

SUB-SLAB DEPRESSURIZATION SYSTEM WORK PLAN

**77-57 Vleigh Place
Flushing, NY
Site Number: C241168**

April 29, 2022

Submitted to:

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Sub-slab Depressurization System Work Plan

77-57 Vleigh Place
Flushing, New York

BCA Site #C241168



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Senior Project Manager



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Principal Engineer



"I Dale C. Konas, P.E. certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Sub-slab Depressurization System Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications."

April 29, 2022
Date

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1.0 INTRODUCTION

This Sub-slab Depressurization System (SSDS) Work Plan has been prepared by EnviroTrac Engineering PE PC (EnviroTrac) in accordance with the Site Management Plan (SMP) for the property at 77-57 Vleigh Place (also known as 77-39/63 Vleigh Place), Flushing, NY 11367 (the Site) on behalf of the property owner, VP Capital Holdings, LLC, to be submitted to the New York State Department of Environmental Conservation (NYSDEC).

The Site is currently in the New York State Brownfield Cleanup Program (BCP), Site No. C241168, which is administered by the NYSDEC. The SSDS will take the place of the Final Soil Vapor Extraction (SVE) System that was to be installed beneath the proposed building to be constructed at the Site. Since the elevation of the building foundation was changed and is now closer to the water table, installation, and operation of a SVE system would not be feasible. The Interim SVE system that is currently operating will continue to operate to address off-Site vapors at the adjoining property to the east until the off-Site vapors measured at soil vapor well SV-KG-1 and SV-9 diminish to acceptable levels.

1.1 Site Background

Aldrich Management Co., LLC entered into a Brownfield Cleanup Agreement (BCA) as a Participant, on April 6, 2015, with the NYSDEC to remediate the Site. VP Capital Holdings, LLC was then added to Brownfield Cleanup Agreement as a Participant following a purchase transaction of the Site from Aldrich Management Co., LLC on July 2, 2018, and pursuant to an amended BCA on July 10, 2018. A Certificate of Completion (COC) was provided by the NYSDEC for the Site on December 24, 2019.

The subsurface at the Site has been impacted with tetrachloroethylene (PCE), its breakdown products (cis-1,2-dichloroethylene and trichloroethylene), and chloroform, associated with a former dry cleaner that occupied the Site. The most impacted area at the Site included the southeastern corner where elevated concentrations of PCE were detected in soil and groundwater. Remedial work for the Site includes operation, maintenance, and monitoring (OMM) of the original SVE system, the removal of all soil from the Site to approximately 25 feet below grade, OMM of the current Interim SVE system, and four (4) rounds of insitu chemical oxidation (ISCO) injections at the southeast corner of the Site, which included the use of PersulfOx, 3_D Microemulsion Factory Emulsified (3DME) mixed with additives identified as

Bio-Dechlor Inoculum Plus (BDI Plus) and Chemical Reducing Solution (CRS), and sodium permanganate.

After completion of the remedial work, some contamination was left at this Site, which is hereafter referred to as remaining contamination. The remaining contamination includes the groundwater and potential soil vapor beneath the Site and soil vapor adjoining to the east of the Site that are contaminated with PCE. Institutional and Engineering Controls (ICs and ECs) have been incorporated into the Site remedy to control exposure to remaining contamination to ensure the protection of public health and the environment. An Environmental Easement granted to the NYSDEC and recorded with the Office of the City Registrar of the City of New York (under recording number 2019000306865), requires compliance with the SMP and all ECs and ICs placed on the Site.

1.2 Objectives

This SSDS Work Plan was developed to address the following objectives:

- provide a brief summary of the Site, including findings pertaining to previous work performed pertinent to the SSDS installation;
- present the technical approach that will be used;
- present procedures that will be employed to address health and safety, quality assurance, and potential community impacts;
- identify applicable regulatory considerations associated with the SSDS Work Plan and discuss their management;
- present information pertaining to a Construction Completion Report (CCR) that will provide results of the SSDS Work Plan; and
- provide a schedule for the installation, OMM of the SSDS and other mitigation components at the Site.

2.0 SCOPE OF WORK

2.1 Overview

Since groundwater and soil gas concentrations for PCE have significantly decreased since (1) the removal of soil across the Site from grade to approximately 25 feet below grade, (2) the startup of the original SVE system and current Interim SVE system, and (3) implementation of ISCO groundwater injections, EnviroTrac recommends that monthly Interim SVE system OMM, quarterly groundwater monitoring, annual Site cover inspections, annual soil gas sampling, and off-Site SSD system inspections at Regency Gardens continue as per the Site's SMP.

As per the SMP, a Final SVE system was to be installed at the southeast corner of the proposed Site building and the Interim SVE system would then be decommissioned. EnviroTrac has been made aware of changes to the proposed building foundation elevation, making it deeper. These changes will inherently impact the proper operation of the Final SVE system at the southeast corner. The new foundation elevation is approximately one (1) foot above the water table at the southeast corner of the Site. Installation of horizontal slotted PVC piping connected to an SVE blower would draw groundwater into the PVC piping and system. Water drawn into the piping and SVE blower would counteract the purpose of the SVE system and damage the SVE blower and other system parts. Therefore, to address potential vapors at the Site, EnviroTrac proposes that a SSDS be installed instead of a Final SVE system. EnviroTrac also proposes that a vapor barrier be installed across the Site beneath the building foundation. It was communicated to EnviroTrac that the proposed building foundation will be approximately three (3) feet thick.

Since elevated PCE soil gas vapors remain at off-Site soil gas well SV-KG-1, EnviroTrac recommends the continued operation of the Interim SVE system until soil gas concentrations at SV-KG-1 and SV-9 reach acceptable levels for PCE and trichloroethylene (TCE). As stated in the New York State Department of Health (NYSDOH) document, The Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, and updates to the guidance from December 2006 to May 2017, the New York State currently does not have any standards, criteria, or guidance values for concentrations of compounds in soil vapor. Additionally, there are currently no databases available of background levels of volatile chemicals in soil vapor. In the absence of this information, soil vapor sampling results are reviewed 'as a whole,' in conjunction with the results of other environmental sampling and the site conceptual model, to identify trends and spatial variations in the data [Section 3.2.1]. To put some perspective on the data, soil vapor

results might be compared to background outdoor air levels [Section 3.2.4], site related outdoor air sampling results, or the NYSDOH's guidelines for volatile chemicals in air [Table 3.1, and updates in September 2013 and August 2015]. There are no concentrations of volatile chemicals in soil vapor that automatically trigger action or no further action. Therefore, No Further Action will be considered based on a review of the soil vapor data in conjunction with the other environmental data and site conceptual model. Once the proposed building is in place, modifications will need to be made to the Interim SVE system. Also, soil gas sampling will be conducted at SV-KG-1 and SV-9 to determine if the Interim SVE system is still needed. SV-KG-1 and SV-9 are within the radius of influence of SVE well EW-6, and, therefore, are the appropriate soil gas wells to sample to determine soil gas improvement in this area. Prior to any system modifications or soil gas sampling related to the Interim SVE system, a request for approval will be sent to the NYSDEC.

Figure 1 shows the current Site Plan and well locations.

2.2 Summary of Site Investigation Results

The subsurface at the Site has been impacted with PCE due to the historical use of the former unit at 77-57 Vleigh Place as a dry cleaner. Subsurface investigations and remedial activities were conducted at the Site from November 2015 to October 2016. The remedial investigation activities included several sampling events for soil, soil vapor, ambient air, and groundwater. Identified Areas of Concern (AOCs) included (1) the presence of chlorinated solvents in shallow and deep soil; (2) the presence of dissolved chlorinated solvents in groundwater on and off-Site; and (3) the presence of chlorinated solvents in soil vapor on and off-Site. Remedial activities were implemented beginning in March 2018 to most recently in March 2021 and included (1) four (4) ISCO groundwater injections; (2) installation and operation of the original SVE system at the southeast corner of the Site with three (3) wells: EW-1, EW-2, and EW-3; (2) removal of the soil across the Site to a depth of approximately 25 feet below grade with end point sample results that showed no detections of contaminants of concern (COC) above NYSDEC Soil Cleanup Objectives (SCOs) during April and September 2019, and (4) installation and operation of an Interim SVE system within the sidewalk, near the southeast corner of the Site, which consisted of two (2) SVE wells: EW-4 and EW-5, which began operating in January 2020. To address off-Site soil gas concentrations at the adjoining property to the east, within the garage

area, SVE well EW-6 was added to the Interim SVE system and is located beneath the sidewalk, in front of the adjoining property to the east.

Based on the previous remedial investigations, the most contaminated areas of soil were removed from the Site along with all soil across the Site to a depth of approximately 25 feet below grade. Therefore, the source area at the southeast corner was removed from the Site and properly disposed off-Site.

After completion of the remedial work, some remaining contamination was left at this Site, which included impacted groundwater and soil vapor. A Track 4 cleanup was implemented at the Site. ICs and ECs have been incorporated into the Site remedy to control exposure to remaining contamination to ensure the protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Queens County Clerk, requires compliance with the SMP and all ECs and ICs placed on the Site.

The ECs include an Interim SVE system and the Site cover (demarcation layer, approximately 24" clean soil backfill, and approximately 6" of blue stone). A Final SVE system was to be installed beneath the proposed building at the Site that would have replaced the Interim SVE system. Four (4) SSDS were also installed within four (4) buildings to the south at Regency Gardens to mitigate contaminated soil vapors present beneath these buildings across 78th Avenue to the south.

The original SVE system was installed and began operating at the southeast corner of the Site prior to soil removal in April 2019. Between April 2019 and January 2020, no systems were operating at the Site. The Interim SVE system was installed at the Site and began operating in January 2020. The previous purpose of the Interim SVE system was to reduce the levels of remaining soil vapor contamination over time at the southeast corner of the Site and most recently at the adjoining property in the area of SV-KG-1 with the addition of SVE well EW-6. Since the Site currently consists of an open pit, approximately 25 feet deep, operating SVE wells EW-4 and EW-5 in the sidewalk along the Site was deemed unnecessary. Therefore, all vacuum has been applied to SVE well EW-6 since October 2020, which was approved by the NYSDEC. Monitoring of the Interim SVE system is conducted on a monthly basis and soil gas sampling is conducted at wells surrounding the Site on an annual basis.

On March 10, 2021, EnviroTrac implemented the fourth ISCO groundwater injection event around groundwater monitoring well MW-11. Concentrations of PCE at MW-11 overtime have decreased significantly; however, the January 2021 sampling event indicated that PCE remained elevated at MW-11 with a concentration of 500 micrograms per liter (ug/L). Due to the remaining elevated concentration of PCE at MW-11, the ISCO groundwater injection event was conducted. The ISCO groundwater injection event included advancing two (2) borings to the east and west of groundwater monitoring well MW-11 to a maximum depth of 45 feet below grade. A total of 48 gallons of Rem Ox L 40% sodium permanganate was reduced to a 10% solution mixed with water to produce approximately 246 gallons of the 10% solution. A total of 123 gallons was injected into each boring from 45 feet below grade to approximately 34 feet below grade. No indications of the sodium permanganate were observed seeping through the open pit wall and no daylighting events occurred during the injections. Follow-up 60-day groundwater monitoring and the quarterly groundwater monitoring event occurred on May 10, 2021. The PCE concentration for MW-11 was reduced to 200 ug/L in May 2021. The most recent quarterly groundwater monitoring occurred on August 17, 2021. The PCE concentration for MW-11 was 260 ug/L, similar to the previous groundwater monitoring result. **Table 1** summarizes the August 17, 2021, groundwater monitoring results.

2.3 Technical Approach

2.3.1 Sub-Slab Depressurization System Installation

EnviroTrac recommends that a SSDS be installed along the southern portion of the Site to mitigate vapors emanating from PCE-contaminated groundwater in the most impacted areas: (1) southeastern corner (most impacted groundwater well, MW-11) and (2) southwestern corner (former location of the dry cleaner unit). **Figure 2** shows the layout of the SSDS zones, vacuum monitoring point locations within the SSDS zones, and sub-slab soil vapor sampling points, located in the northwestern portion of the property.

2.3.1.1 Sub-slab Depressurization System Construction

A total of four (4) SSDS zones (Zone 1, Zone 2, Zone 3, and Zone 4) will each consist of two (2) separate lengths of horizontal perforated PVC pipe connected to horizontal riser PVC pipe that leads back to the southeastern corner of the new building. The piping will be installed beneath the foundation of the new building. Filter fabric will be installed over the PVC piping to reduce

the infiltration of fine materials but allow water to pass through the piping. The PVC piping will be installed within a 12-inch gravel layer to allow for good communication and vacuum application beneath the foundation slab. Vacuum monitoring points will be installed within each zone to monitor the vacuum applied beneath the slab. The riser piping will be connected to mitigation blower(s) which will be installed on the roof of the new building. Any discharge piping will be located two (2) feet above the roof line and at least 10 feet from any air intake or window. The SSDS will also be installed in conjunction with a vapor barrier and three (3) foot thick slab.

EnviroTrac will document the installation of the SSDS zones during building construction.

2.3.1.2 Vacuum Monitoring Point Installation

Each vacuum monitoring point (VMP) will consist of a six (6) inch length stainless steel screen connected to 3/8-inch outer diameter polyethylene tubing in-line with a brass ball valve and a brass barb. The vacuum monitoring points will be installed through a four (4) inch diameter PVC pipe (used to protect the VMP during construction of the building) within the gravel layer and through the vapor barrier. The PVC piping will be lifted above the screen to allow the flow of air to reach the screen. The vapor barrier will then be sealed around the PVC pipe with a bonding agent. A one (1) foot layer of bentonite will be placed above the gravel layer, and the annulus will be filled with clean sand to approximately six (6) inches below the lowest level of the new building. Five (5) inch diameter bolted manhole covers will be placed over the PVC pipes and into the concrete floor as it is poured during construction to seal them in-place. Each VMP will be used to measure the vacuum induced within each SSDS zone.

EnviroTrac will install and document each VMP within the SSDS zones.

2.3.1.3 Sub-slab Soil Vapor Well Installation

Each sub-slab soil vapor well will consist of a six (6) inch length stainless steel screen connected to 3/8-inch outer diameter polyethylene tubing, a brass ball valve, and a brass barb. The sub-slab soil vapor wells will be installed through a four (4) inch diameter PVC pipe (used to protect the well during construction of the building) within the native soil/gravel layer and through the vapor barrier. The PVC piping will be lifted above the screen to allow vapors to reach the screen. The vapor barrier will then be sealed around the PVC pipe with a bonding agent. A one (1) foot layer of bentonite will be placed above the gravel layer, and the annulus

will be filled with clean sand to approximately six (6) inches below the lowest level of the new building. Five (5) inch diameter bolted manhole covers will be placed over the PVC pipes and into the concrete floor as it is poured during construction to seal them in-place. The sub-slab soil vapor wells were installed along the northern perimeter of the building, at the northeastern corner of the building, and along the western perimeter of the building to capture vapors that may be traveling in the direction of groundwater flow (from southeast to northwest) across the Site. Sub-slab soil vapor wells were installed within these areas to avoid elevator pits, utilities, and structural columns located in other portions of the building footprint.

EnviroTrac will install and document each sub-slab soil vapor well within the building footprint.

2.3.2 Vapor Barrier Installation

A vapor barrier will be installed over the gravel layer and cover the entirety of the building footprint. Vapor barrier specifications are included in **Appendix A**. The vapor barrier will consist of the W.R. Meadows waterproofing system consisting of a 4-mil carrier film and a 56-mil polymeric membrane. Areas where piping must break through the vapor barrier will be sealed with a bonding agent. The vapor barrier will work in conjunction with the SSDS to mitigate vapors from entering the building.

EnviroTrac will document the installation of the vapor barrier prior to the placement of the three (3) foot slab.

2.3.3 Concrete Slab Installation

A three (3) foot thick concrete slab will be installed over the vapor barrier as part of the new building construction. The three (3) foot thick concrete slab will work in conjunction with the SSDS and vapor barrier to mitigate vapors from entering the building.

EnviroTrac will document the installation of the three (3) foot concrete slab.

2.3.4 SSDS, Vapor Barrier, and Concrete Slab Operations, Maintenance & Monitoring Procedures

Prior to SSDS startup, a pilot test will be conducted to determine the size of the blower or blowers if more than one (1) is needed. Measurements will be recorded at each VMP to

determine what size blower(s) is/are required to produce a 20-foot radius of influence. Following installation of the blower(s) and following SSDS startup, the SSDS zones will be certified that they are operating properly by measuring the vacuum at each VMP. Acceptable vacuum is -0.02 inches of water.

Thirty (30) days following SSDS startup, sub-slab soil vapor samples will be collected from the northwestern portion of the building and indoor air samples will be collected from the building. All indoor air samples will be collected from the lowest level of the building. An outdoor air sample will also be collected during this time. The indoor air sample locations are shown on **Figure 2**. A tracer gas test will be conducted at each sub-slab soil vapor well location prior to sample collection.

The protocol for using a tracer gas is straightforward: simply enrich the atmosphere in the immediate vicinity of the area where the probe intersects the ground surface with the tracer gas and measure a vapor sample from the probe for the presence of high concentrations (> 10%) of the tracer. A plastic pail will serve to keep the tracer gas in contact with the probe during the testing.

Helium will be released in the enclosure prior to initially purging the sample point, taking care to avoid excessive purging prior to sample collection. Care will also be taken to prevent pressure build-up in the enclosure during introduction of the tracer gas.

Following the tracer gas test, soil vapor samples will be collected into laboratory-supplied 6L Summa Canisters equipped with flow controllers set to sample over a six (6) hour period from the four (4) soil vapor well locations.

The air intakes for each Summa Canister for the indoor and outdoor air samples will be placed three (3) to four (4) feet above the ground surface or lowest floor level. Each Summa Canister will be equipped with flow controllers set to sample over a six (6) hour period. The indoor air samples will be collected from within the vicinity of the sub-slab soil vapor samples. A duplicate sample will be collected at one (1) of the indoor air sample locations.

An effluent vapor sample will also be collected from the discharge piping of the SSDS to determine if treatment of vapors is required.

Laboratory Analysis

The effluent vapor sample(s), sub-slab soil vapor samples, indoor air samples, and outdoor air sample will be laboratory analyzed for volatile organic compounds (VOCs) by US Environmental Protection Agency (EPA) Method TO-15 with Category B Deliverables. The sub-slab soil vapor samples will also be analyzed for helium. The sample results will also be reviewed by Environmental Data Services, Inc. (EDS) and a Data Usability Summary Report (DUSR) will be provided.

