Wickham, Jerry, Env. Health

From: James Jacobs [geojimj@gmail.com]
Sent: Friday, June 07, 2013 6:10 PM
To: Wickham, Jerry, Env. Health
Cc: oj@clearwatergroup.com; Gavin Fisco
Subject: UPDATES: 1125 Miller Ave., Oakland, California
Attachments: Paraseal-LG-Guide-Specifications-201460.pdf

Jerry,

We are planning to do the concrete work in the excavation on Tuesday, June 11, 2013.

Due to the limited time allowed by the USTCF regarding notification of funding (about 2 weeks ago), the workplan approval process, etc., Clearwater will have to substitute the Paramount Paraseal vapor (moisture) and water barrier product for the originally proposed Geo-Seal product. The Geo-Seal product is manufactured on site in place, and there is not enough time to perform this placement given that all work for the budget must be completed by June 30, 2013.

As such, the Paraseal (attached specifications) will meet the technical objectives of the project. The Paraseal contains both an HDPE liner along with a bentonite layer which will expand if moisture or water is present, sealing off the vapor flow pathway. The bentonite layer will be downward facing on top of the controlled density fill (CDF). The surface concrete with rebar will be above the Paraseal HDPE liner.

Unless I hear from you, I will assume the substitution of the Paraseal for the Geo-Seal will be acceptable.

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Regards,

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SECTION 07132
VAPOR-PROTECTIVE WATERPROOFING

The accompanying guide specification has been prepared by Tremco Incorporated according to principles established in the *Manual of Practice* published by The Construction Specifications Institute. It is provided to assist design professionals, building owners and others in the preparation of a specification section covering installation of a dual-waterproofing, vapor-protective, composite sheet membrane system for buried concrete or masonry construction in critical areas scheduled to receive moisture-sensitive flooring or areas designed to maintain tight climate control. It may be used in conjunction with most commercially available master specification sections with minor editing as the basis for developing a project specification or an office master specification.
This guide specification is provided in two parts as follows:

* Cover Page (file 07132cvr.* on diskette): Conveys important requirements that should appear in other pertinent Sections of the project Specifications.

* Section 07132 (file 07132spc.* on diskette): A guide specification that may be used as is or modified as you wish.

Please contact your nearest Tremco Architectural Services Representative or Tremco Incorporated at 800-852-8173 for additional copies, information on available electronic formats or design assistance.

THE PRODUCT: Tremco's "Paramount Paraseal LG" is a composite sheet membrane composed of high-density polyethylene having a sodium-bentonite face with a protective laminate layer of spun polypropylene. It comes in sheets 24 feet long by four feet wide. Paraseal LG Membrane is recommended for use on buried vertical and/or horizontal surfaces such as backfilled foundation walls, between-slab plaza and parking decks, earth-covered roofs, retaining walls and below slab with the bentonite-side down. For such conditions requiring vapor-protection, in addition to waterproofing protection, our waterproofing seam tape is used on overlaps to seal them. Paraseal LG is available in modified form as "Paraseal GM-LG" for use in blindside conditions requiring vapor protection to facilitate taping within overlaps. Paraseal GM-LG is installed vertically on retained earth and horizontally beneath-slab when the bentonite-side is up.

This vapor-protective waterproofing system as specified in guide Section 07132 is used for positive-side protection against moisture vapor passing through slabs-on-subgrade and through buried walls and roofs. Such protection is important in areas scheduled to receive moisture-impermeable or moisture-sensitive flooring such as seamless sheet vinyl, rubber sports flooring, epoxy terrazzo and hardwood. This protection is also important to assist air handling equipment in areas designed to maintain tight climate control such as museum basements, archive vaults and clean rooms.

1. Paraseal membranes are considered self-protecting to the degree of abuse that 1/8" thick asphaltic hardboard protection course is used for other waterproofing products. Contact Tremco Incorporated at 800-852-8173 with project conditions for protection course requirement.
2. For projects that have contaminated groundwater or saltwater conditions, contact Tremco Incorporated for design and specification assistance.

