, terrazzo and sound existing epoxy and urethane coatings. It shall have tensile elongation of at least 6.0% when tested under ASTM-638. Its bond strength to quarry tile shall exceed 1000 psi when tested with an Elcometer pull test. Its hardness shall not exceed 83, as measured on the Shore D scale. The system shall be unaffected by oils and greases and shall withstand chemical attack for at least 72 hours against 98% sulfuric, 50% hydrofluoric acid, glacial acetic acid and acrylonitrile.

Precautions

1. **This is a fast reacting product; immediately pour onto floor after mixing and spread with notched squeegee. Recoat window without sanding at 70°F: 8 hours**
2. **A severe skin and eye irritant; check MSDS before use**
3. **Do not apply below 50°F**

Note: Failure to follow the above instruction, unless expressly authorized by a Land Science Technologies Representative, will void our material warranty.

Chemical Resistance

Retro-Coat™ is considered chemically resistant to neat concentrated acids, caustics and solvents. For permeation or diffusion coefficients please contact Land Science Technologies.

Physical Properties

Tensile Strength	(ASTM D-638)	: 9800 psi	Bond Strength to Quarry Tile	: >1000 psi
Tensile Elongation	(D-638)	: 6.0%	Vapor Transmission Rate (E-96)	: .027 perms
Flexural Strength	(D-790)	: 7035 psi	Water Absorption (D-570)	: 0.2% in 24hrs.
Hardness, Shore D	(D-2240)	: 83	Taber Abrasion (D-1044)	: 86 mg loss.
Gardner Impact Strength	(D-2794)	: 80 in. lbs.	60° Gloss	: 100

Physical Characteristics

Density, lbs/gal.
Pt. A : 11.0
Pt. B : 8.9
A&B Mixed : 9.3

Viscosity @ 77°F, cps
Pt. A : 18,400
Pt. B : 500
A&B Mixed : 4800

Mixing Ratios — **By Volume** — **By Weight**
Pt. A : Pt. B — **2:1** — **2.3:1**

Curing Times @	**50° F**	**77°F**	**90°F**
Pot Life	35 min.	30 min.	20 min.
Working Times	20 min.	20 min.	15 min.
Hard, Foot Traffic	14 hrs.	7 hrs.	3 ½ hrs.

Maximum hardness and chemical resistance are achieved after 7 days at 77°F

Color Availability

Standard colors: beige, black, blue, dark gray, green, gray, red, white, yellow

Shelf Life: 1 Year at 77°F in unopened containers

Packaging and Coverage Rates *(for 20 mil coverage)*

4 Gallon Kit	:	320 SF
20 Gallon Kit	:	1600 SF
100 Gallon Kit	:	8,000 SF

Land Science™ Technologies

1011 Calle Sombra - Ste. 110, San Clemente, CA 92673 P.949.366.8000 F.949.366.8090 www.landsciencetech.com

February 10, 2015

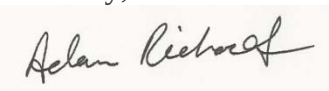
Nathan Lee
Conestoga-Rovers & Associates
5900 Hollis Street
Suite A
Emeryville, CA 94608

Re: Retro-Coat Applicator Certification – American Industrial Coatings

Dear Nathan,

This is to inform you that American Industrial Coatings is certified and approved by Land Science Technologies™ for the installation of the Retro-Coat™ system.

Sincerely,



Adam Richards, PE
Central Region Technical Manager
arichards@landsciencetech.com
M: 312.515.1935

Land Science Technologies
Specifications for Retro-Coat™
Version 1.0

Part 1 – Scope

1.1 Product and Application

This specification describes the application of the Retro-Coat™ System. The minimum thickness of the system is between 25-30 mils, including a 20 mil minimum application of Retro-Coat.