2.3.5 Evaluation of SSDS Startup Results and Vapor Barrier and Concrete Slab Performance

2.3.5.1 Sub-slab Depressurization System, Vapor Barrier, and Concrete Slab Performance Testing Results

Following the startup of the SSDS, vacuum measurements will be recorded for the VMPs within each SSDS zone. Vacuum beneath the slab will be deemed sufficient if readings are -0.02 inches of water or greater. Operation of the SSDS Zones is expected to produce a 20-foot radius of influence beneath the slab, which will cover the entirety of the southern portion of the new building.

Thirty (30) days following SSDS startup, sub-slab soil vapor samples will be collected from the northwestern portion of the building and indoor air samples will be collected from the building. All indoor air samples will be collected from the lowest level of the building. An outdoor air sample will also be collected during this time from an upwind location at the Site. These results will show if the SSDS (where applicable), vapor barrier, and concrete slab are mitigating any potential vapors from entering the building.

As stated in the NYSDOH document, the combined indoor air and sub-slab concentrations will be evaluated as a whole. Following that evaluation, next steps will be determined.

2.3.6 Continued Operation and Modification of the Interim SVE System

Currently the Interim SVE system at the Site is operating with only SVE well EW-6 open and SVE wells EW-4 and EW-5 closed. This is to address the off-Site vapors in the area of off-Site soil gas well SV-KG-1 at the adjoining property to the east. The Interim SVE system will

continue to operate and OMM will be conducted. It is expected that the construction of the building should take approximately two (2) to three (3) years to complete. Within this time, the Interim SVE system will continue to operate and remain in-place, on the sidewalk along 78th Avenue.

Soil gas sampling will continue on an annual basis at the soil gas wells surrounding the Site, including SV-KG-1 and SV-9. The results for SV-KG-1 and SV-9 will be used to monitor soil vapors at the adjoining property to the east and the efficiency of the Interim SVE system. As stated in the New York State Department of Health (NYSDOH) document, The Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, and updates to the guidance from December 2006 to May 2017, the New York State currently does not have any standards, criteria, or guidance values for concentrations of compounds in soil vapor. Additionally, there are currently no databases available of background levels of volatile chemicals in soil vapor. In the absence of this information, soil vapor sampling results are reviewed 'as a whole,' in conjunction with the results of other environmental sampling and the site conceptual model, to identify trends and spatial variations in the data [Section 3.2.1]. To put some perspective on the data, soil vapor results might be compared to background outdoor air levels [Section 3.2.4], site related outdoor air sampling results, or the NYSDOH's guidelines for volatile chemicals in air [Table 3.1, and updates in September 2013 and August 2015]. There are no concentrations of volatile chemicals in soil vapor that automatically trigger action or no further action. Therefore, No Further Action will be considered based on a review of the soil vapor data in conjunction with the other environmental data and site conceptual model. Please note that previous soil vapor intrusion sampling conducted within the cellar of the residential building at the adjoining property to the east prior to the installation of any of the SVE systems for the Site, indicated that mitigation was not necessary for the adjoining property building to the east. SV-KG-1 is located within the garage areas at the adjoining property to the east. These structures are only used for storage purposes.

3.0 PROJECT SCHEDULE

Portions of the SSDS have been installed beneath the southwestern portion of the Site to accommodate the start of the construction of the new building. The sub-slab soil vapor wells were also installed on the northern portion of the Site to accommodate the start of construction of the new building. Installation of the remaining portions of the SSDS and VMPs will continue to be installed to accommodate the continued construction of the new building.

The SSDS pilot test will be completed six (6) months prior to the completion of the building. The sub-slab soil vapor, indoor air, and outdoor air sampling will be conducted 30 days following SSDS startup.

The SSDS startup and OMM results will be provided in the CCR approximately six (6) months following SSDS startup.

4.0 REPORTING OF RESULTS

4.1 Construction Completion Report

A CCR will be prepared and submitted at the completion of installation of the SSDS and follow-up sampling. The CCR will present and discuss the developed remedial action objectives, the selected remedy and the remedial actions performed. Detailed information pertaining to the CCR is provided in DER-10 subdivision 5.8(b)-(d). The CCR will complement the final engineering report for the Site and will provide a certification and be stamped by a NYS registered professional engineer.

4.2 Electronic Data Deliverable

In accordance with requirements specified in DER-10, laboratory data developed during the Work Plan will be submitted to the NYSDEC in the NYSDEC-approved Electronic Data Deliverable (EDD) format.

5.0 REFERENCES

New York State Department of Environmental Conservation (May 3, 2010). Final Program Policy DER-10 - Technical Guidance for Site Investigation and Remediation.

Code of Federal Regulations – Title 40: Protection of the Environment 144.26 – Inventory Requirements.

New York State Department of Health (October 2006, Updates December 2006 to May 2017). Guidance for Evaluating Soil Vapor Intrusion in the State of New York.

FIGURES



LAYOUT OF FORMER BASEMENTS OF TENANT SPACES

77th ROAD

FORMER 1-STORY MULTI-TENANT COMMERCIAL BUILDING

141st STREET

STEPPING STONE DAYSCHOOL (2-STORY BUILDING)

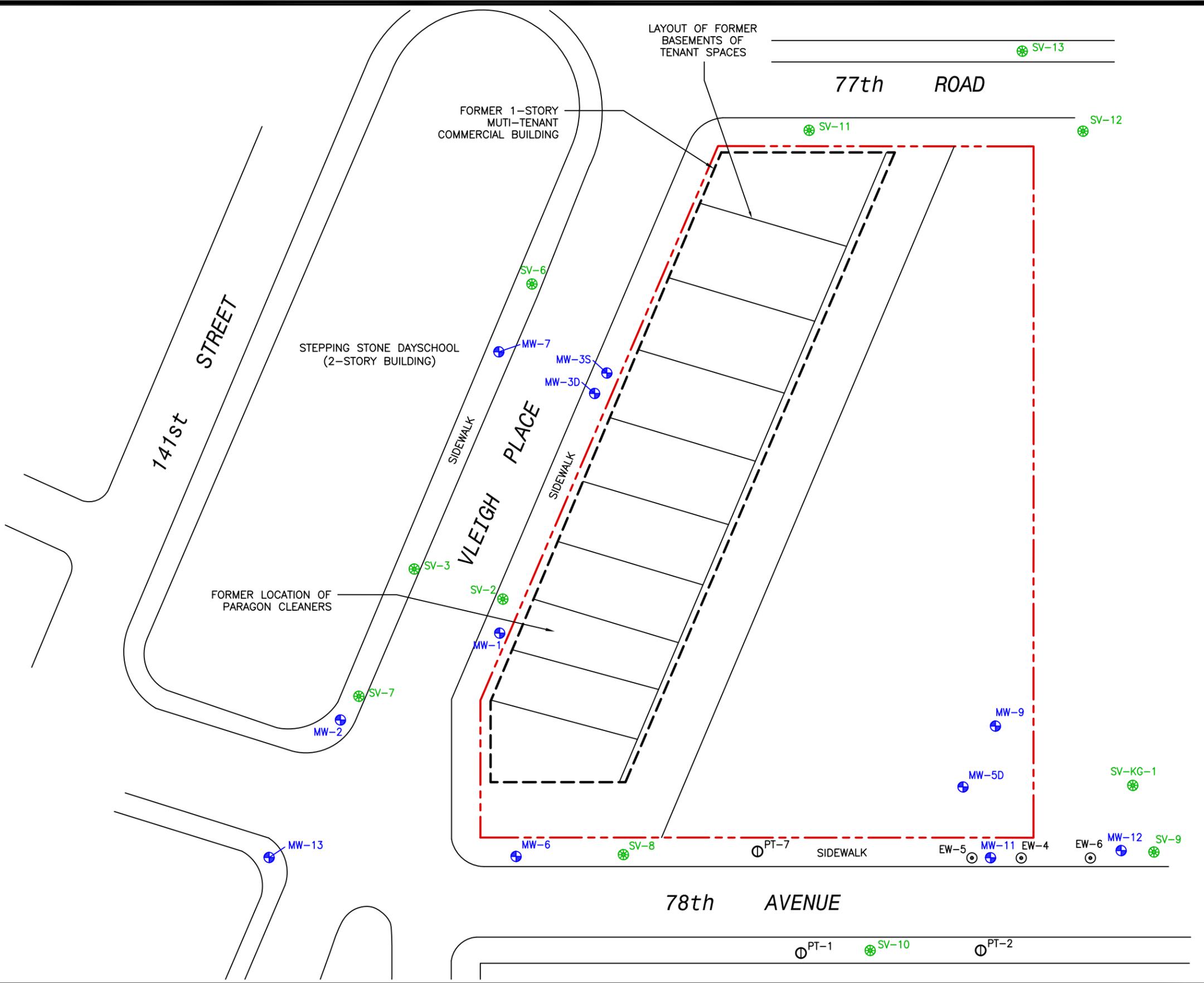
VLEIGH PLACE

FORMER LOCATION OF PARAGON CLEANERS

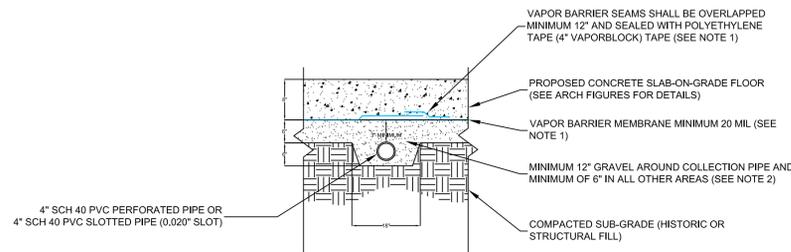
78th AVENUE

LEGEND:

-  SITE BOUNDARY
-  MONITORING WELL
-  SOIL VAPOR EXTRACTION WELL
-  SOIL VAPOR PROBE
-  VACUUM MONITORING POINT

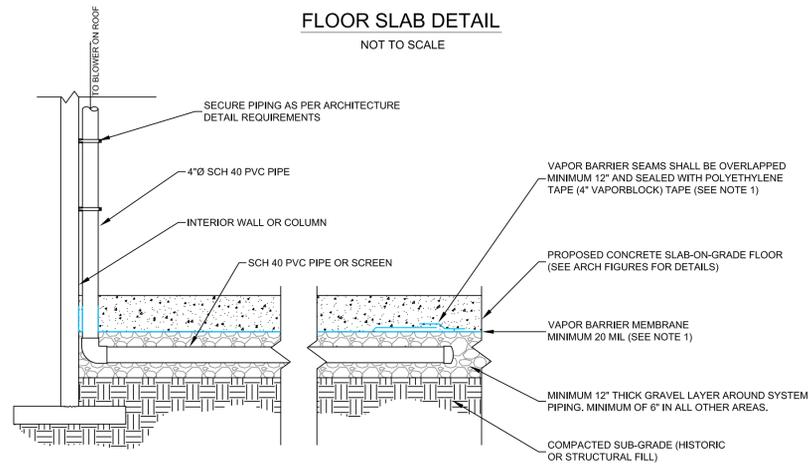


FLOOR SLAB DETAIL A-A'
NOT TO SCALE



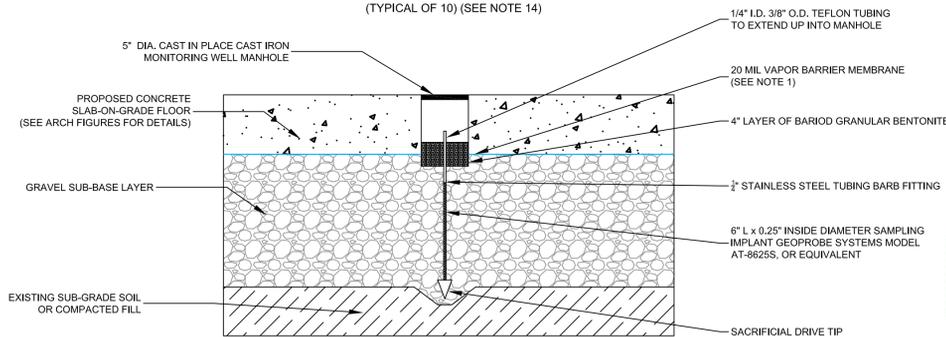
NOTE: BUILDING DETAILS SHOWN FOR CONCEPTUAL PURPOSES ONLY. NOT TO BE USED FOR STRUCTURAL OR ARCHITECTURAL PURPOSES.

FLOOR SLAB DETAIL
NOT TO SCALE

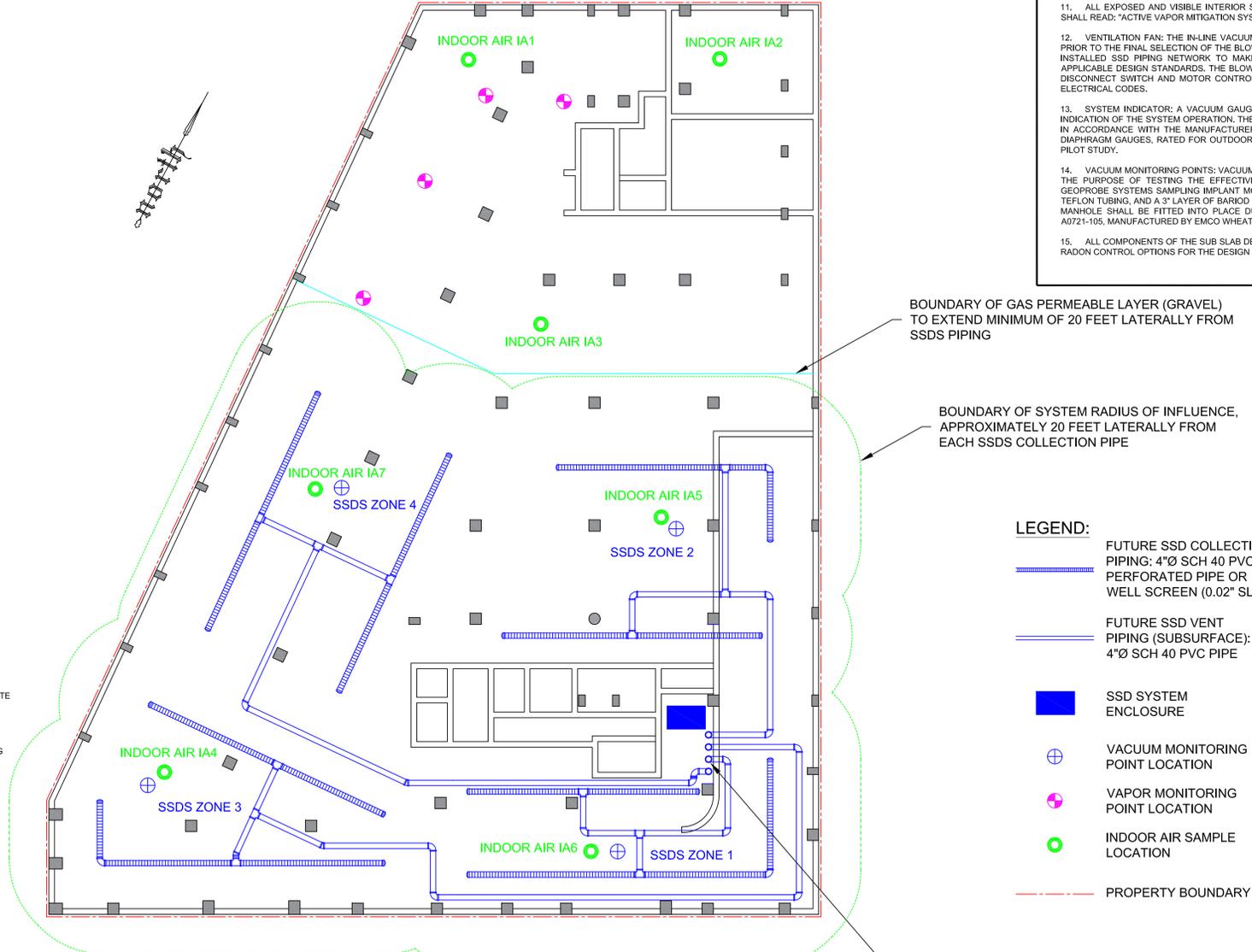


NOTE: BUILDING DETAILS SHOWN FOR CONCEPTUAL PURPOSES ONLY. NOT TO BE USED FOR STRUCTURAL OR ARCHITECTURAL PURPOSES.