3. For projects requiring protection from natural gas (ie. methane), contact Tremco Incorporated for design and specification assistance.

COORDINATION: Section 07132 defines requirements for the vapor-protective composite sheet membrane waterproofing system itself. It is important to define certain substrate requirements and requirements of adjacent trades in pertinent other sections of your specification as follows:

1. Section 02200 - Earthworks/Shoring:
   a. For "Below Slab" conditions:
      * Membrane can be installed directly to subgrade consisting of native soil, sand or crushed stone 3/4 inch diameter and smaller that is stable and compacted to minimum 85 percent modified proctor density according to ASTM D-1557, Method D.
      * Subgrade surface must be cleared of debris and sharp protrusions. Smoothing out or filling of voids may be required.
   b. Backfill media placed against membrane must be free of debris and compacted to minimum 85 percent modified proctor density.
   c. For "Blindside Wall" on retained earth condition:
      * Ensure that the shoring media, such as wood lagging, is carried to the lowest extent of the waterproofing.
      * Require that interior surfaces of shoring be suitable to receive the specified waterproofing system.
      * Require that voids and cavities exterior of wood-lagged shoring be filled with sand or cement slurry.
      * Require that shoring contractor remove the nails holding wood lagging to steel piles.
2. Section 03300 - Concrete cast-in-place/shotcrete/gunite:
   a. For "Below Slab" conditions:
      * Place concrete slabs over the membrane without driving stakes or anything else through it.
      * Place concrete in direct contact with the membrane without an intervening layer of sand. Control concrete shrinkage cracking and curling by established good-concreting practices, such as by curing methods, joint spacing and mix design.
      * Use concrete brick supports beneath rebar.
      * Use a low water/cement ratio permitted by water reducing admixtures or by maintaining a slump below 4-1/2" to facilitate finishing in a timely manner.
      * Require that concrete be pumped into place and not dropped from chutes or buckets.
      * Require that concrete contractor exercise care to avoid damaging installed membrane system in any way and that if damage occurs he, immediately, notify membrane installer for repair.
      * Provide wood formed finish, wood float finish or better on concrete surfaces to receive the membrane system.
      * Where membrane will be subject to extreme construction abuses, heavy rebar network or where covered with structural slabs over 12" thick, we recommend a non-structural protection slab of concrete 2-1/2" or more in thickness be placed over the installed membrane.

b. For "Blindside Wall" on retained earth condition:
   * Coordinate waterproofing pre-installation conference to occur prior to placement of the footings or foundation mat slab.
   * For shotcrete/gunite concrete walls where tie-back bolts must be detensioned, require that sufficient access to tie-back heads for final waterproofing detail procedures be provided by a formed boxout. Prohibit access to tie-back heads by removal of wet concrete.

c. Waterstops: Provide for proper installation of bentonite-laminate waterstop strips in static cold joints with a continuous 1-1/2" wide smooth surface that is formed or tooled.
   * Surfaces must be reasonably smooth such as a float finish or a formed keyway surface.
   * For concrete surfaces scheduled to be very rough to enhance interlocking with the adjoining concrete placement, require that a 1-1/2 inch wide ribbon of flat surface be tooled or formed into the concrete surface to facilitate proper installation of the waterstop.
   * Bentonite waterstop strips are designed for static cold joints only, such as non-moving joints at footing-to-wall, wall-to-slab, slab-to-slab and wall-to-wall.

3. Section 04200 - Concrete unit masonry:
   a. Mortar joints must be struck flush or tooled flush on surfaces to receive waterproofing system.
4. Section 09___ - Finish flooring:
   a. Fully climatize rooms prior to installing any moisture-impermeable or moisture-sensitive flooring by engaging climate controls for sufficient period to ensure that moisture introduced during construction process has sufficiently dissipated.
   b. Test substrate for moisture content according to flooring manufacturer's instructions to ascertain acceptable moisture level prior to installing finish flooring.