1.2 Acceptable Manufacturers

A. Retro-Coat as manufactured by Land Science Technologies San Clemente, CA.

1.3 Performance Criteria

A. Retro-Coat as manufactured by Land Science Technologies San Clemente, CA.

1. Diffusion Coefficient (Columbia Labs)
   PCE: 7.6×10^{-14} m^2/s
   TCE: 8.2×10^{-14} m^2/s

2. Tensile Elongation (ASTM D-638)
   Minimum: 6000 psi

3. Tensile Elongation (ASTM D-638)
   Minimum: 6 %

4. Flexural Strength (ASTM D-790)
   Minimum: 7000 psi

5. Hardness, Shore D (ASTM D-2240)
   Maximum: 85

6. Gardner Impact (ASTM D-2794)
   Minimum: 80 inch-pounds

7. Bond Strength to Quarry Tile
   Minimum: 1000 psi

8. Vapor Transmission Rate (ASTM E-96)
   Maximum: .07 perms

9. Water Absorption (ASTM D-570)
   Maximum: .02% in 24 hours

10. 60° Gloss
    Minimum: 100.

1.4 Materials

A. Retro-Coat “A” shall be a modified epoxy containing special flexibilizers and specially formulated resins for superior chemical resistance and enhanced resilience. No solvents are allowed.

B. Retro-Coat “B” shall be customized blend of hardeners specifically formulated to maximize chemical resistance. No solvents are allowed.

1.5 Applicator

A. Applicator must be a certified contractor of Land Science Technologies.

Part 2 – Application

2.1 Surface Preparation

A. All existing surfaces that will be covered with the systems specified herein should be mechanically ground, shot blasted or sand blasted to yield a minimum 60 grit surface texture. All loosely adhered coatings will be removed. Any grease and other contaminants found on the concrete must also be removed.

B. All open cracks 1/2" and greater should be v-notched to a 3/4" width by 1/2" depth and cleaned of any debris. Such cracks should be filled with Retro-Coat Gel and struck off flush with the surrounding surface.

C. Cut back and/or remove any expansion joint backing or filler strips to a minimum of 1 ½" deep. Insert disposable filler in the joints to prevent filling with the overlayment materials and to allow for accurate location of final saw cuts in the overlayment.

2.2 Material Application

A. Retro-Coat CAULK

1. Apply Retro-Coat CAULK around the base of all pipe penetrations making sure to fill any gap between the penetration and concrete slab

2. Apply Retro-Coat CAULK to the joint created between horizontal and vertical transitions. The caulking material should be applied and pressed into the joint filling any gaps that might be present.

B. Retro-Coat PRIMER

1. Apply Retro-Coat PRIMER to all areas at a thickness of 6 mil and allow to dry tack free. In areas where the concrete surface is in need of slight repair or needs to be leveled, a slurry form of Retro-Coat PRIMER called Retro-Coat PRIMER-S can be applied with a flat squeegee. Retro-Coat PRIMER-S is self priming and does not need to be primed again.

C. Retro-Coat

1. Mix Retro-Coat, Part A with a low-speed (<750 rpm) jiffy-style mixer for about 30 seconds, or until uniform in color, then mix in Retro-Coat Coating, Part B for another 30-60 seconds.

2. Dump contents onto floor in a ribbon pattern, squeegee, and then back roll at a coverage rate of 160 SF/gallon to achieve a film thickness of 10 mils.

3. Apply second coat 10 mil coat to achieve a total thickness of 20 mils. Repeat as necessary to achieve specified thickness.

4. If a flooring material will be placed over Retro-Coat after it is applied, or appearance is not a priority, (1) 20 mil coat can be applied.

2.3 Protection of Finished Work

A. Prohibit foot traffic on floor for 24 hours after laying (at 70ºF). At 50ºF,this time should be extended to 48 hours.

B. Rinse off any chemicals that may come in contact within 7 days of installation with the freshly laid floor immediately.

2.4 Cleanup

A. Properly dispose of all unused and waste materials.

B. Tools can be washed in warm, soapy water when wet, but after drying, can only be cleaned by grinding or with a paint stripper.