VAPOR / VACUUM MONITORING POINT
NOT TO SCALE
(TYPICAL OF 10) (SEE NOTE 14)



SSD SYSTEM PIPING PLAN (SUBSURFACE & GARAGE LEVEL)
SCALE: 1/16" = 1'-0"



LEGEND:

- FUTURE SSD COLLECTION PIPING: 4"Ø SCH 40 PVC PERFORATED PIPE OR WELL SCREEN (0.02" SLOT)
- FUTURE SSD VENT PIPING (SUBSURFACE): 4"Ø SCH 40 PVC PIPE
- SSD SYSTEM ENCLOSURE
- VACUUM MONITORING POINT LOCATION
- VAPOR MONITORING POINT LOCATION
- INDOOR AIR SAMPLE LOCATION
- PROPERTY BOUNDARY

SLEEVE PIPING THROUGH FLOOR SLAB AND MANIFOLD TOGETHER PRIOR TO FINAL TIE-IN TO EXTRACTION SYSTEM EQUIPMENT

GENERAL NOTES

1. VAPOR BARRIER MEMBRANE: A MINIMUM 20-MIL HIGH DENSITY POLYETHYLENE FLEXIBLE SHEETING MATERIAL SHALL BE PLACED ON TOP OF THE GAS PERMEABLE LAYER PRIOR TO POURING THE SLAB OR PLACING THE FLOOR ASSEMBLY. THE SHEETING SHALL COVER THE ENTIRE FLOOR AREA, AND SEPARATE SECTIONS OF SHEETING SHALL BE OVERLAPPED AT MINIMUM OF 12 INCHES AND SEALED WITH 4" VAPORBLOCK TAPE OVER THE TWO OVERLAPPING LAYERS AT THE JOINT. THE SHEETING IS TO BE INSTALLED SO THAT IT SHALL FIT TIGHTLY AROUND ANY PIPE, WIRE, OR OTHER PENETRATIONS OF THE MATERIAL. ALL PUNCTURES OR TEARS IN THE MATERIAL SHALL BE SEALED OR COVERED WITH ADDITIONAL SHEETING. THE VAPOR BARRIER SHALL BE PREFRUE 300R, MANUFACTURED BY GCP APPLIED TECHNOLOGIES INC., CAMBRIDGE, MASSACHUSETTS, OR EQUAL.
2. GAS PERMEABLE LAYER: A UNIFORM LAYER OF CLEAN AGGREGATE, A MINIMUM OF 12 INCHES THICK AROUND THE VAPOR COLLECTION PIPING AND 6 INCHES THICK UNDER THE SLAB BETWEEN EACH LATERAL COLLECTION PIPE. THE AGGREGATE WILL CONSIST OF MATERIAL THAT WILL PASS THROUGH A 3/4-INCH SIEVE AND BE RETAINED BY A 1/2-INCH SIEVE. THE AGGREGATE WILL SERVE AS A PERMEABLE LAYER THAT WILL ALLOW THE PASSAGE OF ANY POTENTIAL VAPOR TO THE VAPOR COLLECTION PIPING. THE AGGREGATE SHALL BE CLEAN AND FREE OF ANY DEBRIS AND OR ANY OTHER FOREIGN MATERIAL. THE USE OF RECYCLED AGGREGATE OR CLEAN, NEW AGGREGATE IS PERMITTED. AGGREGATE SHALL BE ASTM-C33 SIZE 6.
3. VAPOR COLLECTION PIPING: 4 INCH DIAMETER SCHEDULE 40 PVC PERFORATED OR SLOTTED (0.02" SLOT) PIPING SHALL BE USED FOR THE SUBSURFACE HORIZONTAL LEGS TO BE INSTALLED BELOW THE CONCRETE SLAB. A 4" SCHEDULE 40 PVC DOME CAP SHALL BE INSTALLED AT THE END OF EACH LEG.
4. SSD VENT PIPING:
 - 4.1. SUB-SURFACE SOLID PIPING: 4 INCH DIAMETER SCHEDULE 40 PVC PIPE SHALL BE CONNECTED TO THE VAPOR COLLECTION PIPING VIA A 4 INCH DIAMETER TEE FITTING, LOCATED AT THE CENTER POINT OF EACH PIPING LATERAL LEG. EACH LEG OF THE VENT PIPING WILL BE EXTENDED TO A DESIGNATED LOCATION IN THE NEAR VICINITY OF THE ROOF DRAIN PIPING CHASE THAT EXTENDS VERTICALLY TO THE BUILDING ROOF LEVEL. ALL PIPE AND FITTING CONNECTIONS SHALL BE EITHER SOLVENT WELDED OR THREADED CONNECTIONS.
 - 4.2. ABOVE GRADE PIPING: ALL EXPOSED ABOVE GRADE VENT PIPE SHALL BE CAST IRON, NO-HUB PIPE AND FITTINGS. ALL PIPE AND FITTING CONNECTIONS SHALL BE NEOPRENE FLEXIBLE COUPLINGS WITH STAINLESS STEEL BANDS. THIS PIPING SHALL BE EXTENDED VERTICALLY THROUGH THE BUILDING BASEMENT FLOOR SLAB, WHERE IT WILL CONNECT TO THE BLOWER INLET. THE EXHAUST PIPING SHALL TERMINATE AT LEAST 2 FEET ABOVE THE SURFACE OF THE ROOF, IN A LOCATION AT LEAST 10 FEET AWAY FROM ANY WINDOW OR OTHER OPENING INTO THE CONDITIONED SPACES OF THE BUILDING THAT IS LESS THAN 2 FEET BELOW THE EXHAUST POINT, AND 10 FEET AWAY FROM ANY ADJOINING OR ADJACENT BUILDING.
5. IN BUILDINGS DESIGNED WITH INTERIOR FOOTINGS OR OTHER BARRIERS TO LATERAL FLOW OF SUB-SLAB SOIL GAS, VENT PIPES SHALL BE INSTALLED IN EACH ISOLATED, NON-CONNECTED FLOOR AREA. IF MULTIPLE VENT POINTS ARE USED IN NON-CONNECTED FLOOR AREAS, VENT PIPES ARE PERMITTED TO BE MANIFOLDED BELOW THE FLOOR SLAB INTO A SINGLE VENT.
6. TO RETARD SOIL GAS ENTRY, LARGE OPENINGS THROUGH CONCRETE SLABS OR OTHER FLOOR ASSEMBLIES IN CONTACT WITH THE SOIL, SUCH AS SPACES AROUND BATHTUB, SHOWER, OR TOILET DRAINS, SHALL BE FILLED OR CLOSED WITH MATERIALS THAT PROVIDE A PERMANENT AIRTIGHT SEAL SUCH AS NON-SHRINK MORTAR, GROUTS, EXPANDING FOAM, OR SIMILAR MATERIAL DESIGN FOR SUCH APPLICATION.
7. TO RETARD SOIL GAS ENTRY, SMALLER GAPS AROUND ALL PIPES, WIRE, OR OTHER OBJECTS THAT PENETRATE THE CONCRETE SLAB OR OTHER FLOOR ASSEMBLY SHALL BE MADE AIRTIGHT WITH AN ELASTOMER JOINT SEALANT OR POLYETHYLENE TAPE, AS DEFINED IN ASTM C920-87, AND APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
8. TO RETARD SOIL GAS ENTRY ALL CONTROL JOINTS, ISOLATION JOINTS AND ANY OTHER JOINTS IN CONCRETE SLABS OR BETWEEN SLABS AND FOUNDATION WALLS SHALL BE SEALED. A CONTINUOUS FORMED GAP "TOOLED EDGE" WHICH ALLOWS THE APPLICATION OF A SEALANT THAT WILL PROVIDE A CONTINUOUS, AIRTIGHT SEAL SHALL BE CREATED ALONG ALL JOINTS. WHEN THE SLAB HAS CURED, THE GAP WILL BE CLEARED OF ANY LOOSE MATERIAL AND FILLED WITH AN ELASTOMER JOINT SEALANT, AS DEFINED IN ASTM C920-87, AND APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
9. CONCRETE MASONRY FOUNDATION WALLS BELOW THE GROUND SURFACE SHALL BE CONSTRUCTED TO MINIMIZE THE TRANSPORT OF SOIL GAS FROM THE SOIL TO THE BUILDING. HOLLOW BLOCK MASONRY WALLS SHALL BE SEALED AT THE TOP TO PREVENT THE PASSAGE OF AIR FROM THE INTERIOR OF THE WALL TO THE LIVING SPACE. AT A MINIMUM, ONE COURSE OF SOLID MASONRY, ONE COURSE OF MASONRY GROUTED SOLID, OR A POURED CONCRETE BEAM AT OR ABOVE THE FINISHED GROUND SURFACE LEVEL SHALL BE USED FOR THIS PURPOSE, WHERE A BRICK VENEER OR OTHER MASONRY LEDGE IS INSTALLED, THE COURSE IMMEDIATELY BELOW THAT LEDGE SHALL ALSO BE SEALED.
10. JOINTS, CRACKS, OR OTHER OPENINGS AROUND ALL PENETRATIONS OF BOTH EXTERIOR AND INTERIOR SURFACES OF MASONRY BLOCK WALLS BELOW THE GROUND SURFACE SHALL BE SEALED WITH AN ELASTOMERIC SEALANT THAT PROVIDES AN AIRTIGHT SEAL. PENETRATIONS OF POURED CONCRETE WALLS SHALL ALSO BE SEALED ON THE EXTERIOR SURFACE. THIS INCLUDES SEALING OF WALL PENETRATIONS.
11. ALL EXPOSED AND VISIBLE INTERIOR SSD VENT PIPES SHALL BE IDENTIFIED WITH AT LEAST ONE LABEL ON EACH FLOOR LEVEL. THE LABEL SHALL READ: "ACTIVE VAPOR MITIGATION SYSTEM".
12. VENTILATION FAN: THE IN-LINE VACUUM BLOWER SHALL BE INSTALLED WITHIN THE BASEMENT PARKING LEVEL OF THE PROPOSED BUILDING. PRIOR TO THE FINAL SELECTION OF THE BLOWER PERFORMANCE REQUIREMENTS AND BLOWER MODEL, A PILOT TEST SHALL BE PERFORMED ON THE INSTALLED SSD PIPING NETWORK TO MAKE THIS DETERMINATION. THE FINAL BLOWER SELECTION SHALL BE MADE IN ADHERENCE TO, ALL APPLICABLE DESIGN STANDARDS. THE BLOWER SHALL BE INSTALLED AS PER THE MANUFACTURER'S INSTRUCTIONS. A 208 V, 3-PHASE, ELECTRICAL DISCONNECT SWITCH AND MOTOR CONTROLS SHALL BE INSTALLED BY A LICENSED ELECTRICIAN IN ACCORDANCE WITH ALL APPLICABLE LOCAL ELECTRICAL CODES.
13. SYSTEM INDICATOR: A VACUUM GAUGE SHALL BE INSTALLED ON EACH LEG OF THE VAPOR VENT PIPING IN ORDER TO PROVIDE A VISUAL INDICATION OF THE SYSTEM OPERATION. THE VACUUM GAUGE SHALL BE INSTALLED AT THE LOWEST ACCESSIBLE LOCATION OF EACH MANIFOLD LEG IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE VACUUM GAUGES WILL BE 4" STAINLESS STEEL, ULTRA-LOW VACUUM DIAPHRAGM GAUGES, RATED FOR OUTDOOR USE. THE VACUUM RANGE, MAKE, AND MODEL WILL BE DETERMINED BASED ON THE RESULTS OF THE PILOT STUDY.
14. VACUUM MONITORING POINTS: VACUUM TEST POINTS SHALL BE INSTALLED AT A MINIMUM OF FOUR (4) LOCATIONS IN THE CONCRETE SLAB FOR THE PURPOSE OF TESTING THE EFFECTIVENESS OF THE SSD SYSTEM. THE VAPOR MONITORING POINTS SHALL BE DIRECT-PUSH INSTALLED GEOPROBE SYSTEMS SAMPLING IMPLANT MODEL: AT-8625S, OR EQUIVALENT. UTILIZING: 6" LONG x 0.25" INNER DIAMETER SAMPLING IMPLANT, 0.25" TEFLON TUBING, AND A 3" LAYER OF BARIOD GRANULAR BENTONITE, OR EQUIVALENTS. A 5" DIAMETER CAST-IN-PLACE CAST IRON MONITORING WELL MANHOLE SHALL BE FITTED INTO PLACE DURING THE INSTALLATION OF THE FINISHED FLOOR SLAB. THE MANHOLE COVERS SHALL BE MODEL A0721-105, MANUFACTURED BY EMCO WHEATON RETAIL, WILSON, NC, OR EQUAL.
15. ALL COMPONENTS OF THE SUB SLAB DEPRESSURIZATION SYSTEM SHALL BE IN ACCORDANCE WITH ASTM E 1465-08a "STANDARD PRACTICE FOR RADON CONTROL OPTIONS FOR THE DESIGN AND CONSTRUCTION OF NEW LOW-RISE RESIDENTIAL BUILDINGS".

DRAWN/REVISED BY: DK	FIGURE: 2
REVISION No: 1.6	
REVISION DATE: JULY 20, 2022	

DRAWING TITLE
SUB-SLAB DEPRESSURIZATION SYSTEM DETAILS

PREPARED FOR
VP CAPITAL HOLDINGS LLC 62 W 47TH STREET, SUITE 603 NEW YORK, NY 10036

PROJECT NAME
77-63 VLEIGH PLACE QUEENS, NY 11367



TABLE

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Vapor Barrier Specifications

Submittal Package



W. R. MEADOWS®



A Family Company Since 1926

QUALITY...SERVICE...INTEGRITY

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PRODUCT DATA

MasterFormat: 07 13 26

W. R. MEADOWS®

SEALTIGHT®

NO. 714

OCTOBER 2013
(Supersedes July 2012)

MEL-ROL®

Rolled, Self-Adhering Waterproofing Membrane

DESCRIPTION

MEL-ROL waterproofing system is a flexible, versatile, dependable, bituminous, roll-type waterproofing membrane. It is composed of a nominally 56 mil thick layer of polymeric waterproofing membrane on a heavy duty, four-mil thick, cross-laminated polyethylene carrier film. The two components are laminated together under strict quality-controlled production procedures.

A handy overlap guideline is printed 2 ½" (63.5 mm) from the material edge on each side to assure proper overlap coverage and to assist in maintaining a straight application. Special exposed polymeric membrane strips are provided on both sides for positive membrane-to-membrane adhesion in the overlap area. The membrane strips are protected by a pull-off release strip. All components of the MEL-ROL waterproofing system work together to provide a cost-effective, positive waterproofing system that's quick and easy to apply.

W. R. MEADOWS accessory products included in the MEL-ROL waterproofing system are: BEM, MEL-ROL LIQUID MEMBRANE, MEL-PRIME™ adhesive (solvent-based and water-based), POINTING MASTIC, DETAIL STRIP, CATALYTIC BONDING ASPHALT, TERMINATION BAR, PROTECTION COURSE and MEL-DRAIN™ drainage board.

USES

MEL-ROL waterproofing system provides a cost-effective answer to properly waterproof foundations, vertical walls, and below-grade floors in residential and commercial construction. It is equally effective for use as between-the-slab waterproofing on plaza decks, parking decks, and structural slabs. Use it as a waterproofing membrane to isolate mechanical and electronic rooms, laboratories, kitchens, and bathrooms. MEL-ROL offers positive protection when "wrapped around" major rapid transit, vehicular, utility, and pedestrian tunnel projects. MEL-ROL can also be used on insulated concrete forms (ICF).

Installation of PROTECTION COURSE from W. R. MEADOWS is recommended before backfilling. MEL-ROL can also be used with drainage boards when specified.

FEATURES/BENEFITS

- Provides cost-effective, flexible, versatile, dependable, positive waterproofing protection against damaging moisture migration and the infiltration of free water.
- Offers a quick and easy-to-apply system for maximum productivity.
- Special membrane-to-membrane adhesion provides additional overlap security.
- Meets or exceeds the test requirements of all currently applicable specifications.
- Components work together for positive waterproofing protection.
- Handles with ease on the jobsite.
- Available in a low temperature version for use when air and surface temperatures are between 20° F (-7° C) and 60° F (16° C). An extra-low temp version is also available, ideal for application in extra-low temperatures down to 0° F (-18° C).

PACKAGING

38.5" (977.9 mm) wide x 62.5' (19.1 m) long, one roll per carton.

COVERAGE

Provides 200 ft.² (18.6 m²) per roll. Gross coverage is 200 ft.² (18.6 m²). [Net coverage is 187.5 ft.² (17.4 m²) with overlap of 2 ½" (63.5 mm).]

STORAGE AND HANDLING

Store membrane cartons on pallets and cover if left outside. Keep materials away from sparks and flames. Store where temperature will not exceed 90° F (32° C) for extended periods of time.

SPECIFICATIONS

- A.R.E.M.A.® Specifications Chapter 29, Waterproofing
- LARR Report 26022

APPLICATION

Surface Preparation ... Concrete should be cured at least 72 hours, be clean, dry, smooth, and free of voids. Repair spalled areas; fill all voids and remove all sharp protrusions.

CONTINUED ON REVERSE SIDE...

W. R. MEADOWS, INC.

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FORT WORTH, TX / BENICIA, CA / POMONA, CA
GOODYEAR, AZ / MILTON, ON / SHERWOOD PARK, AB

MEL-ROL COMBINES POSITIVE WATERPROOFING PROTECTION WITH EASE OF HANDLING

EXCLUSIVE FEATURES

A handy overlap guideline is printed 2 ½” (63.5 mm) in from the material edge on each side, assuring proper overlap coverage and assisting in maintaining a straight application. The polymeric waterproofing membrane is protected by a special, easy-to-remove release paper. The exposed membrane strips on the material edges are protected by a pull-off release strip. Exposed polymeric membrane strips are provided on both sides of MEL-ROL for positive membrane-to-membrane adhesion in the overlap area ... note the detail, as shown in inset photo.

TECHNICAL DATA		
PROPERTY	TYPICAL VALUE	TEST METHOD
COLOR ... Carrier Film	White	
Polymeric Membrane	Black	
THICKNESS ... Carrier Film	4 mils	
Polymeric Membrane	56 mils	
TENSILE STRENGTH ... Carrier Film	5900 psi min. (40.71 MPa)	ASTM D 412
Membrane	460 psi (3230 KPa)	(Die C)
ELONGATION	971.3%	ASTM D 412
LOW TEMP CRACK BRIDGING		
100 Cycle -25° F (-32° C)	Pass	ASTM C 836
PEEL ADHESION	11.8 lb./in. (2068 N/m)	ASTM D 903
LAP ADHESION	8.62 lbf/in. (1508.5 N/m)	ASTM D 1876
WATER VAPOR PERMEABILITY	0.036 Perms	ASTM E-96, B
WATER ABSORPTION	0.1%, 72 hrs. max.	ASTM D570
HYDROSTATIC RESISTANCE	Equiv. to 230.9' (70.38 m) of water	ASTM D 5385
PUNCTURE RESISTANCE	50 lbf (222 N)	ASTM E154
EXPOSURE TO FUNGI	Pass, 16 weeks	Soil Test
FLEXIBILITY @ -20° F (-29° C)	Pass	ASTM D 1970

MEL-ROL IS QUICK AND EASY TO APPLY

Temperature ... Apply in dry, fair weather when the air and surface temperatures are above 40° F (4° C). Do not apply to frozen concrete.

MEL-ROL LOW TEMP can be used when air and surface temperatures are between 20° F (-7° C) and 60° F (16° C).

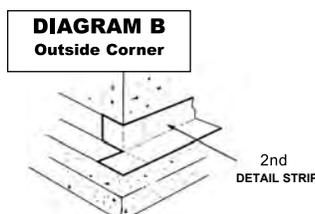
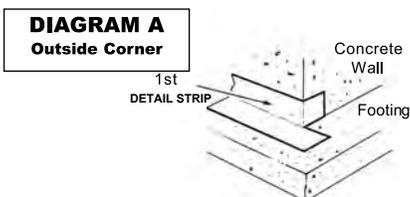
Surface Conditioning ... Apply MEL-PRIME adhesive to surfaces that will be covered within one working day. If left exposed overnight, additional adhesive must be applied. Follow all instructions and precautions on containers.

REMOVE release paper from MEL-ROL from the top edge of the roll and firmly press exposed area to the wall. Remove the release paper from the rolls in a downward direction, pressing MEL-ROL into place on the wall.

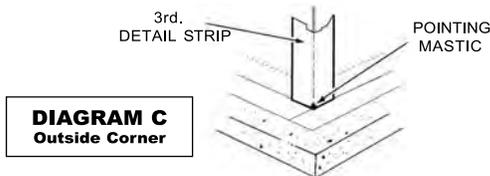
Footing Details ... Use DETAIL STRIP for impaction sheet coverage. First, fold strips lengthwise and then cut at the fold. Material is then ready to install as 4 ½” (114.3 mm) strips on either side of the rebar. Any excess can be turned down on the face of the footing. Next, fill the voids around rebars in the keyway with CATALYTIC BONDING ASPHALT. Pour the walls. Install DETAIL STRIP horizontally along the wall where it meets the footing, placing half the material up the wall and the other half onto the footing. Extend the material 4 ½” (114.3 mm) beyond outside corners. Slit extended portion of DETAIL STRIP lengthwise. Place the horizontal flap out onto the footing and bend the vertical flap around the wall. (See Diagram A.) Repeat this procedure in the opposite direction as shown in Diagram B.