END OF COVER PAGE(s)

SECTION 07132
VAPOR-PROTECTIVE WATERPROOFING

Before using this Guide Section, fully read the associated cover page(s) (on diskette as file 07132cvr.*) for information about its use and important requirements that must appear in other Sections of the Project Manual. Carefully review this Guide and delete inapplicable text.

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Provide a complete vapor-protective, composite sheet membrane waterproofing system.
   2. Work includes all applicable sealants, waterstops and waterproofing flashings needed to ensure a complete waterproof and vapor-protective membrane system for buried concrete and masonry components at locations indicated.

B. Related work:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.02 SUBMITTALS

A. Comply with pertinent provisions of Section 01330.

B. Product data:
   1. Materials list of items proposed to be provided under this Section;
   2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
   3. Shop Drawings or catalog illustrations in sufficient detail to show installation and interface of the work of this Section with the work of adjacent trades;
   4. Manufacturer's current recommended installation procedures which, when reviewed by Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.
   5. Written documentation of applicator's qualifications, including reference projects of similar scope and complexity, with current phone contacts of architects and owners for verification.
   6. Where work of this Section may potentially contact groundwater, include manufacturer's report confirming laboratory testing of membrane system with project groundwater samples and confirming suitability for installation in Project conditions.

C. Mock-up: Prior to installation, prepare a sample panel of the work of this Section at a location on the job site where approved by the Architect.
   1. Make the sample panel in dimensions approved by the Architect and with one panel for each of the various types of installation.
   2. Show all aspects of the work of this Section to the quality specified.
   3. Make necessary adjustments in the sample panel(s) and secure the Architect's approval.
   4. The sample panel(s), when approved by the Architect, will be used as a datum point for comparison with the remainder of the work of this Section for the purpose of acceptance or rejection.

5. Upon approval of the Architect, the sample panel(s) may become actual part of the installation required for this Work.

1.03 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.
B. Applicator qualifications:
   1. Applicator shall have at least three years experience in installing materials of types specified and shall have successfully completed at least three projects of similar scope and complexity.
   2. Applicator shall designate a single individual as project foreman who shall be on site at all times during installation.
C. Convene a pre-installation job-site conference three weeks prior to commencing work of this Section:
   1. Secure attendance by Architect, Contractor, applicator, and authorized representatives of the vapor-protective waterproofing system manufacturer and interfacing trades.
   2. Examine Drawings and Specifications affecting work of this Section, verify all conditions, review installation procedures, and coordinate scheduling with interfacing portions of the Work.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to job site in manufacturer's unopened containers with all labels intact and legible at time of use.
B. Maintain the products in a dry condition during delivery, storage, handling, installation, and concealment.
C. Comply with pertinent provisions of Section 01660.

1.05 SUBSTRATE CONDITIONS

A. Provide applicator with substrates that are free of standing water, dirt and debris, loose material, voids and protrusions or deformations which may inhibit application or performance of waterproofing.
   1. Where work of this Section will be installed on earth, provide subgrades that are stable, smoothed and compacted to minimum 85 percent modified proctor density.
   2. Where work of this Section will be installed on earth retaining system, fill gaps and voids in earth retaining system to conform with waterproofing manufacturer's requirements; remove nails in wood lagging.
   3. Where work of this Section will be installed on concrete and/or masonry, provide substrates that are free of voids deeper than 3/8" and free of surface protrusions more than 1/4" above the surface.
   4. Where work of this Section will be installed on concrete footings, provide wood float or better finish to surfaces scheduled to receive the vapor-protective waterproofing.
   5. Where work of this Section will include bentonite waterstop strips, provide concrete surfaces as required for that installation.