C. Unused resin can be set off with proper amount of hardener and disposed of in regular trash bins.

Part 3 – Quality Control

3.1 Warranty

A. Installer shall provide a one year warranty against delamination, chemical attack and normal wear and tear.

B. Manufacturer will provide a one year material warranty.

3.2 Quality Control

A. Installer shall use a notched squeegee to apply Retro-Coat to the specified mil thickness and calculations shall be done to determine if the correct amount of material has been applied. Retro-Coat contains 100% solids at the time of application; therefore no material shrinkage will occur during the curing process. One gallon will cover 80 square feet.

B. A wet mil film gauge can be used to spot check the Retro-Coat thickness to make certain the minimum 20 mil thickness has been applied, though some discretion should be used because high points or low points on the underlying surface can adversely affect the thickness measurements.

3.3 Floor Care

A. The standard smooth surface of Retro-Coat should be cleaned on a regular basis by damp mopping the floor with conventional commercial cleaners. It is important to first remove any grease or oils by a suitable cleaner, preferably a citrus based cleaner. Rinse with clear water to help eliminate film buildup and then allow to dry. Never use abrasive powder cleaners like Ajax or Comet as they tend to scratch the floor.

B. Additional steps can also be taken to prolong the look and life of a seamless floor:

1. Protect the floor during transference of heavy equipment
2. Educate the drivers inside the building the importance of avoiding “jack-rabbit” starts and stops, as well as keeping the metal forks lifted
3. Regular cleaning should take place as to not allow the buildup of abrasive material, such as sand or dirt, on the coating
4. Eliminate all metal wheels
5. Change over to light-colored polyurethane wheels
6. Do not slide heavy metal totes, drums or bins across the floor
7. Immediately hose down chemical spills, especially on newly laid floors.

AMERICAN INDUSTRIAL COATINGS

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May 30, 2013

Vince Young
724 Lombard Street
San Francisco, CA 94133

Re Location: 724 Lombard Street, San Francisco, CA 94133

This letter confirms that American Industrial Coatings (AIC) has completed the installation of the Retro-Coat vapor barrier product as per manufacturers (Land Science Technologies) specifications at the above referenced location. In addition, the installation has passed the Quality Control measures as detailed below. AIC is an authorized and certified contractor of Land Science Technologies and their Retro-Coat product.

The following products have been applied to the entire basement concrete surface areas including the slab and foundation stem walls. Total application area of 5,500 square feet (floor/slab and walls):

(1) 6 mil of Retro-Coat Primer on walls and 18 mil on floor with mitigating moisture primer
(2) 40 mil of Retro-Coat Vapor Barrier on all slab surfaces
(3) 20 mil of Retro-Coat Vapor Barrier on all concrete stem walls
(4) 180 Tubes of Retro-Coat Caulk
(5) 2x3 gal kits of Retro-Coat Gel

Per the manufacturers specifications in their document "Land Science Technologies Specifications for Retro-Coat Version 1.0 (attached); referencing sections 2.1 - Surface Preparation, and 2.2 – Material Application, the installation was performed per spec by AIC. In addition, referencing section 3.2 – Quality Control, the following were performed per spec by AIC:

A. Installer shall use a notched squeegee to apply Retro-Coat to the specified mil thickness and calculations shall be done to determine if the correct amount of material has been applied. Retro-Coat contains 100% solids at the time of application; therefore no material shrinkage will occur during the curing process. One gallon will cover 80 square feet.

B. A wet mil film gauge can be used to spot check the Retro-Coat thickness to make certain the minimum 20 mil thickness has been applied, though some discretion should be used because high points or low points on the underlying surface can adversely affect the thickness measurements.

In addition, attached are pictures of the wet mil film gauge from various random area of the slab and concrete stem walls effectively spot checking the installation at 724 Lombard Street. These pictures provide further documentation that the minimum 20 mil Retro-Coat thickness has been achieved in the slab and stem wall areas as per Land Science Technologies Quality Control specification.

Sincerely,

Dan Chervinskas, President
American Industrial Coatings
23827 County Road 23
Esparto, CA 95627

Enclosures

Cc: Kelly Ameli – Land Science Technologies
Elyse Heilshorn – SF Department of Public Health