MEL-ROL can be applied to concrete, masonry surfaces, wood, insulated wall systems, and metal. All substrates must be clean, dry, and free of all surface irregularities.

Horizontal Application ... Remove release paper on edge, then position the MEL-ROL membrane. Pull balance of release paper off, running the roll from low to high points, so all laps will shed water. Stagger end laps and overlap all seams at least 2 ½” (63.5 mm). Apply a double-thickness of the MEL-ROL membrane over construction, control, all expansion joints and over cracks greater than 1/16” (1.59 mm) wide.



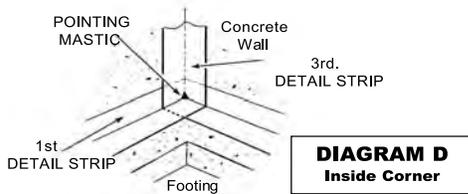
Vertical Wall Application ... Masonry walls may require the application of a cementitious parge-coat. Allow the parge-coat to dry before priming and applying MEL-ROL. When applied, the parge-coat will produce a smooth, uniform, and well-bonded surface. Remove release paper, then apply vertically in lengths approximately 8' (2.44 m) long over the top of the horizontal DETAIL STRIP at the footing. Overlap seams at least 2 1/2" (63.5 mm). Tightly butt edges of membrane and apply POINTING MASTIC in corner applications. (See Diagram C.)



To the top terminations, apply POINTING MASTIC at least 1/8" (3.18 mm) thick and 1" (25.4 mm) wide. As an option, TERMINATION BAR may be used to mechanically fasten the membrane.

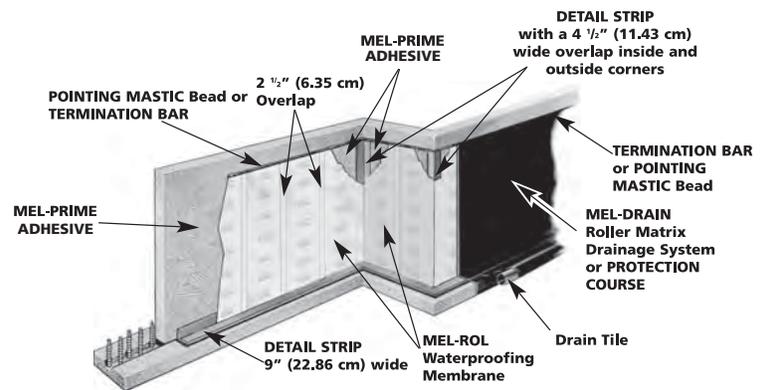
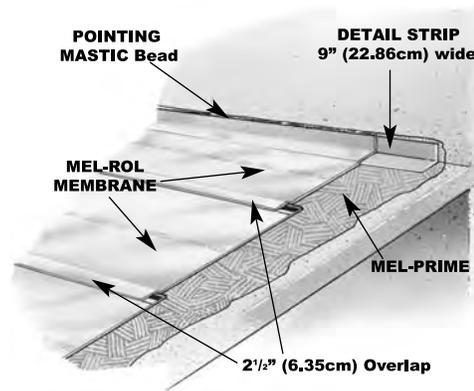
Hand-Rub and Roll Press ... Once positioned, immediately hand-rub the MEL-ROL membrane firmly to the surface, removing any bubbles or wrinkles, then pressure roll the complete surface to assure positive adhesion.

Inside Corners ... Before MEL-ROL is applied, place a vertical DETAIL STRIP on inside corners extending the material 4 1/2" (114.3 mm) beyond each side of the corner. (See Diagram D.) Terminate at the footing and finish the corner with POINTING MASTIC.



Outside Corners ... Bend DETAIL STRIP vertically over the outside corner and extend 4 1/2" (114.3 mm) beyond each side of the corner. Terminate the material at the footing. Finish the corner with POINTING MASTIC. (See Diagram C.)

Drains and Protrusions ... All protrusions should be sealed with two layers of membrane applied at least 6" (152.4 mm) in all directions. Seal all terminations with POINTING MASTIC. Around drains, apply two layers of MEL-ROL and put a bead of POINTING MASTIC between the membrane and clamping rings and at all terminations, drains, and protrusions. See ASTM D 5898.



Inspect and Repair ... A thorough inspection should be made before covering and all necessary repairs made immediately. Tears and inadequate overlaps should be covered with MEL-ROL ... slit fish mouths and patch. Seal edges of all patches with POINTING MASTIC. Where applicable, horizontal applications can be flood-tested for 24 hours. All leaks should be marked and repaired when membrane dries.

Protect the Membrane ... on all vertical and horizontal installations with the immediate application of PROTECTION COURSE if no drainage system is used, or MEL-DRAIN. To secure PROTECTION COURSE, use POINTING MASTIC as an adhesive, and/or physically attach at the top edge using TERMINATION BAR. Backfilling should be done immediately, using care and caution to avoid damaging the waterproofing application.

PRECAUTIONS

Avoid the use of products that contain tars, solvents, pitches, polysulfide polymers, or PVC materials that may come into contact with MEL-ROL. The use of MEL-ROL does not negate the need for relief of hydrostatic heads. A complete drain tile system should be placed around the exterior of footing and under slabs, as required.

ACCESSORIES

MEL-PRIME W/B ... This water-based adhesive prepares concrete surfaces for MEL-ROL application. Arrives ready to use. Requires no additional mixing. MEL-PRIME W/B emits no unpleasant odors and works with all W. R. MEADOWS waterproofing membranes. Applies easily with manual sprayer or roller; VOC-compliant. MEL-PRIME W/B is for use at temperatures of 40° F (4° C) and up.

COVERAGE: 150 - 200 ft.²/gal. (3.7 - 4.9 m²/L)

PACKAGING: 1 Gallon (3.79 Liter) Units (4 units per carton), 5 Gallon (18.93 Liter) Pails

MEL-PRIME ... This solvent-based adhesive is for use at temperatures of 25° F (-4° C) and above. Apply by roller.

COVERAGE: 250-350 ft.²/gal. (6.14 to 8.59 m²/L) PACKAGING: 5 Gallon (18.93 Liter) Pails

MEL-ROL LIQUID MEMBRANE ... A two-component material used as a flashing to form fillets at corners and at protrusions. May be used as a substitute for POINTING MASTIC. Product can also be used in between walls and footings in lieu of DETAIL STRIP.

COVERAGE: As a fillet, approximately 135 lineal feet per gallon (10.87 m per liter) PACKAGING: 1 Gallon (3.79 Liter) Units, 4 Units per carton.

BEM ... BEM can be used as a fillet to round out 90° angles, such as the wall-footing connection, and can be used as a substitute for MEL-ROL LIQUID MEMBRANE.

COVERAGE: As a fillet, approximately 135 lineal ft./gal. (10.9 m/L). PACKAGING: 28 Oz. (828 mL) Cartridges (12 per Carton)

POINTING MASTIC ... Used as an adhesive and for sealing top edge terminations on DETAIL STRIP and membrane, and to adhere PROTECTION COURSE.

COVERAGE: 1/8" x 1" x 200"/gal. (3.18 mm x 25.4 mm x 16.10 ml). PACKAGING: 5 Gallon (18.93 Liter) Pails, 29 Oz. (857.65 ml) Cartridges, 12/ctn.

CATALYTIC BONDING ASPHALT ... Easy-to-apply, one-component material for sealing around rebar.

COVERAGE: 5 gal./1000 ft.²/gal. (4.9 m²/L) PACKAGING: 5 Gallon (18.93 Liter) Pails.



LIMITED WARRANTY

W. R. MEADOWS, INC. warrants at the time and place we make shipment, our material will be of good quality and will conform with our published specifications in force on the date of acceptance of the order. Read complete warranty. Copy furnished upon request.

Disclaimer

The information contained herein is included for illustrative purposes only, and to the best of our knowledge, is accurate and reliable. W. R. MEADOWS, INC. cannot however under any circumstances make any guarantee of results or assume any obligation or liability in connection with the use of this information. As W. R. MEADOWS, INC. has no control over the use to which others may put its product, it is recommended that the products be tested to determine if suitable for specific application and/or our information is valid in a particular circumstance. Responsibility remains with the architect or engineer, contractor and owner for the design, application and proper installation of each product. Specifier and user shall determine the suitability of products for specific application and assume all responsibilities in connection therewith.

DETAIL STRIP ... Convenient, easy-to-use DETAIL STRIP provides an economical and effective method for sealing vertical and horizontal butt joints, i.e. inside or outside corners and where walls and footings meet.

PACKAGING: 9" x 50' (.23 x 15.24 m) roll, 4 rolls per carton.

PROTECTION COURSE ... Use for vertical and horizontal applications. Adhere with POINTING MASTIC or use mechanical fasteners.

PACKAGING: 4' x 8' (1.22 x 2.44 m) panels.

MEL-DRAIN ... is a dimple-raised molded polystyrene fabric designed to provide high flow capacity to reduce hydrostatic pressure buildup around waterproofing and vaporproofing membranes. Choice of drain types are available for vertical, horizontal, and site applications. Use MEL-PRIME to condition surface prior to application of MEL-DRAIN.

TERMINATION BAR ... is a high strength, pre-formed, multi-purpose, plastic strip designed to support vertical membrane systems and PROTECTION COURSE at their termination point.

PACKAGING: 10' (Holes every 6" o/c, 2" from either end), 25 pieces per carton.

MAINTAIN ENERGY EFFICIENCY

Wet insulating materials lose much of their "R" factor performance characteristics, reducing the energy efficiency of the structure. W. R. MEADOWS thermal and moisture protection products play a key role in *maintaining* the structure's energy efficiency and aiding in the integrity of other structural systems, such as insulation.

LEED INFORMATION

May help contribute to LEED credits:

- EA Credit 1: Optimize Energy Performance
- IEQ Credit 3.1: Construction Indoor Air Quality Management Plan: During Construction
- IEQ Credit 7.1: Thermal Comfort - Design
- MR Credit 2: Construction Waste Management
- MR Credit 5: Regional Materials

For CAD details, most recent data sheet, further LEED information, and MSDS, visit www.wrmeadows.com.



SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product: MEL-ROL® **Part Number:** 5110060
Manufacturer: W. R. MEADOWS, INC. **Address:** 300 Industrial Drive
 Hampshire, Illinois 60140
Telephone: (847) 214-2100 **In case of emergency, dial (800) 424-9300 (CHEMTREC)**
Revision Date: 8/15/2019
Product Use: Waterproofing Membrane

SECTION 2: HAZARDS IDENTIFICATION/EXPOSURE LIMITS

HMIS
| Health | |0| Product is classified as non-hazardous per OSHA 1910.1200. Mel-Rol is
| Flammability | |1| defined by OSHA as an "article." A manufactured item that is formed to a specific
| Reactivity | |0| shape or design during manufacture that does not release or result in exposure
| Personal Protection | | | to a hazardous chemical under normal use conditions.

SECTION 3: HAZARDS COMPONENTS

<u>Chemical Name:</u>	<u>CAS Number</u>	<u>% by Weight</u>	<u>SARA 313</u>	<u>Vapor Pressure (mm Hg@20°C)</u>	<u>LEL (@24°C)</u>
1. Petroleum Asphalt	8052-42-4	55-60	No	N/A	N/A

N/A = Not Applicable

Under the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1966 (SARA) and 40 CFR Part 372, chemicals listed on the 313 List (40 CFR Part 373.65) are identified under the heading "SARA 313."

SECTION 4: EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Not expected to be an exposure route.
SKIN CONTACT: Wash affected areas with soap and water if available.
INHALATION: Not expected to be an exposure route.
INGESTION: Not expected to be an exposure source.
MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND CHRONIC: See Section Eleven for Symptoms/Effects.

SECTION 5: FIRE AND EXPLOSIVES HAZARDS

FLASHPOINT: Not applicable; product is a solid.
EXTINGUISHING MEDIA: Water fog, foam, dry chemical.
CHEMICAL/COMBUSTION HAZARDS: Oxides and compounds of nitrogen/sulfur.
PRECAUTIONS/PERSONAL PROTECTIVE EQUIPMENT: Avoid smoke inhalation. Use appropriate respiratory protection.

SECTION 6: ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK PROCEDURES: Not applicable. Product is a solid.

SECTION 7: HANDLING AND STORAGE

SAFE HANDLING PROCEDURES: Avoid direct contact.
SAFE STORAGE: Prevent job-site damage.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

<u>Chemical Name:</u>	<u>OSHA</u>				<u>ACGIH</u>			
	<u>PEL</u>	<u>PEL/CEILING</u>	<u>PEL/STEL</u>	<u>SKIN</u>	<u>TLV</u>	<u>TLV/CEILING</u>	<u>TLV/STEL</u>	<u>SKIN</u>
1. Petroleum Asphalt	5 mg/m ³ *	N/E	N/E	No	0.5 mg/m ³ *	N/E	N/E	N/E

ENGINEERING CONTROLS: None required under normal use conditions.
PERSONAL PROTECTIVE EQUIPMENT: Safety glasses, chemical-resistant gloves. *N/E = Not Established* *: Asphalt Fumes

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: N/A	VAPOR DENSITY: N/A	% VOLATILE BY VOLUME: N/A
EVAPORATION RATE: N/A	pH LEVEL: N/A	% VOLATILE BY WEIGHT: N/A
WEIGHT PER GALLON: N/A	PRODUCT APPEARANCE: Black Solid	VOC CONTENT: N/A
ODOR: Mild Asphaltic	ODOR THRESHOLD: N/D	MELTING/FREEZING POINT: N/D
FLASH POINT: See Section 5	FLAMMABILITY: N/D	UEL/LEL: N/D
VAPOR PRESSURE: N/D	RELATIVE DENSITY: N/D	SOLUBILITY: N/D
PARTITION COEFFICIENT: N/D	AUTOIGNITION TEMPERATURE: N/D	DECOMPOSITION TEMPERATURE: N/D
VISCOSITY: N/D		<i>N/D: Not Determined</i>

SAFETY DATA SHEET

Date of Preparation: 8/15/19	Page 2 of 2	5112060
SECTION 10: STABILITY/REACTIVITY		
STABILITY: Stable. HAZARDOUS POLYMERIZATION: Will not occur.		
CONDITIONS AND MATERIALS TO AVOID: None recognized.		
HAZARDOUS DECOMPOSITION PRODUCTS: None recognized.		
SECTION 11: TOXICOLOGICAL INFORMATION		
EYE CONTACT: Direct contact may cause mild irritation.		
SKIN CONTACT: Direct contact may cause slight skin irritation.		
INHALATION: Not anticipated to be an exposure route.		
INGESTION: Not anticipated to be an exposure route.		
SIGNS AND SYMPTOMS: Symptoms of eye irritation include tearing, reddening, and swelling. Symptoms of skin irritation include redness and swelling. Gastrointestinal irritation symptoms include nausea, vomiting, and abdominal discomfort.		
AGGRAVATED MEDICAL CONDITIONS: None recognized.		
OTHER HEALTH EFFECTS: None recognized.		
SECTION 12: ECOLOGICAL INFORMATION		
ECOTOXICITY: N/E	DEGRADABILITY: N/E	BIOACCUMULATIVE POTENTIAL: N/E
SOIL MOBILITY: N/E	OTHER ADVERSE EFFECTS: None Recognized	
SECTION 13: WASTE DISPOSAL INFORMATION		
WASTE DISPOSAL INFORMATION: Product is classified as a non-hazardous waste.		
SECTION 14: TRANSPORTATION INFORMATION		
HAZARDOUS/NON-HAZARDOUS MATERIAL: Not regulated by DOT.		
UN NUMBER: None	HAZARD CLASS: N/A	PACKING GROUP: N/A
UN PROPER SHIPPING NAME: N/A		
ENVIRONMENTAL HAZARDS: None recognized.		
BULK TRANSPORTATION INFORMATION: None.		
SPECIAL PRECAUTIONS: None.		
SECTION 15: REGULATORY INFORMATION		
OTHER REGULATORY CONSIDERATIONS: None recognized.		
SECTION 16: OTHER INFORMATION		
PREPARATION DATE:	8/15/2019	
PREPARED BY:	Dave Carey	

The information contained herein is based on the data available to us and is believed to be correct. However, we make no warranty, expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. We assume no responsibility for injury from the use of this product described herein.

GUIDE SPECIFICATION FOR MEL-ROL: ROLLED, SELF ADHERING WATERPROOFING MEMBRANE

SECTION 07 13 26

SELF-ADHERING SHEET WATERPROOFING

Specifier Notes: This guide specification is written according to the Construction Specifications Institute (CSI) MasterFormat 2010. The section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project. Coordinate this section with other specification sections and the drawings.

Specifier Notes: W.R. Meadows SEALTIGHT® MEL-ROL® waterproofing system is a flexible, versatile, dependable, roll-type waterproofing membrane. It is composed of a nominally 56 mil thick layer of polymeric waterproofing membrane on a heavy duty, 4 mil thick, cross-laminated polyethylene carrier film. The two components are laminated together under strict quality-controlled production procedures. A handy overlap guideline is printed 2 ½" (63.5 mm) in from the material edge on each side to assure proper overlap coverage and to assist in maintaining a straight application. Special exposed polymeric membrane strips are provided on both sides for positive membrane-to-membrane adhesion in the overlap area. The membrane strips are protected by a pull-off release strip.

MEL-ROL waterproofing system provides a cost-effective answer to properly waterproof foundations, vertical walls and below-grade floors in residential and commercial construction. It is equally effective for use as between-the-slab waterproofing on plaza decks, parking decks and structural slabs. Use it as a waterproofing membrane to isolate mechanical and electronic rooms, laboratories, kitchens and bathrooms. MEL-ROL offers positive protection when "wrapped around" major rapid transit, vehicular, utility and pedestrian tunnel projects. MEL-ROL can also be used on insulated concrete forms (ICF).

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Application of rolled, self-adhering waterproofing membrane system.

1.02 RELATED SECTIONS

Specifier Notes: Edit the list of related sections as required for the project. List other sections dealing with work directly related to this section.

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 07 21 00 – Thermal Insulation.
- C. Section 07 60 00 – Flashing and Sheet Metal.
- D. Section 07 92 00 – Joint Sealants.
- E. Section 33 46 00 - Subdrainage.

1.03 REFERENCES

- A. American Railway Engineering & Maintenance of Way Association (AREMA) Specification Chapter 29 - Waterproofing.