6. Rigidly install penetrations of vapor-protective waterproofing for detailing procedures.

B. Groundwater:
   1. Where work of this Section will encounter groundwater, provide waterproofing manufacturer with sufficient groundwater samples taken from Project at logged locations for manufacturers laboratory analysis.
   2. Manufacturer shall provide written report confirming laboratory testing with regard to suitability of waterproofing system for installation in Project conditions.

1.06 WARRANTY

A. Deliver to Architect signed copies of the following written warranties against defective materials and workmanship for a period of five years following date of completion. Warrant that installed waterproofing system shall be free of defects including waterproofing failure resulting from substrate cracking up to 1/8 inch.
   1. Manufacturer's standard warranty covering materials.
   2. Applicator's standard warranty covering workmanship.

PART 2 PRODUCTS

2.01 GENERAL

A. General:
   1. Where indicated on the Drawings, provide a complete dual-waterproofing, vapor-protective, composite sheet membrane system composed of high-density polyethylene having a sodium-bentonite face with a protective laminate layer of spun polypropylene designed for buried concrete or masonry construction having the following attributes.
      a. Acceptable products.
         1. Paramount Paraseal LG
         2. Paramount Paraseal GM
   2. Obtain primary waterproofing materials of each type required from a single manufacturer to greatest extent possible. Provide accessory materials that are approved by vapor-protective waterproofing manufacturer.

B. Membrane properties: Equal to "Paramount Paraseal LG" for use on buried vertical and horizontal surfaces such as backfilled foundation and retaining walls, between-slab plaza and parking decks, earth-covered roofs and below slab with the bentonite-side down:

1.	Puncture resistance	169 lbs.	ASTM E154
2.	Tensile strength	4,000 psi	ASTM D412
3.	Water vapor permeance	0.03 perms	ASTM E96
4.	Percent elongation	700 percent	ASTM D638, Type 4 Dumbbell
5.	Resistance to hydrostatic head	150 feet	ASTM D751
6.	Warranted crack-bridging capability	1/8 inch	

C. For use in blindside conditions on retained earth, below slab with bentonite-side up, in elevator pits or where shotcrete/gunite is scheduled to be blown directly onto the membrane face, provide "Paramount Paraseal GM-LG" which is Paraseal LG specially manufactured with a modified overlap area providing for non-reinforced integral seam tape within overlaps.

2.02 ACCESSORIES

A. For installation at horizontal-to-vertical junctures, provide "Paramount Paragranular" loose bentonite granules in weatherproof 50 lb. bags and capable of swelling to occupy a minimum volume of 17 ml when 2 grams are dispersed into deionized water.

B. For detailing vertical junctures and penetrations, provide "Paramount Paramastic" non-hydrated expandable mastic of trowelable consistency containing not less that 55 percent high swelling Wyoming sodium-bentonite.

C. Provide the following fasteners as needed:
   1. Case-hardened steel nail with fluted shank having a minimum 1" length and a minimum 1" diameter cap for use on green concrete and masonry substrates.
   2. Powder shot steel pin having a minimum 3/4" diameter washer for use on concrete substrates.
   3. Steel staples approved by membrane manufacturer for use according to Project conditions.

D. Provide the following seam tapes as needed:
   1. "Paramount Permanent Seam Tape" reinforced, rubberized-asphaltic waterproofing seam tape 4" wide by 60 mils thick for simple lap sealing of membrane.
   2. "Paramount Para JT Tape" non-reinforced, adhesive tape of partially cross-linked polymeric elastomers 2" wide by 1/8" thick for molding form-fit seals around difficult contours and for integral seam seals within overlaps.

E. Provide "Paramount Paraterm Bar" extruded aluminum bar with upper flange to receive sealant for terminations at grade line and on parapet walls.

F. Provide "Vulkem 116/227 Sealant" one- or two-part, gun-grade polyurethane sealant for completing termination seals and other sealing recommended by manufacturer.

G. Provide "Vulkem 101/102 Elastomeric Flashing" 100 percent solids polyurethane, liquid-applied, elastomeric waterproofing flashing.

H. Provide "Paramount Parastick'N'Dry" pressure sensitive, double-sided tape laminate of bentonite sandwiched between a netting and non-woven fabric for wrapping through-concrete imbeds and other detailing.

I. Provide "Paramount Superstop" flexible, reinforced, bentonite-laminate waterstop strips 1/2" by 1" by 20' -0" with pressure-sensitive adhesive backing for sealing static cold joints in concrete.

J. Provide "Paramount Paraprimer" versatile adhesive bonding agent formulated for use with tapes and pressure-sensitive waterproofing accessories.
K. Provide "Paramount Paradrain" composite drainage mats composed of rot resistant non-woven filter fabric on high-density polyethylene drainage core.
L. Provide base sheet of minimum 6 mil polyethylene sheet for use as hydration barrier.
M. Provide protection course as recommended by the waterproofing system manufacturer.

2.03 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor and approved by the vapor-protective waterproofing system manufacturer as compatible, subject to review of the Architect.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section and to prevent damage to installed waterproofing.
B. Applicator shall examine the areas and conditions under which work of this Section will be performed.
   1. Verify conformance with manufacturer's requirements;
   2. Report unsatisfactory conditions in writing to the Architect;
   3. Do not proceed until unsatisfactory conditions are corrected.

3.02 PREPARATION

A. General: Surface preparation and detailing procedures shall be in accord with this Specification and the Drawings. Comply with waterproofing system manufacturer's instructions except where more stringent requirements are indicated or specified.
B. Lay out project to determine and anticipate conditions prior to start of work.
   1. Note termination and penetration conditions to determine methods for creating a waterproof and vapor-protective envelope. Verify that where below-grade waterproofing extends to grade, other waterproofing provides for substrate continuing above grade.

3.03 INSTALLATION

A. General: Install waterproofing system in accord with manufacturer's instructions, recommendations and specific project instructions as applies to the Work.
   1. Coves: Form 2" coves with granular bentonite at horizontal-to-vertical junctures such as at footings and horizontal shelves; form 2" coves with sealant, elastomeric flashing or non-reinforced tape at vertical inside corners, under ledges and at penetrations.
   2. Place membrane in manner that assures minimum handling; fit closely to and seal around inlets, outlets and other penetrations; press membrane tight to corner surfaces and securely fasten.

3. Priming: Prime concrete, masonry and metal surfaces with substrate primer immediately prior to application of tapes and pressure-sensitive waterproofing accessories. Prime membrane surfaces immediately prior to application of tapes as required for a tight seal.
4. Taping: Tape seams closely following membrane placement and immediately roll-press using 2" wide hand-held seam roller to effect a tight seal.
5. Gradeline terminations: Terminate membrane system with termination bar finished off with bead of sealant or terminate to elastomeric flashing using reinforced seam tape.
6. Construction joints: Protect static construction joints in concrete with flexible, reinforced, bentonite-laminate waterstop strips; install to suitable hardened concrete surface prior to subsequent concrete placement.