- B. ASTM D146 - Standard Test Methods for Sampling and Testing Bitumen-Saturated Felts and Fabrics Used in Roofing and Waterproofing.
- C. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
- D. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
- E. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
- F. ASTM D1876 – Standard Test Method for Peel Resistance of Adhesives. (T-Peel Test).
- G. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- H. ASTM E96 (Method B) - Standard Test Methods for Water Vapor Transmission of Materials.
- I. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.

1.04 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Submit manufacturer's product data and application instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in a clean dry area in accordance with manufacturer's instructions.
- C. Store adhesives and primers at temperatures of 40°F (5°C) and above to facilitate handling.
- D. Store membrane cartons on pallets.
- E. Do not store at temperatures above 90°F (32°C) for extended periods.
- F. Keep away from sparks and flames.
- G. Completely cover when stored outside. Protect from rain.
- H. Protect materials during handling and application to prevent damage or contamination.
- I. Avoid use of products which contain tars, solvents, pitches, polysulfide polymers, or PVC materials that may come into contact with waterproofing membrane system.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Product not intended for uses subject to abuse or permanent exposure to the elements.
- B. Protect rolls from direct sunlight until ready for use
- C. Do not apply membrane when air or surface temperatures are below 40°F (4°C).
- D. Do not apply to frozen concrete.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. W.R. MEADOWS, Inc., PO Box 338, Hampshire, Illinois 60140-0338. (800) 342-5976. (847) 683-4500. Fax (847) 683-4544. Web Site www.wrmeadows.com.

2.02 MATERIALS

- A. Rolled, Self-Adhering Waterproofing Membrane: Polymeric waterproofing membrane protected by release paper on cross-laminated polyethylene carrier film with exposed polymeric membrane strips on both sides protected by pull-off release strips.
1. Performance Based Specification: Waterproofing membrane shall have the following characteristics:
 - a. Compliance: AREMA Specification Chapter 29 - Waterproofing.
 - b. Thickness:
 - 1) Carrier Film: 4 mils.
 - 2) Polymeric Membrane: 56 mils.
 - c. Tensile Strength, ASTM D412, Die C:
 - 1) Carrier Film: 5,900 psi (40.71 MPa) minimum.
 - 2) Polymeric Membrane: 460 psi (3.23 MPa) minimum.
 - d. Elongation, ASTM D412, Die C: Polymeric Membrane: 971 % minimum.
 - e. Peel Adhesion, ASTM D903: 11.8 lbf/in. (2068 N/m).
 - f. Lap Adhesion, ASTM D1876: 8.62 lbf/in. (1508 N/m)
 - g. Water Vapor Permeability, ASTM E96, Method B: 0.036 perms.
 - h. Water Absorption, ASTM D570: 0.1 percent, 72 hours maximum.
 - i. Resistance to Hydrostatic Head: Equivalent to 230.9 feet (70.3 m) of water.
 - j. Puncture Resistance, ASTM E154: 48.2 lbf (214.6 N).
 - k. Exposure to Fungi, Soil Test: Pass, 16 weeks.
 - l. Color:
 - 1) Carrier Film: White.
 - 2) Polymeric Membrane: Black.
 2. Proprietary Based Specification: MEL-ROL Waterproofing System by W.R. MEADOWS.

Specifier Notes: Select one of the following MEL-ROL products based on air and surface temperatures during time of application.

- a. MEL-ROL: For use at temperatures of 40°F (4°C) and above.
- b. MEL-ROL LT (Low Temperature): For use at temperatures of 20°F (-7°C) to 60°F (16°C).
- c. MEL-ROL XLT (Extra Low Temperature): For use at temperatures of 0°F (-18°C) to 60°F (16°C).

2.03 ACCESSORIES

- A. Surface Conditioner:
 1. Temperatures Above 40°F (4°C): Mel-Prime Water Base Primer.
 2. Temperatures Above 0°F (-18°C): Mel-Prime VOC Compliant Solvent Base Primer or Standard Solvent Base Primer.
- B. Flashing and Fillets: MEL-ROL LIQUID MEMBRANE.
- C. Pointing Mastic: POINTING MASTIC.
- D. Termination Bar: TERMINATION BAR.
- E. Corner Tape: DETAIL STRIP.
- F. Waterproofing Protection Course: PROTECTION COURSE
- G. Rolled Matrix Drainage System: MEL-DRAIN Rolled Matrix Drainage System.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive self-adhering membrane. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

- A. Protect adjacent surfaces not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
- C. Do not apply waterproofing to surfaces unacceptable to manufacturer.
- D. Concrete surfaces must be clean, smooth and free of standing water.
- E. Patch all holes and voids and smooth out any surface misalignments.
- F. Apply surface conditioner to surfaces that will be covered within one working day according to manufacturer's recommended coverage rates.
- G. Install corner tape on all inside and outside corners, including the footing.
- H. Apply a 9" (229 mm) strip of self-adhering membrane over construction, control and expansion joints and over cracks greater than 1/16" (1.59 mm) wide.
- I. Seal all terminations with pointing mastic.

3.03 APPLICATION

Specifier Notes: Select A (Horizontal Application), or B (Vertical Application) based on project requirements

- A. Horizontal Application
 1. Apply waterproofing membrane system in accordance with manufacturer's instructions.
 2. Ensure accessory materials are compatible with membrane and approved by membrane manufacturer.
 3. Remove release paper on edge, then position the membrane.
 4. Pull balance of release paper off, running the roll from low to high points, so all laps will shed water.
 5. Immediately hand-rub the membrane firmly to the surface, removing any bubbles or wrinkles, then pressure roll the complete surface to assure positive adhesion.
 6. Stagger end laps and overlap all seams at least 2 1/2" (63.5 mm).
 7. Seal all terminations with pointing mastic.
 8. Inspect membrane before covering and repair as necessary. Cover tears and inadequate overlaps with membrane. Seal edges of patches with pointing mastic.
 9. Perform flood testing of horizontal applications, as required. Mark leaks and repair when membrane dries.
- B. Vertical Application
 1. Apply waterproofing membrane system in accordance with manufacturer's instructions.

2. Ensure accessory materials are compatible with membrane and approved by membrane manufacturer.
3. Remove release paper on edge and position the membrane.
4. Pull balance of release paper off, running the roll vertically over the top of the corner tape at the footing.
5. Immediately hand-rub the membrane firmly to the surface, removing any bubbles or wrinkles, then pressure roll the complete surface to assure positive adhesion.
6. Overlap all seams and stagger end laps at least 2 ½" (63.5 mm).
7. Seal all terminations with pointing mastic.
8. Inspect membrane before covering and repair as necessary. Cover tears and inadequate overlaps with membrane. Seal edges of patches with pointing mastic.

3.04 PROTECTION

- A. Protect membrane on vertical and horizontal applications with immediate application of waterproofing protection course, rolled matrix drainage board.
- B. Backfill immediately using care to avoid damaging waterproofing membrane system.

END OF SECTION



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INSTALLATION GUIDELINES MEL-ROL®

This document has been created as an addendum to the MEL-ROL technical data sheet to provide the recommended procedure to use when installing MEL-ROL self-adhesive waterproofing membrane from W. R. MEADOWS. The guide will cover recommended tools to use, surface preparation prior to membrane installation, and the membrane installation on both vertical and horizontal surfaces.

TOOLS RECOMMENDED

- Utility knife
- Chalk line
- Stiff bristle broom
- 6' (1.8 m) broom handle or equivalent
- 1.5" (38.1 mm) or 2" (50.8 mm) margin trowel
- Medium nap (3/8" - 1/2") lambswool paint roller
- Tape measurer
- Gloves (solvent-resistant)
- Screwdriver
- Small diamond point trowel
- 35 lb. or heavier linoleum roller
- Hammer
- Rags
- Cleanup solvent similar to xylene or toluene or SEALTIGHT CLEANER or SEALTIGHT SOLVENT from W. R. MEADOWS

The above tools are enough to perform a proper installation; however, more tools may be used.

W. R. MEADOWS MATERIALS NEEDED

- MEL-ROL self-adhesive waterproofing membrane
- MEL-PRIME, MEL-PRIME N.E., or MEL-PRIME W/B adhesive
- DETAIL STRIP
- POINTING MASTIC
- BEM
- PC protection board and/or MEL-DRAIN drainage board
- MEADOW-CRETE GPS
- MEADOW-PATCH 20



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SURFACE PREPARATION

Concrete should be cured at least 72 hours, be clean, dry, smooth, and free of voids. Repair spalled areas; fill all voids and remove all sharp protrusions. Apply in dry, fair weather when the air and surface temperature are above 40° F (4° C). Do not apply to frozen concrete. MEL-ROL LOW TEMP can be used when air and surface temperatures are between 20° F (-7° C) and 60° F (16° C),

Apply MEL-PRIME adhesive to surfaces that will be covered within one working day. If left exposed overnight, additional adhesive must be applied. Follow all instructions and precautions on containers.

MEL-ROL can be applied to concrete, masonry surfaces, wood, insulated wall systems, and metal. All substrates must be clean, dry, and free of all surface irregularities.

Masonry walls may require the application of a cementitious parge-coat. Allow the parge-coat to dry before priming and applying MEL-ROL. When applied, the parge-coat will produce a smooth, uniform, and well-bonded surface. Apply MEL-PRIME to all areas to receive MEL-ROL.

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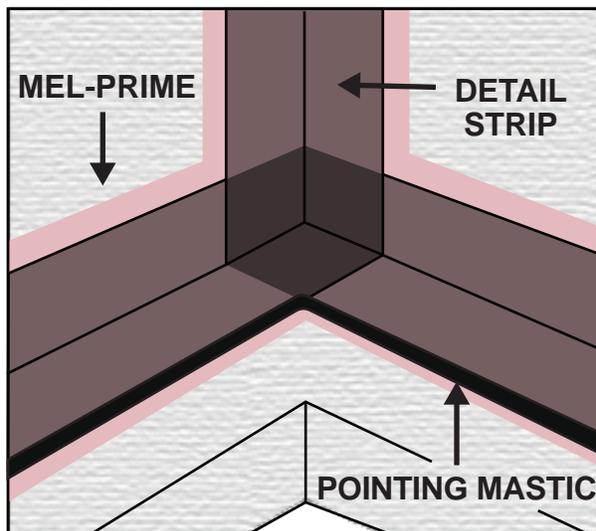
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INSTALLATION GUIDELINES MEL-ROL®

DETAILING

INSIDE CORNERS

Before MEL-ROL is applied, place a vertical **DETAIL STRIP** on inside corners extending the material 4 ½" (114.3 mm) beyond each side of the corner. Terminate at the footing and finish the corner with **POINTING MASTIC**.



OUTSIDE CORNERS

Bend **DETAIL STRIP** vertically over the outside corner and extend 4 ½" (114.3 mm) beyond each side of the corner. Terminate the material at the footing. Finish the corner with **POINTING MASTIC**.

DRAINS AND PROTRUSIONS

All protrusions should be sealed by forming a collar of **MEL-ROL** or **DETAIL STRIP** applied at least 3" (76.2 mm) in all directions. Seal all terminations with **POINTING MASTIC**. Around drains, apply in the same method and put a bead of **POINTING MASTIC** between the membrane and clamping rings at all terminations, drains, and protrusions.



FOOTING DETAILS

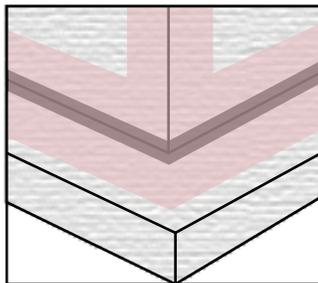
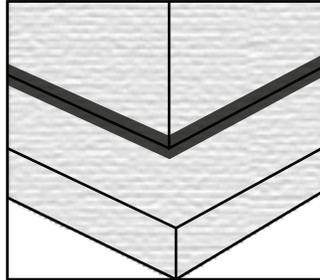
Fill 90° interior angles with a cove of **BEM**. Apply **MEL-PRIME** in all the inside and outside corners prior to installing **DETAIL STRIP**. Install **DETAIL STRIP** 4 ½" (114.3 mm) up the wall and 4 ½" (114.3 mm) on the footing. Extend the material 4 ½" (114.3 mm) beyond outside corners. Slit extended portion of **DETAIL STRIP** lengthwise. Place the horizontal flap out onto the footing and bend the vertical flap around the wall. Repeat this procedure in the opposite direction. Apply a bead of **POINTING MASTIC** on the exposed edge of installed **DETAIL STRIP** at footing. Please note: use **POINTING MASTIC** in place of **BEM** when using **MEL-ROL XLT**.



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INSTALLATION GUIDELINES MEL-ROL®

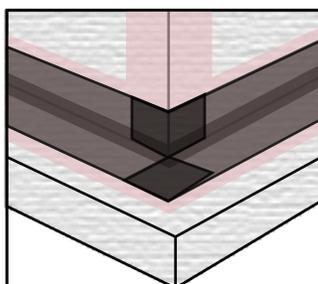
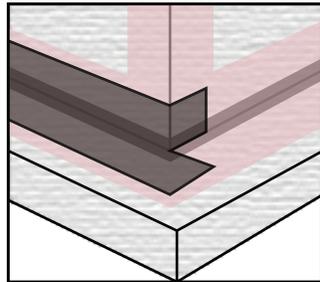
1. Cove of BEM



2. MEL-PRIME



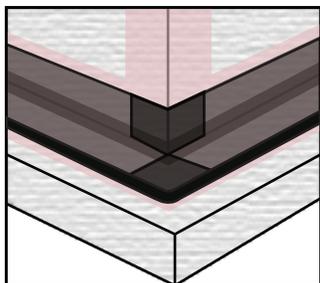
3. 1st DETAIL STRIP



4. 2nd DETAIL STRIP



5. POINTING MASTIC



VERTICAL WALL APPLICATION

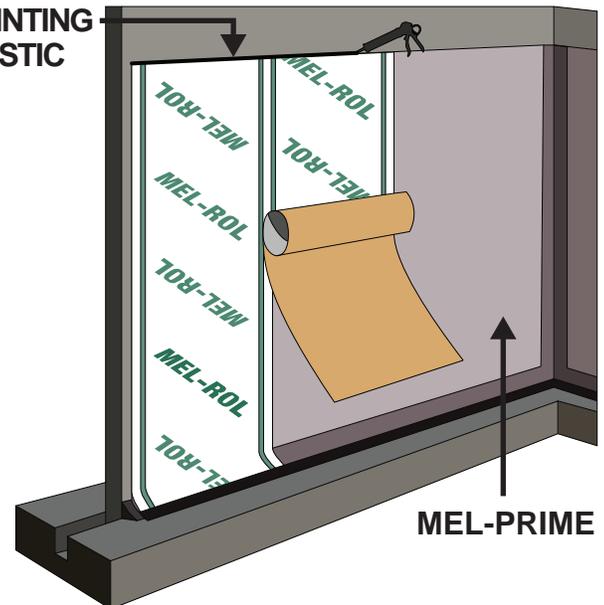
Remove the release paper, then apply vertically in lengths approximately 8' (2.44 m) long over the top of the horizontal DETAIL STRIP at the footing. Overlap the seams at least 2 1/2" (63.5 mm). Tightly butt edges of membrane and apply POINTING MASTIC in corner applications.

To aid in a proper overlap, position the membrane so that it covers the "W. R. MEADOWS" wording running along the edge.

Apply POINTING MASTIC to the top terminations at least 1/8" (3.18 mm) thick and 1" (25.4 mm) wide. As an option, TERMINATION BAR may be used to fasten and membrane mechanically.

Once positioned, immediately hand-rub the MEL-ROL membrane firmly to the surface removing any bubbles or wrinkles, then pressure roll the complete surface to assure positive adhesion. Apply POINTING MASTIC to the leading edge of the membrane at the end of each working day.

POINTING MASTIC



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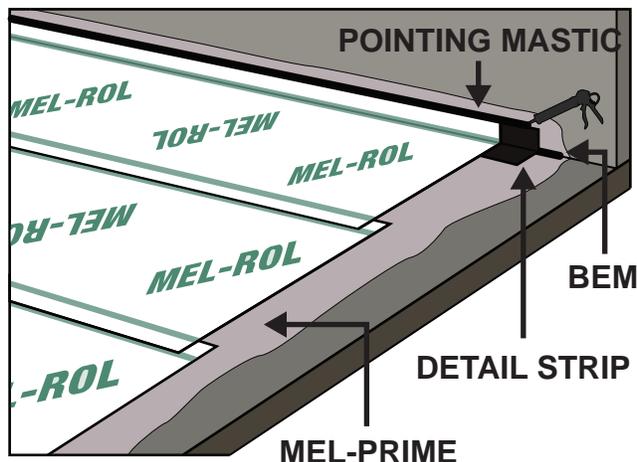
INSTALLATION GUIDELINES MEL-ROL®

HORIZONTAL APPLICATION

Remove the release paper on the edge, then position the MEL-ROL membrane. Pull the balance of the release paper off, running the roll from low to high points so that all the laps will shed water. Stagger end laps and overlap all seams at least 2 ½" (63.5 mm). All terminations of MEL-ROL must be detailed with a bead of POINTING MASTIC. Apply a double-thickness of the MEL-ROL membrane over construction, control, and all expansion joints and cracks greater than 1/16" (1.59 mm) wide.

Once positioned, immediately hand-rub the MEL-ROL membrane firmly to the surface removing any bubbles or wrinkles. Pressure roll the complete surface to assure positive adhesion.

A thorough inspection should be made before covering and all necessary repairs made immediately. Tears and inadequate overlaps should be covered with MEL-ROL. Slit fish mouths and patch. If flooding test is required, allow a minimum of 24 hours following the membrane installation. Flood testing should be performed accordingly to ASTM D5957.



INSPECT AND REPAIR

A thorough inspection should be made before covering and all necessary repairs made immediately. Tears and inadequate overlaps should be covered with MEL-ROL. Slit fish mouths and patch. Seal edges of all patches with POINTING MASTIC. Where applicable, horizontal applications can be flood-tested for 24 hours. All leaks should be marked and repaired when membrane dries.

PROTECT THE MEMBRANE

Immediately apply PROTECTION COURSE on all vertical and horizontal installations if no drainage system is used, or apply MEL-DRAIN. To secure PROTECTION COURSE, use POINTING MASTIC as an adhesive, and/or physically attach at the top edge using TERMINATION BAR.

When using MEL-DRAIN on a vertical wall application, align the first roll and mechanically fasten in place. Roll MEL-DRAIN down the wall, overlapping the footing. Continue MEL-DRAIN installation to cover installed MEL-ROL. Pull away the fabric layer of MEL-DRAIN to expose dimples. Install drainage tile and wrap excess fabric over the drainage tile. Install TERMINATION BAR and fasted at 12" on center to hold MEL-DRAIN in place and apply a bead of POINTING MASTIC on the top edge of the TERMINATION BAR.