B. Below slab installation:
1. Bentonite-side up use Paraseal GM-LG Membrane:
   a. Install membrane sheets bentonite-side up with edges overlapped 4" minimum over stable, smoothed and compacted subgrade or mud slab; position membrane to stagger end laps 12".
   b. Remove bentonite from face of membrane inside overlaps, extending 2" in from lap leading edges, by removing factory installed edge tape or by scraping.
   c. Wipe clean HDPE surfaces inside overlaps just prior to contacting with tape using lint free white cloths soaked in solvent; install non-reinforced integral seam tape to HDPE surfaces cleaned of bentonite along lap edges strictly aligning the adhesive mass on membrane leading edge and not behind it; roll-press seam tape into place prior to removal of the release-paper backing.
   d. Align overlaps, remove release-paper backing from seam tape within laps and roll-press membrane sheets together to effect a vapor tight seal.
   e. Install vapor-protective waterproofing to wrap footings and grade beams where shown on Drawings.
   f. Turn membrane up 6" minimum along bottom edges of slabs, wrapped footings and wrapped grade beams. Install double layer of membrane along bottom edges of slabs, wrapped footings and wrapped grade beams extending 6" minimum from edges in each direction. Avoid overlaps coinciding between layers. Provide for tie-in of subsequent membrane installation.
   g. Install membrane across top surfaces of unwrapped footings or mud slab and turn up 4" minimum onto vertical faces of concrete walls and columns. Terminate leading edges with continuous seam tape and 3" wide double-sided bentonite tape installed edge-to-edge aligned on leading edge on face of membrane toward wall or column surface in accord with manufacturer’s recommendations to effect a vapor tight seal.
   h. Install vapor-protective waterproofing to overlap 4" minimum onto top surfaces of unwrapped grade beams and carry to extent indicated on Drawings. Terminate leading edges with continuous seam tape and 3" wide double sided bentonite tape installed edge-to-edge aligned on leading edge on face of membrane toward grade beam in accord with manufacturer’s recommendations to effect a vapor tight seal.
   i. Waterproof penetrations in accord with manufacturers recommendations.

j. Verify membrane is protected from damage caused by rebar and support chairs.
k. Protect exposed bentonite from moisture with temporary plastic sheets; remove plastic sheets before final covering.
l. Inspect and repair damaged material immediately before concrete placement.

2. Bentonite-side down use Paraseal LG Membrane:
   a. Install polyethylene base sheets with edges lapped 5" over stable, smoothed and compacted subgrade or mud slab; trim base sheet away from penetrations and terminations.
   b. Install membrane bentonite-side down with edges lapped 3" minimum over polyethylene base sheets; position membrane sheets to stagger end laps 12"; tape seams with reinforced seam tape and roll-press to effect a vapor tight seal.
   c. Install vapor-protective waterproofing to wrap footings and grade beams where shown on Drawings.
   d. Turn membrane up 6" minimum along bottom edges of slabs, wrapped footings and wrapped grade beams. Install double layer of membrane along bottom edges of slabs, wrapped footings and wrapped grade beams extending 6" minimum from edges in each direction. Avoid overlaps coinciding between layers. Provide for tie-in of subsequent membrane installation.
   e. Install membrane across top surfaces of unwrapped footings or mud slab and turn up 4" minimum onto vertical faces of concrete walls and columns. Terminate leading edges with continuous seam tape and continuous waterstop strip in accord with manufacturer's recommendations to effect a vapor tight seal.
   f. Install vapor-protective waterproofing to overlap 4" minimum onto top surfaces of unwrapped grade beams and carry to extent indicated on Drawings. Terminate leading edges with continuous seam tape and continuous waterstop strip in accord with manufacturer's recommendations to effect a vapor tight seal.
   g. Waterproof penetrations in accord with manufacturers recommendations.
   h. Verify membrane is protected from damage caused by rebar and support chairs.
   i. Inspect and repair damaged material immediately before concrete placement.

C. Backfilled wall installation use Paraseal LG Membrane:
   1. Install membrane sheets in vertical or horizontal lifts with HDPE-side facing applicator to prepared surfaces conforming to manufacturer's requirements.
      a. Vertical orientation: Securely fasten membrane 12" on center along top edge with sheet extending onto footing surfaces and overlapping below-slab membrane 6"; install subsequent membrane sheets to overlap previous sheets 1-1/2" minimum; securely fasten membrane 24" on center through both sheets at overlaps; securely fasten 18" on center to tops of footing surfaces and horizontal shelves; tape seams with reinforced seam tape and roll-press to effect a vapor tight seal.
      b. Horizontal orientation: Start membrane at lowest portion of wall; securely fasten membrane 24" on center along top edge with sheet extending onto footing surfaces and overlapping under slab membrane 6"; install subsequent membrane sheets to overlap previous sheets minimum 1-1/2" in shingle fashion with staggered end laps; securely fasten membrane 24" on center through both sheets at overlaps; securely fasten 18" on center to tops of footing surfaces and

horizontal shelves; tape seams with reinforced seam tape and roll-press to effect a vapor tight seal.