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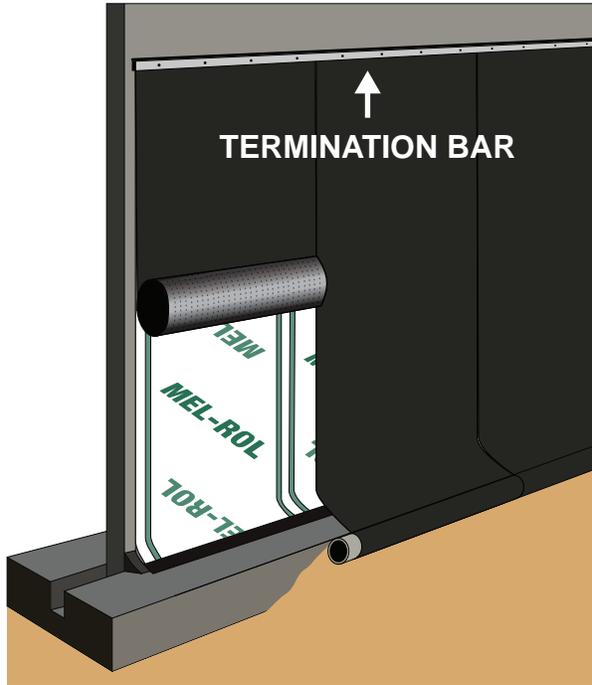
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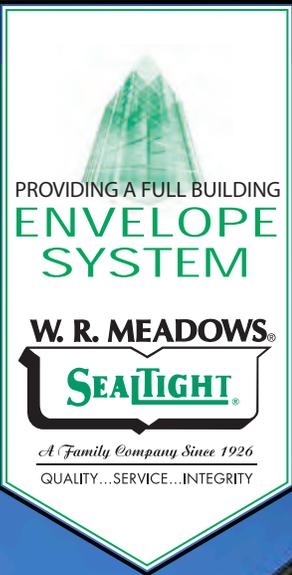
Backfilling should be done immediately, using care and caution to avoid damaging the waterproofing application.

PRECAUTIONS

Avoid the use of products that contain tars, solvents, pitches, polysulfide polymers, or PVC materials that may come into contact with MEL-ROL. The use of MEL-ROL does not negate the need for relief of hydrostatic heads. A complete drain tile system should be placed around the exterior of footings and under slabs, as required.



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A NEW HOME FOR BIOSCIENCE RESEARCH: W. R. MEADOWS on Campus at the University of Arizona



Pursuing the cutting edge in research and education has always been a focus at the University of Arizona—located in Tucson. And this intent was evident when the University first set out to build a new hub, on campus, to house bioscience research themes that included work on biosensors, bioimaging, bioinformatics, healthy aging, genomics technology, and precision medicine. The building itself is a joint collaboration between the University of Arizona Office for Research, Discovery, and Innovation and the University’s Department of Health Sciences. It was designed by ZGF Architects and BWS Architects, and the general contractor was DPR Construction.

The goal of the building was to house 50 faculty members and over 300 graduate students, post-docs, and technical support staff. Some of these individuals would be moving from other places on campus to pursue interdisciplinary research, and many would be new to the University—especially recruited because of the promise associated with this new space. The building was also set to be home to a clinical-certified genetics facility focused on testing tumor biopsies in order to set the best course of treatment for individual patients.

Ultimately, the demand for innovation was primary in this construction project. And the teams associated with the groundbreaking and realization of this building had to be able to rise to the challenge.

A Trifecta of Beauty, Functionality, and Sustainability

With a price tag of \$107M and comprised of square footage equaling just over 140K, the new construction of this state-of-the-art facility began in 2015. It was significant in nature and involved many moving parts—and project teams. There was a need for collaboration, communication, and synergy alongside the requirement of hitting quality assurance targets. And it just so happened that W. R. MEADOWS happened to be listed in the construction specifications as a potential manufacturer who could get the job done.

“An air barrier and numerous waterproofing products were needed for this project,” states Greg Neundorfer, the W. R. MEADOWS salesperson in charge of this project. “There were also multiple transitions between these products that needed to be addressed.”

Whatever products used in this project had a tall order to meet; they had to work well with a variety of substrates.

Creating the Foundation

Starting from the ground up, the first part of the project was centered on the foundation of the building.



“We were confronted with needing multiple forms of waterproofing,” explained Neundorfer. “The first was called blindside waterproofing, also known as pre-placed waterproofing. This is present when you are faced with having a hole in the ground that is the size of the building as opposed to being over-excavated. You are building the structure within the exact size of the building itself. So, you have to install a shoring system in order to keep the soil stable. Then, the waterproofing is placed and the concrete is cast against the waterproofing.”

It was Firestop Southwest, the waterproofing installer, who ultimately brought W. R. MEADOWS to the table with the University of Arizona. Ryan Olsen, originally the estimator and project manager for Firestop Southwest, and who ended up transitioning into a consulting role three months into the project with a third-party testing agency, explains.

“W. R. MEADOWS wasn’t originally in the specs, but we proposed using W. R. MEADOWS for the waterproofing membrane on both the below-grade and podium decks in lieu of what was specified. The specs, ultimately, had multiple products from varied manufacturers, but we thought it would be better to recommend all W. R. MEADOWS products. I went to U of A and presented to them, explaining what W. R. MEADOWS could do and why we should use them on this project. I told them all the benefits,” said Olsen.

The University of Arizona ended up agreeing with Olsen’s recommendation and awarded the bid.

“I think that using all of the products together is a great benefit to the owner,” said Olsen. “If they ever have an issue, they only have one manufacturer to turn to for maintenance or warranties.”

Another waterproofing product needed had to address positive-side below-grade waterproofing. This is when there is an over-excavated hole and the concrete is cast. The waterproofing is then applied from the back-fill side of the hole.

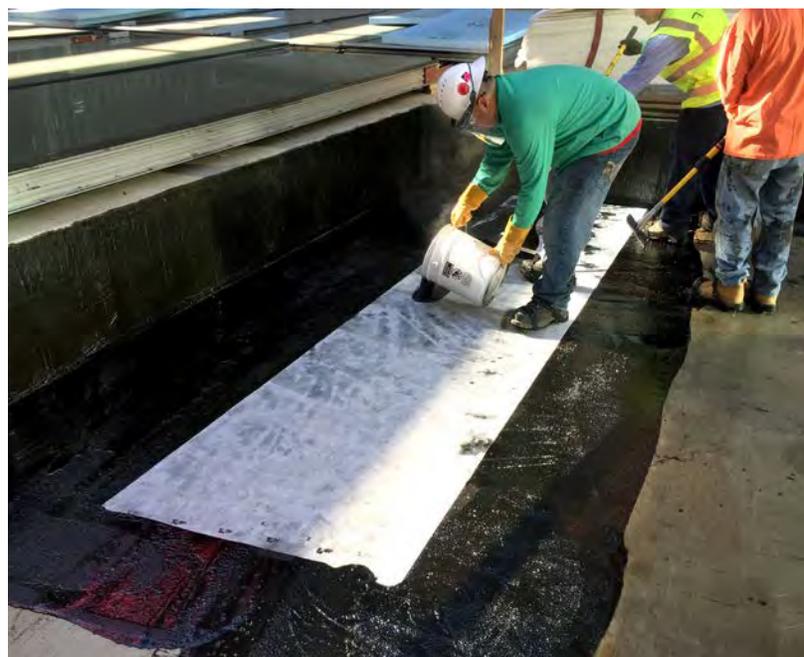
Finally, there was also a large breezeway/walkway area that was positioned over the top of the basement. This received two different types of products including a hot-applied material and a cold-applied material.

All in all, the blindside product was PRECON®, the positive-side below-grade was MEL-ROL™, the hot-applied



material was HRM 714, and the cold-applied material was HYDRALASTIC™ 836.

Tracy Smith and Henry Rocha, Vice President and Lead Installer, respectively, at Firestop Southwest, noted, “There are many factors that sets W. R. MEADOWS products apart from other competitors on the market—cost savings, ease of use, durability, and local warehousing. It’s a superior company. We have been in business for 18 years and using W. R. MEADOWS for 10 of those. We used so many different products with this project. And even though we have worked with other manufacturers, few compare to W. R. MEADOWS. [Their products] bond to anything you apply [them] to, and it is great with the Arizona heat.”





A Challenge Arises

The below-grade vertical walls presented the first issue. “The substrates were a little tough,” stated Rocha. “The concrete wasn’t done correctly so it had to be repaired and replaced before we could put the waterproofing down. But Greg was on site the entire time and helped tremendously.”

“It was the manufacturer’s approval process for warranties that was utilized here,” said Smith. “Greg assessed the substrate for warranty, and everything was remedied.”

Brent Elliott, a Superintendent for DPR Construction, was responsible for handling the foundation structure, air barrier, waterproofing, and anything that had to do with the exterior envelope of the building, also reflected on the situation. “It was a big job,” he said. “We had to pour the foundation walls and then had to cast in place elevated slabs that also needed to be poured. So, we had to run the waterproofing up the walls, which then had to tie back into the frame walls. We also had to tie in an existing basement. We had Greg come out and work with us on the strategy here. There was so much going on. From the waterproofing standpoint, it was probably the most technical project I have ever been involved with.”

All in all, Firestop Southwest had a crew of six on site over the course of about a year. There were multiple stages with what the company was involved in and note that Neundorfer’s experience definitely assisted in the process.

“We have a long history with [Greg]. He has been our local rep for a very long time. We love to work with him and have an excellent partnership with him,” said Rocha.

Firestop Southwest also says that there was a considerable time savings experienced by their team, which led to an overhead and cost reduction. “Workers understand how to use the [products] and can handle them well. PRECON is especially easy to use and install. And for an installer, time savings is a huge benefit in this regard—it goes beyond material cost alone. If we can do single source and not have to have multiple manufacturers involved, that is a great perk, too,” said Rocha.

“I have worked with W. R. MEADOWS before,” continued DPR’s Elliott. “However, it was the first time I worked with Greg. He was always attentive. If it was an emergency or we had a question that needed an immediate answer, he would address it quickly. We didn’t have to put the brakes on and hold up the whole project to wait for him to get back to us.”

The Exterior Façade

When it came to the air barrier installer on site, it was AK&J Sealants that was on the case. Brian Whited is a partner in the company and was the project manager for the University of Arizona's Bioscience Research Laboratory.

"We have used W. R. MEADOWS air and vapor products—as well as their waterproofing products—on and off for several years now. The Air-Shield LMP is one of our go-to air and vapor products. So, when we were looking at the [U of A] project, that was the product that we referenced in order to price it," explained Whited. "I believe [W. R.] MEADOWS was actually our approved manufacturer in the spec when we put the pricing together."

AK&J Sealants was responsible for installing the air barrier on the entire exterior façade of the building and had a crew of five workers at the site on average. The bulk of the façade was metal panel, but there was also some masonry and glass. The air barrier was set to be placed behind these exterior finishes.



"The normal LMP system is a 60-mils system," said Whited. "However, the specs for this project called for a 90-mils system. It was a bit 'beefier' than what AK&J usually handles. However, very few challenges were experienced, and frankly, the majority of issues that did occur were related to scheduling, the fast pace of the project, and the sheer number of people who were present at the site. [AK&J] had to be precise in our installation. There were masons and metalsmiths there who were also obviously wanting to keep to their own schedules and do their work. At the end of the day, any of the problems we experienced had nothing to do with W. R. MEADOWS. They delivered everything on time, and it was always high quality. We were happy with their product line and with the local support."

Whited went on to also say that working with Neundorfer was definitely a perk. The two regularly interacted and walked the jobsite together.

"The technical assistance he provides is why we feel like we have a good partner. We know we can reach out and ask questions and he is going to get back with us. That helps projects move forward," commends Whited.

The Man on Both Sides of the Job

If there is one person on this project who had one of the most comprehensive views while on site, it was Ryan Olsen. As stated, Olsen originally entered the project while working for Firestop Southwest. He then transitioned into a role with Field Verified—a third-party consultant. Now, instead of being charged with the installation of the waterproofing, he was responsible for observing and ensuring that the products were installed correctly and properly.



“I was on both sides of the fence here,” said Olsen. “After I left Firestop and started with Field Verified, I ended up having to go over my recommendations and submittal of the W. R. MEADOWS products with my leadership. I discussed all of the reasons why these products were used. What’s more is that instead of only overseeing the below-grade waterproofing, I was actually looking at the entire envelope, including the air and vapor barrier. At the end of the day, everything except the roof was sealed with W. R. MEADOWS products.”

Further to consider, per Olsen, was the way all of the products tied together.

“It was nice to see how the W. R. MEADOWS waterproofing products would tie in with the air barrier on the exterior walls—and many times in places that would normally prove difficult. The products were able to transition from one substrate to the next. We didn’t have to worry about compatibility because W. R. MEADOWS had that covered,” said Olsen.

Ultimately, many times, when one is working on a jobsite, there may not be details on how to handle a unique situation in the installation process. If the manufacturer is not present, then it definitely can slow down the process as the contractors will need to get special approval before moving forward.

“If the manufacturer is on site and involved, then they can assist directly. This is what W. R. MEADOWS does,” praises Olsen. “Now that I am a consultant, I can appreciate the field support. They are one of the leading manufacturers when it comes to customer service. They will come on site when one or more of their products are being installed and will talk with the people handling the products. They operate cross-functionally with everyone involved, make sure things are going smoothly, and offer help and knowledge.”

Inspecting the Work

Finally, Mike Seal, of the University of Arizona, was the Senior Building Inspector assigned to the Bioresearch Laboratory. He handled all of the inspection related to structural, architectural, waterproofing, interior, exterior, and roofing.

“I inspected everything that had to do with the building,” he confirmed.

He was present on site every day—sometimes for several hours or more. Seal has also worked with

W. R. MEADOWS products in other University of Arizona projects.

“Once we got over the first couple of hurdles related to logistics, it was smooth sailing,” Seal said. “We had good installers and a lot of access to product information.”

Seal regularly interacted with Neundorfer as well as Olsen and performed varied forms of testing on both the waterproofing and air barriers. During all phases of the inspections that were conducted, Seal never ran into a situation where W. R. MEADOWS had to fix something. While there were times that the installer had to go back and apply more sealant because of transitions—it was never a state that could be attributed to a product defect.

“We love MEADOWS,” praised Seal. “They are fantastic. We have projects that go back with them 10 or 12 years, and we don’t experience problems or failures. They are one of the top companies we use.”

The Bioscience Research Laboratory project was completed in late 2017. And indeed, the University of Arizona has been satisfied with the outcomes on this building. There have been no issues or reports of water intrusion on site.

Brent Elliott, of DPR Construction, confirms this point. “We are still working on campus—and are in and out of this building occasionally. There have been no issues.”



A Study on Teamwork

“All around it was a successful project,” said Neundorfer. “Everyone worked well together, from the general contractor on down. I like the whole team effort on this job. I was just so impressed with how we all worked together to get it done.”

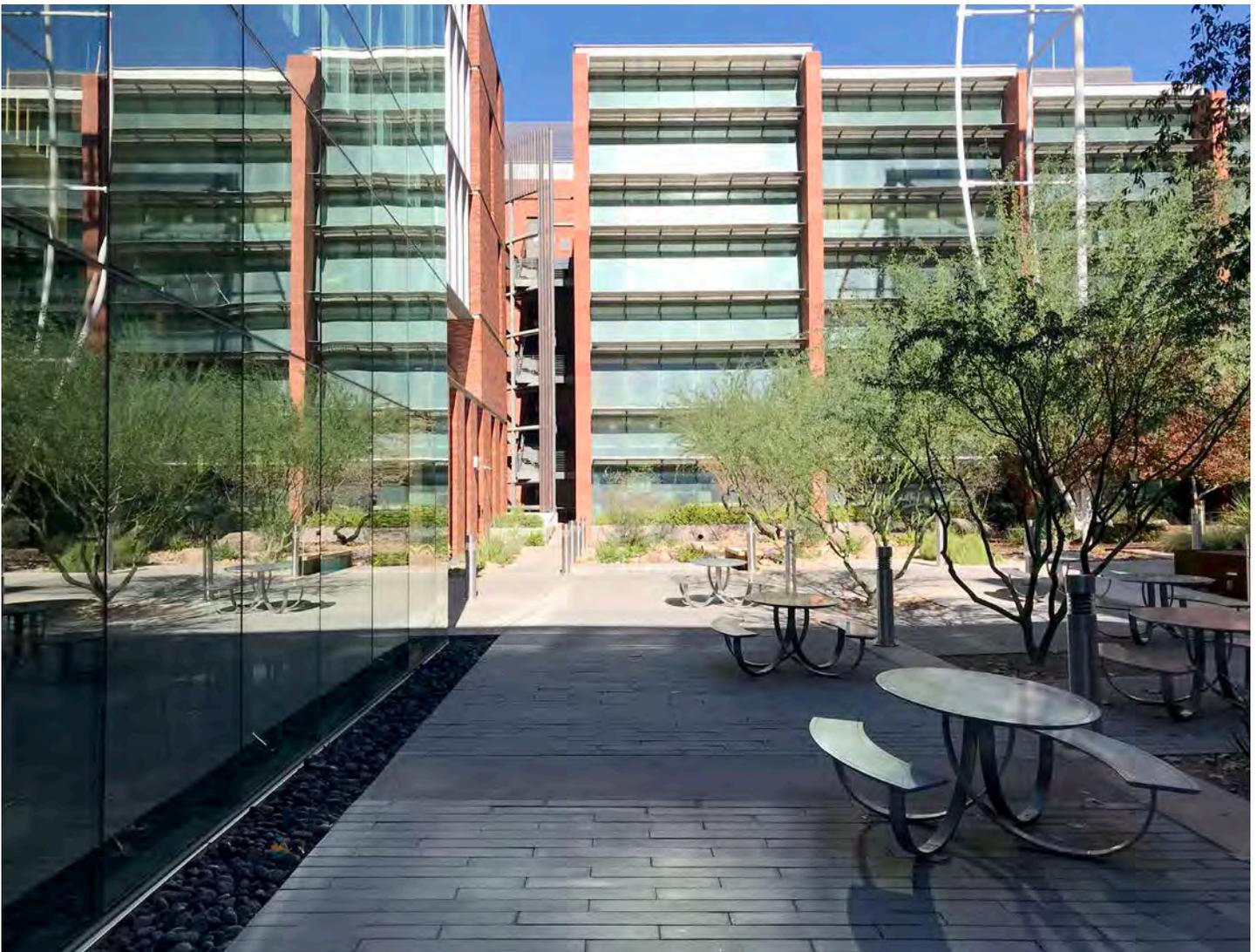
And the general contractor confirmed this point.

“It was a very good dynamic with W. R. MEADOWS,” said Elliott, “as well as with Field Verified, Firestop Southwest, DPR, AK&J, and the University of Arizona. The entire experience was positive.”

In turn, because of this cooperation, the Bioscience Research Laboratory at the University of Arizona was able to open in March of 2018 and is currently pursuing its mission of bringing creative people together to advance knowledge, find solutions to medical challenges, and improve health outcomes for Arizonans.

PROJECT SPECS

Architect:	ZGF Architects, LLP
Contractor:	DPR Construction
Subcontractor:	Firestop Southwest
Salesperson:	Greg Neundorfer
Products:	BEM DETAIL FABRIC HRM 714 HYDRALASTIC 836 MEL-DRAIN PRECON
Scope:	140,000 square feet



About W. R. MEADOWS

Since 1926, W. R. MEADOWS has been a leader in developing products that protect structures from moisture infiltration. From below-grade installations to rooftops and in-between, issue-specific products target and prevent potential, costly problems. Today, patented technologies enable more environmentally effective, efficient designs, and many of our products contribute LEED-certification "green" credits. With nine manufacturing facilities throughout the U.S. and Canada, the materials you need are within easy reach. For additional information, call 800.342.5976 or visit www.wrmeadows.com.



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GOODYEAR, AZ / MILTON, ON / SHERWOOD PARK, AB



Project: Consolidated Rent-A-Car Facility
 Location: Los Angeles, California, USA
 Architect: PGAL, Inc.; AC Martin Partners
 Waterproofing Consultant: Larsen and Zienkiewicz
 Contractor: PCL
 Subcontractor: Eberhard Energy Systems
 Salesperson: Roger Smith
 Scope: 100,000 square feet

Product: MEL-ROL®
 MEL-PRIME™ W/B
 MEL-DRAIN™
 BEM
 MEL-ROL LIQUID MEMBRANE
 DETAIL STRIP

This project is striving for LEED Silver certification.



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Project: Boise VA Hospital Parking Garage
 Location: Boise, Idaho, USA
 Architect: ZGA Architects & Planning
 General Contractor: Winspear Construction
 Subcontractor: Petra Concrete
 Salesperson: Bryon Allen

Products: MEL-ROL®
 MEL-DRAIN™ 5035
 BEM
 DUOGARD® CITRUS
 1100
 Scope: 20,000 sq. ft.



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Project: Arizona State University Biodesign
Institute Building B

Location: Phoenix, Arizona, USA

Architect: Gould Evans

Contractor: McCarthy

Subcontractor: Firestop Southwest

Salesperson: Greg Neundorfer

Product: HRM 714
MEL-ROL®
MEL-DRAIN™ 5035
MEL-DRAIN 9055-B
HYDRALASTIC™ 836
PRECON® FABRIC TAPE

Scope: 22,000 square feet

This project is the first project to earn LEED Platinum certification in Arizona. HYDRALASTIC 836 was used for vertical substrates and transitions. MEL-ROL with MEL-DRAIN 5035 was used for foundation walls.

PRODUCT DATA

MasterFormat: 07 13 00

W. R. MEADOWS®

SEALTIGHT®

NO. 714-F

PRECON®

SEPTEMBER 2017
(Supersedes January 2016)

Pre-Applied/Underslab Waterproofing Membrane

DESCRIPTION

PRECON is a composite sheet membrane comprised of a non-woven fabric, elastomeric membrane, and W. R. MEADOWS' exclusive, patented plasmatic core (U.S. Patent No. 7,179,761). The plasmatic core is a seven-layer matrix designed for toughness and provides the lowest water vapor transmission (WVT) rating on the market. Once concrete is poured against PRECON and the concrete cures, a mechanical bond forms that secures the concrete to the membrane.

USES

PRECON is used as a blindside membrane in vertical applications where access to the positive side is limited. The membrane can also be used for horizontal applications for underslab waterproofing and vaporproofing.

FEATURES/BENEFITS

- Provides a waterproof seal between the membrane and poured concrete wall.
- Helps prevent moisture migration into the structure.
- Reduces methane and radon gas intrusion.

PACKAGING

4' (1.2 m) wide x 50' (15.2 m) long rolls, one roll per carton.

STORAGE AND HANDLING

Store membrane cartons on pallets and cover if left outside. Keep materials away from sparks and flames.

SPECIFICATIONS

- ASTM E1993-98 - Standard Specification for Bituminous Water Vapor Retarders used in Contact with Soil or Granular Fill under Concrete Slabs.
- LARR Report 26023

APPLICATION

Surface Preparation ... Inspect all surfaces for any conditions detrimental to the proper completion of the work. Surfaces should be structurally sound. Remove debris or any other foreign material that could damage the membrane.

PRECON can be used with a caisson wall shoring system without the use of a drainage board, such as MEL-DRAIN™ from W. R. MEADOWS. W. R. MEADOWS recommends proper site drainage, but due to certain site conditions this sometimes cannot be done effectively. The decision to remove the drainage board should be at the discretion of the engineer. In situations where a drainage board is not applied, surface preparation is important. The substrate needs to be sound, solid, and smooth. Any gaps or voids >1" (25 mm) need to be grouted. When PRECON is used with MEL-DRAIN from W. R. MEADOWS, the system can bridge gaps <2" (50.8 mm). However, gaps >2" (50.8 mm) will need to be grouted.

CONTINUED ON REVERSE SIDE ...

W. R. MEADOWS, INC.

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Application Method ... PRECON may be applied at temperatures down to 40° F (5° C); however, in less than ideal environments or marginal conditions, consider the use of PRECON LOW TEMP below 60° F (16° C). PRECON LOW TEMP can be used in temperatures down to 25° F (-4° C). MEL-PRIME™ from W. R. MEADOWS should be used to enhance the bond at the selvedge edge when conditions warrant with both PRECON and PRECON LOW TEMP.

Prior to application of the blindside membrane, attach MEL-DRAIN™ rolled matrix drainage system from W. R. MEADOWS to lagging or soil retention system.

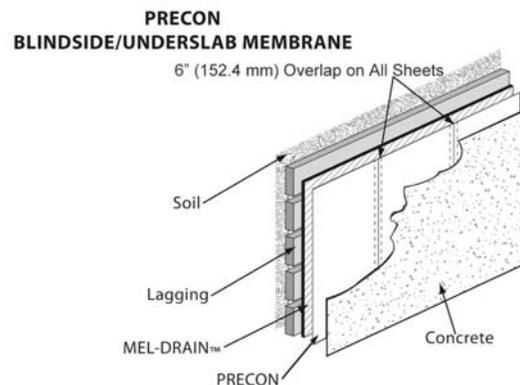
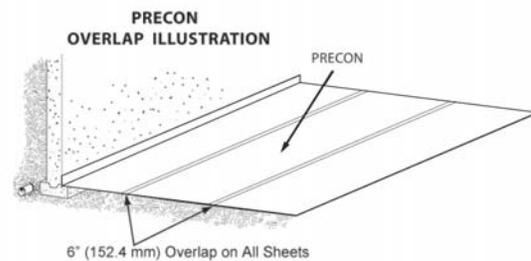
In vertical applications of PRECON, mechanically attach with fasteners every 12" (304.8 mm) across the top, within ½" (13 mm) of the top edge of the membrane. Install the membrane with the fabric side facing toward the concrete pour.

Remove release paper on 6" (152.4 mm) overlap. Apply membrane and roll press into place with a tile type roller.

End Laps ... Overlap membrane 6" (152.4 mm). Prior to overlap, apply BEM, HYDRALASTIC 836, or MEL-ROL® LIQUID MEMBRANE (two-component) from W. R. MEADOWS in area to be lapped. Roll press membrane into BEM, HYDRALASTIC 836, or MEL-ROL LIQUID MEMBRANE. At terminations of membrane, apply BEM, HYDRALASTIC 836, or MEL-ROL LIQUID MEMBRANE 12" (304.8 mm) wide centered over the termination and while still wet, embed 12" (31 cm) wide DETAIL FABRIC into the HYDRALASTIC 836 or MEL-ROL LIQUID MEMBRANE and roll press into place. Ensure that DETAIL FABRIC is centered over the termination with 6" (152.4 mm) on each side of lap edge. Apply additional HYDRALASTIC 836 on all terminations of DETAIL FABRIC.

Penetrations and Protrusions ... Detail around all horizontal and vertical penetrations using BEM or MEL-ROL LIQUID MEMBRANE (two-component) from W. R. MEADOWS. Apply BEM or MEL-ROL LIQUID MEMBRANE by forming a fillet around the pipe or protrusion, overlapping the fabric side of PRECON and the protrusion a minimum of 2.5" (64 mm). If the gap between the protrusion and the membrane is greater than ½" (13 mm), apply PRECON FABRIC TAPE over uncured BEM or MEL-ROL LIQUID MEMBRANE. All penetration and protrusion surfaces must be clean, rust-free, and sound prior to application of BEM or MEL-ROL LIQUID MEMBRANE.

*MEL-ROL LIQUID MEMBRANE is a two-component material, not to be confused with MEL-ROL LM.



For horizontal applications involving a cluster of penetrations, consider the use of HYDRALASTIC 836. Prior to application of HYDRALASTIC 836, prepare the surfaces of the penetrations as above and provide a block out using 2' x 4' (.6 x 1.2 m) lumber or other in order to create a "pitch pan" area to receive HYDRALASTIC 836.

Patching ... Prior to pouring, inspect membrane for punctures or damage and repair as necessary with HYDRALASTIC 836 and/or DETAIL FABRIC. (BEM or MEL-ROL LIQUID MEMBRANE may be used in place of HYDRALASTIC 836.) In addition, ensure the membrane is free of standing water and has been cleaned of any deleterious materials that will affect the bond of the concrete to the membrane.

Underslab Application ... Refer to ACI 302.1R-04: Chapter 4 – Site Preparation and Placing Environment for sub-grade preparation prior to PRECON placement.

PRECAUTIONS

Concrete should be poured within 60 days of membrane installation. For installations below 40° F (4° C), contact W. R. MEADOWS technical services. When using bar supports, use those with a flat bottom.

LEED INFORMATION

May help contribute to LEED credits:

- EA Credit 1: Optimize Energy Performance
- EAp2: Minimum Energy Performance
- EAe2: Optimize Energy Performance
- MRc9: Construction and Demolition Waste Management

For BIM assemblies, CAD details, most recent data sheet, further LEED information, and SDS, visit www.wrmeadows.com.

TECHNICAL DATA

Property	Test Method	PRECON Results
Thickness	ASTM D1000	73 mil (1.85 mm)
Low Temp Flexibility	ASTM D1970, 180° @ -20° F (-28.9° C)	Pass
Resistance to Hydrostatic Head	ASTM D5385-93	230' (70 m)
Elongation, Polymeric Membrane	ASTM D412-06	> 400%
Tensile Strength, Film	ASTM D882	9200 psi (63.4 MPa)
Crack Cycling	ASTM C836 @ -15° F (-26° C)	Pass
Puncture Resistance	ASTME 154	> 210 lb. (> 934 N)
Peel Adhesion to Concrete	ASTMD 903	10 lb./in (1754 N/m)
Moisture Vapor Transmission	ASTME 96B	0.0011 perms (0.0004 grains/ft. ² /hr) (0.007 gram/m ² /24 hr)
Resistance to Fungi in Soil	GSA-PBS 07115 – 16 Weeks	No Effect
Radon Transmittance (m/s)	k124/02/95	<3.0 x 10 ⁻⁹
Radon Coefficient (m2/s)	k124/02/95	<5.6 x 10 ⁻¹²



LIMITED WARRANTY

W. R. MEADOWS, INC. warrants at the time and place we make shipment, our material will be of good quality and will conform with our published specifications in force on the date of acceptance of the order. Read complete warranty. Copy furnished upon request.

Disclaimer

The information contained herein is included for illustrative purposes only, and to the best of our knowledge, is accurate and reliable. W. R. MEADOWS, INC. cannot however under any circumstances make any guarantee of results or assume any obligation or liability in connection with the use of this information. As W. R. MEADOWS, INC. has no control over the use to which others may put its product, it is recommended that the products be tested to determine if suitable for specific application and/or our information is valid in a particular circumstance. Responsibility remains with the architect or engineer, contractor and owner for the design, application and proper installation of each product. Specifier and user shall determine the suitability of products for specific application and assume all responsibilities in connection therewith.



SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION								
Product:	PRECON.	Part Number:	5118050					
Manufacturer:	W. R. MEADOWS, INC.	Address:	300 Industrial Drive Hampshire, Illinois 60140					
Telephone:	(847) 214-2100	In case of emergency, dial (800) 424-9300 (CHEMTREC)						
Revision Date:	10/17/2019							
Product Use:	Waterproofing Membrane							
SECTION 2: HAZARDS IDENTIFICATION/EXPOSURE LIMITS								
HMIS								
Health	0	Product is classified as non-hazardous per OSHA 1910.1200. PRECON is defined by						
Flammability	1	OSHA as an "article." A manufactured item that is formed to a specific shape or						
Reactivity	0	design during manufacture that does not release or result in exposure to a hazardous						
Personal Protection		chemical under normal use conditions.						
SECTION 3: HAZARDS COMPONENTS								
Chemical Name:	CAS Number	% by Weight	SARA 313	Vapor Pressure (mm Hg@20°C)	LEL (@24°C)			
1. Petroleum Asphalt	8052-42-4	55-60	No	N/A	N/A			
<i>N/A = Not Applicable</i>								
Under the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1966 (SARA) and 40 CFR Part 372, chemicals listed on the 313 List (40 CFR Part 373.65) are identified under the heading "SARA 313."								
SECTION 4: EMERGENCY AND FIRST AID PROCEDURES								
EYE CONTACT: Not expected to be an exposure route.								
SKIN CONTACT: Wash affected areas with soap and water if available								
INHALATION: Not expected to be an exposure route.								
INGESTION: Not expected to be an exposure source.								
MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND CHRONIC: See Section Eleven for Symptoms/Effects.								
SECTION 5: FIRE AND EXPLOSIVES HAZARDS								
FLASHPOINT: Not applicable; product is a solid.								
EXTINGUISHING MEDIA: Water fog, foam, dry chemical.								
CHEMICAL/COMBUSTION HAZARDS: Oxides and compounds of nitrogen/sulfur.								
PRECAUTIONS/PERSONAL PROTECTIVE EQUIPMENT: Avoid smoke inhalation. Use appropriate respiratory protection.								
SECTION 6: ACCIDENTAL RELEASE MEASURES								
SPILL OR LEAK PROCEDURES: Not applicable. Product is a solid.								
SECTION 7: HANDLING AND STORAGE								
SAFE HANDLING PROCEDURES: Avoid direct contact.								
SAFE STORAGE: Prevent job-site damage.								
SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION								
	OSHA			ACGIH				
Chemical Name:	PEL	PEL/CEILING	PEL/STEL	SKIN	TLV	TLV/CEILING	TLV/STEL	SKIN
1. Petroleum Asphalt	5 mg/m ³ *	N/E	N/E	No	0.5 mg/m ³ *	N/E	N/E	N/E
<i>N/E = Not Established</i>								
<i>* = Asphalt Fumes</i>								
ENGINEERING CONTROLS: None required under normal use conditions.								
PERSONAL PROTECTIVE EQUIPMENT: Safety glasses, chemical resistant gloves.								
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES								
BOILING POINT: N/A	VAPOR DENSITY: N/A		% VOLATILE BY VOLUME: N/A					
EVAPORATION RATE: N/A	pH LEVEL: N/A		% VOLATILE BY WEIGHT: N/A					
WEIGHT PER GALLON: N/A	PRODUCT APPEARANCE: Black Solid		VOC CONTENT: N/A					
ODOR: None	ODOR THRESHOLD: N/D		MELTING/FREEZING POINT: N/D					
FLASH POINT: See Section 5	FLAMMABILITY: See Section 5		UEL/LEL: N/D					
VAPOR PRESSURE: N/D	RELATIVE DENSITY: N/D		SOLUBILITY: N/D					
PARTITION COEFFICIENT: N/D	AUTOIGNITION TEMPERATURE: N/D		DECOMPOSITION TEMPERATURE: N/D					
VISCOSITY: N/D	<i>N/D: Not Determined</i>							

SAFETY DATA SHEET

Date of Preparation: 10/17/19

Page 2 of 2

5118050

SECTION 10: STABILITY/REACTIVITY

STABILITY: Stable. **HAZARDOUS POLYMERIZATION:** Will not occur.
CONDITIONS AND MATERIALS TO AVOID: None recognized.
HAZARDOUS DECOMPOSITION PRODUCTS: None recognized.

SECTION 11: TOXICOLOGICAL INFORMATION

EYE CONTACT: Direct contact may cause mild irritation.
SKIN CONTACT: Direct contact may cause slight skin irritation.
INHALATION: Not anticipated to be an exposure route.
INGESTION: Not anticipated to be an exposure route.
SIGNS AND SYMPTOMS: Symptoms of eye irritation include tearing, reddening, and swelling. Symptoms of skin irritation include redness and swelling. Gastrointestinal irritation symptoms include nausea, vomiting, and abdominal discomfort.
AGGRAVATED MEDICAL CONDITIONS: None recognized.
OTHER HEALTH EFFECTS: None recognized.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY: N/E **DEGRADABILITY:** N/E **BIOACCUMULATIVE POTENTIAL:** N/E
SOIL MOBILITY: N/E **OTHER ADVERSE EFFECTS:** None Recognized

SECTION 13: WASTE DISPOSAL INFORMATION

WASTE DISPOSAL INFORMATION: Product is classified as a non-hazardous waste.

SECTION 14: TRANSPORTATION INFORMATION

HAZARDOUS/NON-HAZARDOUS MATERIAL: Not regulated by DOT.
UN NUMBER: None. **HAZARD CLASS:** N/A **PACKING GROUP:** N/A
UN PROPER SHIPPING NAME: N/A
ENVIRONMENTAL HAZARDS: None recognized.
BULK TRANSPORTATION INFORMATION: None.
SPECIAL PRECAUTIONS: None.

SECTION 15: REGULATORY INFORMATION

OTHER REGULATORY CONSIDERATIONS: None recognized.

SECTION 16: OTHER INFORMATION

PREPARATION DATE: 10/17/2019
PREPARED BY: Dave Carey

The information contained herein is based on the data available to us and is believed to be correct. However, we make no warranty, expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. We assume no responsibility for injury from the use of this product described herein.

GUIDE SPECIFICATION FOR PRECON®: PRE-APPLIED/UNDERSLAB WATERPROOFING MEMBRANE

SECTION 07 13 00

SHEET WATERPROOFING

Revision Date: December 20, 2019

Specifier Notes: This guide specification is written according to Construction Specifications Institute (CSI) MasterFormat. The section must be carefully reviewed and edited by the architect or engineer to meet the requirements of the project. Coordinate this section with other specification sections and the drawings.