2. Waterproof penetrations in accord with manufacturer's recommendations.

D. Blindside wall installation use Paraseal GM-LG Membrane:
   1. Ensure that vertical surfaces to receive waterproofing system conform to manufacturer's requirements as applicable to the earth retaining system employed prior to commencing installation.
   2. Install waterproofing membrane starter-strip with bentonite-side facing applicator to vertical surfaces of earth retaining system prior to placement of concrete footings or foundation mat slab.
   3. Prepare all vertical inside corners that occur along the earth retaining system by fastening a minimum 12" wide strip of membrane with bentonite-side facing applicator pressed tight into corner; securely fasten along both edges 24" on center.
   4. Remove bentonite from face of membrane inside overlaps, extending 2" in from lap leading edges, by removing factory installed edge tape or by scraping; install membrane sheets vertically with bentonite-side facing installer and mechanically fasten along lap edges cleaned of bentonite at 24" on center; restrict fasteners to lap edges cleaned of bentonite.
   5. Wipe clean HDPE surfaces inside overlaps just prior to contacting with tape using lint free white cloths soaked in solvent; install non-reinforced integral seam tape to HDPE surfaces cleaned of bentonite along lap edges strictly aligning the adhesive mass on membrane leading edge, not behind it, covering completely all mechanical fasteners; roll-press seam tape into place prior to removal of the release-paper backing.
   6. Install subsequent membrane sheets to overlap previous sheets 4"; remove release-paper backing from seam tape within overlaps and roll-press membrane sheets together to effect a vapor tight seal.
   7. Verify which penetrations must be accessed after concrete placement for completion of waterproofing detail treatment and ensure that sufficient access to membrane is provided within a formed boxout; verify which penetrations will not be accessed after concrete placement for completion of waterproofing detail treatment and effect final detailing procedures prior to erection of concrete formwork or shotcreting/guniting; seal all penetrations in accord with manufacturer's current procedures as required to seal against both water and vapor.
   8. Protect vapor-protective waterproofing system from excessive rain.
   9. Inspect and repair damages to vapor-protective waterproofing system immediately prior to erection of concrete formwork or shotcreting/guniting; ensure that concrete directly contacts membrane.
   10. Complete waterproofing details and terminations at gradeline coordinating with other trades.

E. Buried roof deck installation use Paraseal LG Membrane:
   1. Install membrane with bentonite-side down against deck surfaces with edges overlapped minimum 1-1/2" in shingle fashion with staggered end laps; start installation at lowest point; tape seams with reinforced seam tape and roll-press to effect a tight seal.

2. Waterproof penetrations, horizontal-to-vertical junctures and vertical terminations with liquid-applied elastomeric flashing carried out onto deck surfaces 12"; overlap cured elastomeric flashing 6" with membrane sheet and seal overlap with reinforced waterproofing seam tape.
3. Conduct flood-test of vapor-protective waterproofing installed to elevated horizontal surfaces by damming perimeter, stopping drains and covering with 2" of water for 24 hours; if leakage occurs, make repairs and repeat flood-test; when area is proven watertight, drain water and remove dams; obtain written authorization by manufacturer's representative prior to conducting flood-test.
4. Ensure membrane is protected from damage caused by construction trades.
5. Inspect and repair damaged material immediately before final covering.

F. Drainage mat installation: Install drainage mat units where shown on Drawings according to manufacturer's installation instructions as shown in installation manuals.

END OF SECTION