Specifier Notes: PRECON is a composite sheet membrane comprised of elastomeric membrane bonded to W. R. MEADOWS®' exclusive plasmatic matrix and a non-woven geotextile fabric. Once concrete is poured against PRECON and the concrete cures, a mechanical bond forms that tightly and permanently secures the concrete to the membrane.

PRECON is used as a waterproofing membrane where vertical positive-side waterproofing is required but access to the positive side is impossible due to the soil retention system. The membrane can also be used for horizontal applications for underslab waterproofing and vaporproofing.

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Installation of a blindside sheet membrane.

1.02 RELATED SECTIONS

Specifier Notes: Edit the list of related sections as required for the project. List other sections dealing with work directly related to this section.

- A. Section 03 30 00 – Cast-in-Place Concrete.
- B. Section 07 13 26 – Self-Adhering Sheet Waterproofing.
- C. Section 07 21 00 – Thermal Insulation.
- D. Section 07 60 00 – Flashing and Sheet Metal.
- E. Section 07 92 00 – Joint Sealants.
- F. Section 31 50 00 – Excavation Support and Protection.
- G. Section 33 46 00 – Subdrainage.

1.03 REFERENCES

- A. ACI 302.1R.17 – Guide for Concrete Floor and Slab Construction.
- B. ASTM C836 - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.

- C. ASTM D412-06: Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
- D. ASTM D882: Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
- E. ASTM D903: Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
- F. ASTM D1970-01 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- G. ASTM D5385-93: Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.
- H. ASTM E96 (Method B): Standard Test Methods for Water Vapor Transmission of Materials.
- I. ASTM E154: Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
- J. ASTM F2130: Standard Test Method for Measuring Repellency, Retention, and Penetration of Liquid Pesticide Formulation Through Protective Clothing Materials.
- K. GSA-PBS 07115: General Services Administration, Public Building Service - Guide Specification for Elastomeric Waterproofing.

1.04 QUALITY ASSURANCE

- A. Contractor will provide the proper equipment, manpower, and supervision at the jobsite to install the membrane in compliance with the project plans and specifications.
- B. Installation must be carried out by an experienced contractor with an adequate number of skilled personnel, experienced in the application of the blindside membrane applications.
- C. Maintain a record of the batch numbers of all materials supplied for this project.

1.05 PRE-CONSTRUCTION MEETING

- A. Convene [one] [____], week [____] prior to commencing work of this section, in accordance with Section 1.04 - Quality Assurance, meeting with manufacturer's technical representative, general contractor and site engineer to review the installation procedures.

1.06 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Submit manufacturer's product data and application instructions.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in a clean, dry area in accordance with manufacturer's instructions.
- C. Store adhesive at temperatures of 40° F (4.4° C) and above to facilitate handling.
- D. Do not store at temperatures above 90° F (32° C) for extended periods.
- E. Protect materials during handling and application to prevent damage or contamination.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Product not intended for uses subject to abuse or permanent exposure to the elements.
- B. Apply membrane when conditions are dry and rain is not imminent.
- C. Ensure concrete is poured within 60 days of membrane application.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. W. R. MEADOWS, INC., PO Box 338, Hampshire, Illinois 60140-0338. (800) 342-5976. (847) 683-4500. Fax (847) 683-4544. Website: www.wrmeadows.com.

2.02 MATERIALS

- A. Blindsight Waterproofing Membrane: 73 mil (1.85mm) thick, composite sheet membrane comprised of an elastomeric membrane bonded to a seven-ply plasmatic matrix and a non-woven geotextile fabric.
 - 1. Performance Based Spec: Blindsight waterproofing membrane shall have the following properties as determined by laboratory testing:
 - a. Membrane Thickness: 73 mil (1.85 mm)
 - b. Low Temperature Flexibility, ASTM D1970: Pass
 - c. Resistance to Hydrostatic Head, ASTM D5385-93: 230' (70 m)
 - d. Elongation, ASTM D412-06: >400%
 - e. Tensile Strength (film), ASTM D882: 9,200 psi (63.4 MPa)
 - f. Crack Cycling, ASTM C836: Pass
 - g. Puncture Resistance, ASTM E154: >210 lb. (>934 N)
 - h. Peel Adhesion to Concrete, ASTM D903: 10 lb./in (1,754 N/m)
 - i. Moisture Vapor Transmission, ASTM E96 (Method B): 0.0011 perms
 - j. Resistance to Penetration by Pesticides, ASTM F2130, Percentage of Penetration: 0.0%
 - k. Resistance to Fungi in Soil, GSA-PBS 07115 – 16 weeks: No Effect
 - 2. Proprietary Based Spec:
 - a. PRECON Blindsight/Underslab Waterproofing Membrane by W. R. MEADOWS.

Specifier Notes: For temperatures that are below 40° F (5° C), PRECON LOW TEMP must be used. This product can be applied at temperatures down to 25° F (-4° C) and this temperature must be maintained for a period of 24 hours prior and post application. If site conditions are marginal and conditions less than optimal, PRECON LOW TEMP can be considered below 60° F (16° C). W. R. MEADOWS has a low temperature application bulletin with specific installation instructions that needs to be followed.

2.03 ACCESSORIES

- A. Rolled Matrix Drainage System: MEL-DRAIN™ by W. R. MEADOWS.
- B. Liquid Membrane for Fastener Details:
 - 1. MEL-ROL® LIQUID MEMBRANE (two-component) by W. R. MEADOWS.
 - 2. BEM by W. R. MEADOWS.
- C. Liquid Membrane for Overlap Detail: HYDRALASTIC™ 836 by W. R. MEADOWS.

Specifier Notes: HYDRALASTIC 836, MEL-ROL LIQUID MEMBRANE (two-component) and BEM (BUILDING ENVELOPE MEMBRANE) can be interchanged. It must be noted that HYDRALASTIC 836 and BEM can only be applied in temperatures above 30° F (-1° C). MEL-ROL LIQUID MEMBRANE may be used on end laps, penetrations and terminations down to 25° F (-4° C).

D. Detail Fabric for Terminations: DETAIL FABRIC by W. R. MEADOWS.

E. Detail Tape Adhesive: MEL-PRIME™ by W. R. MEADOWS.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces to receive membrane. Notify architect if surfaces are not acceptable. Do not begin surface preparation or installation until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

A. Inspect all surfaces for any conditions detrimental to the proper completion of the work.

B. Ensures surfaces are structurally sound.

C. Remove debris or any other foreign material that could damage the membrane.

3.03 INSTALLATION

A. Vertical Application

1. Install the membrane with the fabric side facing the interior side of the form to receive the concrete.
2. Mechanically fasten membrane across the top lagging at 12" (310 mm) on center, ½" (12 mm) from the top, with fasteners approved by the manufacturer.
3. Apply liquid membrane over the areas where the fasteners have been attached and carry over the top edge.
4. Remove release paper on 6" (152.4 mm) factory edge.
5. Mechanically fasten membrane vertically, 24" (620 mm) on center, into the exposed factory edge of the membrane if vertical fastening is required.
6. Install subsequent sheet of membrane and overlap onto the 6" (152.4 mm) factory edge and roll press into place.
7. For end-to-end overlap, overlap membrane 6" (152.4 mm).
8. Apply liquid detail membrane in this area to be lapped and roll press membrane into this liquid detail membrane.
9. Apply liquid detail membrane at terminations of membrane, 12" (310 mm) wide centered over the termination.
10. Embed detail fabric into this wet liquid detail membrane centered over the termination, 6" (152.4 mm) on each side of lap edge, and roll press into place.
11. Apply additional liquid detail membrane on all terminations of detail fabric.
12. Inspect membrane prior to pouring of concrete for any punctures or damage.
13. Repair damaged areas as directed by the manufacturer.

B. Horizontal Application

1. Prepare subgrade prior to membrane application according to ACI 302.1R.17.
2. Ensure the fabric side of the membrane is facing up.
3. Remove release paper on 6" (152.4 mm) selvedge edge and overlap edges of additional sheet. Roll press into place.
4. For end-to-end overlap, overlap membrane 6" (152.4 mm).

5. Apply liquid detail membrane in this area to be lapped and roll press membrane into this liquid detail membrane.
6. Apply liquid detail membrane at terminations of membrane, 12" (310 mm) wide centered over the termination.
7. Embed detail fabric into this wet liquid detail membrane centered over the termination, 6" (152.4 mm) on each side of lap edge, and roll press into place.
8. Apply additional liquid detail membrane on all terminations of detail fabric.
9. Inspect membrane prior to pouring of concrete for any punctures or damage.
10. Repair damaged areas as directed by the manufacturer.

3.04 PROTECTION

- A. Ensure membrane is not damaged prior to concrete pour.
- B. Ensure concrete is poured within 60 days of membrane application.

END OF SECTION



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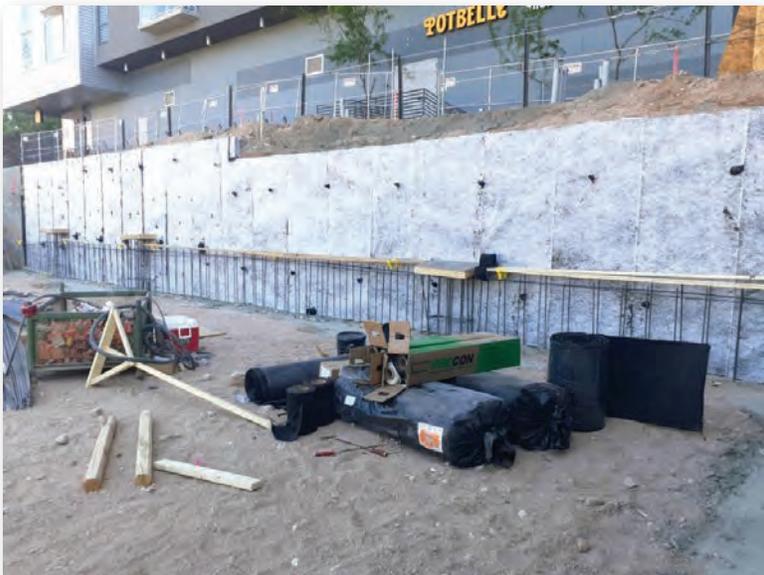
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FORT WORTH, TX / BENICIA, CA / POMONA, CA

GOODYEAR, AZ / MILTON, ON / SHERWOOD PARK, AB



Project: HUB 4 Tucson Off-Campus Student Housing
Location: Tucson, Arizona, USA
Architect: Antunovich Associates
Contractor: J.H. Fidorff & Son, Inc.
Salesperson: Greg Neundorfer

Products: PRECON®
HYDRALASTIC™ 836
MEL-DRAIN™ 5035
BEM
Scope: 18,000 square feet



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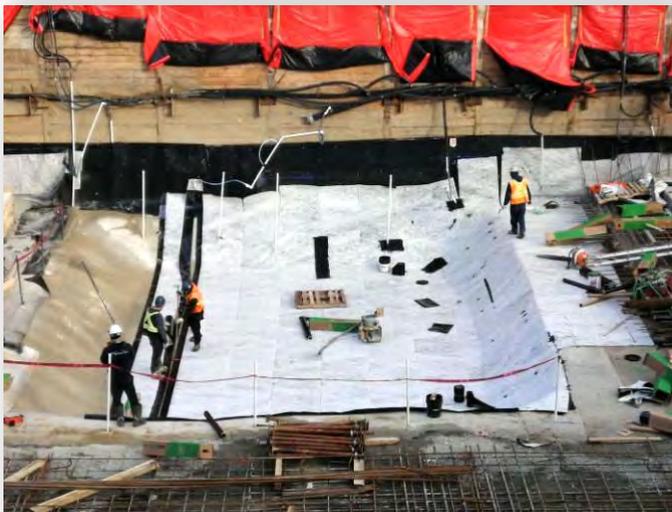
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GOODYEAR, AZ / MILTON, ON / SHERWOOD PARK, AB



Project: Bayview/Hillsdale Condominiums
Location: Toronto, Ontario, Canada
Architect: Kohn Partnership Architects
Contractor: Bluescape Construction Management Inc
Subcontractor: W+J Construction
Salesperson: Stacey Bogdanow
Scope: 50,000 square feet
Products: PRECON,
HYDRALASTIC™ 836
MEL-DRAIN™ 5035
DETAIL FABRIC
MEL-PRIME™
PENTREAT™ 244-100



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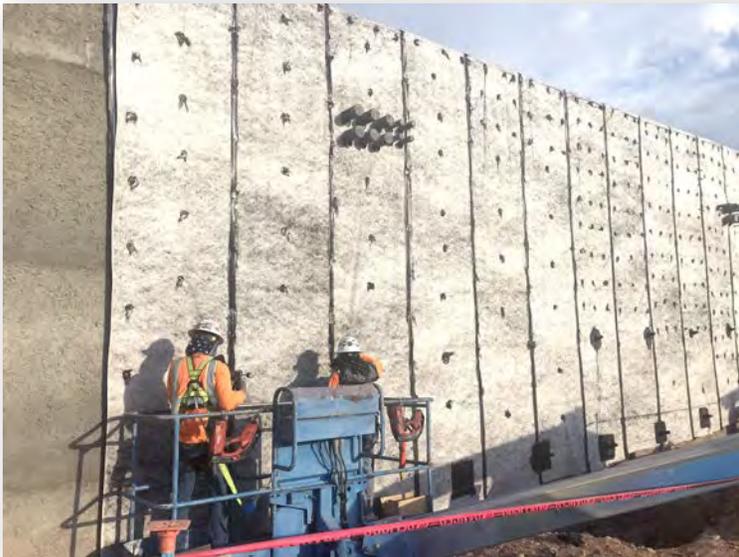
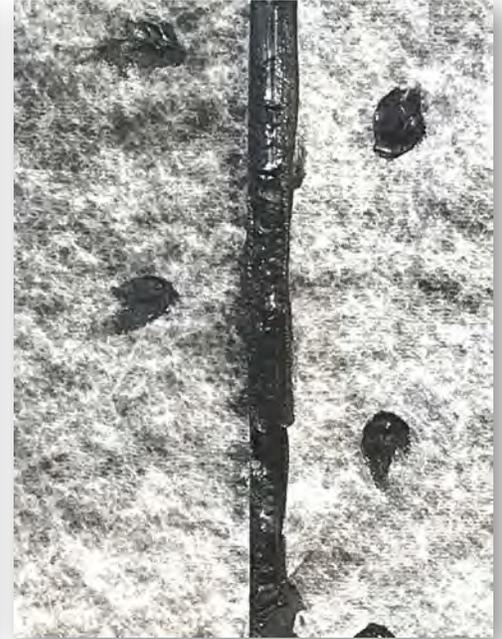
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GOODYEAR, AZ / MILTON, ON / SHERWOOD PARK, AB



Project Name: Valleywise Health Hospital Expansion
 Location: Phoenix, Arizona, USA
 Architect: Cunningham Group
 General Contractor: Kitchell
 Subcontractor: RTI Sealants
 Salesperson: Greg Neundorfer

Product: PRECON,
 BEM
 HYDRALASTIC 836
 MEL-DRAIN™ 5035
 MEL-DRAIN TOTAL-DRAIN
 Scope: 20,000 square feet

LEED-Certified Gold project.



PRECON®

Pre-Applied/Underslab Waterproofing Membrane

A cost-effective, fully bonded solution for blindside or pre-applied waterproofing applications



Waterproofing is not a one-size-fits-all proposition. That's why **W. R. MEADOWS** offers an entire family of products to address different requirements – including **PRECON**, a cost-effective solution for difficult blindside or pre-applied applications.

PRECON is comprised of a non-woven fabric, elastomeric membrane and **W. R. MEADOWS'** exclusive, patented plasmatic core (U.S. Patent No. 7,179,761). The plasmatic core is a seven-layer matrix designed for toughness and provides the lowest water vapor transmission (WVT) rating on the market. Designed to provide a waterproof seal between the membrane and poured concrete, **PRECON** also:

- Reduces methane and radon gas intrusion.
- Forms a mechanical bond between the membrane and the concrete as it cures.
- Serves as a blindside membrane in vertical applications where access to the positive side is limited.
- May be used for horizontal applications for underslab waterproofing and vaporproofing



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INSTALLATION GUIDELINES PRECON®

This document has been created as an addendum to our PRECON technical data sheet to provide information regarding the application of PRECON waterproofing/vaporproofing membrane when installed up against a soil retention system in a blindside application. Following are the typical installation instructions recommended by W. R. MEADOWS. It is important to review each application as there may be situations that may require this procedure to be modified based on the project requirements. If this situation arises, please contact W. R. MEADOWS technical service.

PRODUCTS REQUIRED

- PRECON waterproofing/vaporproofing membrane: composite sheet membrane comprised of a non-woven fabric, elastomeric membrane, and W. R. MEADOWS' patented plasmatic core.
- HYDRALASTIC 836: cold-applied, solvent-free, single-component waterproofing compound used for detailing of PRECON at end laps, penetrations, and repairs.
- BEM: one-component, cold-applied, non-slump waterproofing material that can be used as an alternate to HYDRALASTIC 836.
- MEL-ROL LIQUID MEMBRANE (two-component): two component, 100% solids, cold-applied, non-slump waterproofing material that can be used as an alternate to HYDRALASTIC 836 and is recommended for low temperature installations of PRECON LOW TEMP.
- DETAIL FABRIC: polypropylene, staple fiber, needle-punched, non-woven geotextile fabric used for end laps and penetration details.
- WATERSTOP EC: regular version waterstop containing bentonite.
- WATERSTOP EC PLUS: combination of hydrophilic rubber and bentonite for use in applications below the water table.
- CLAY-TITE™ MASTIC: used for adhesion of the WATERSTOP EC or WATERSTOP EC PLUS.
- MEL-DRAIN™ drainage board: dimple-raised, molded polystyrene sheet bonded to high strength polypropylene fabric.
- MEL-DRAIN TOTAL-DRAIN™: Prefabricated strip drain consisting of molded polystyrene sheet bonded to high strength polypropylene fabric.
- TERMINATION BAR: high strength plastic strip designed to support PRECON and MEL-DRAIN at the top of wall termination point.
- FASTENERS: Flat-headed steel fasteners with washers are recommended. Must be appropriate for the substrate.

LIMITATIONS

- Concrete should be poured within 60 days of membrane installation.
- PRECON may be applied at temperatures down to 40° F (5° C); however, in less than ideal environments or marginal conditions, consider the use of PRECON LOW TEMP below 60° F (16° C). PRECON LOW TEMP can be used in temperatures down to 25° F (-4° C). Please refer to the PRECON COLD WEATHER APPLICATION TECHNICAL BULLETIN for proper installation procedures.
- Prior to the concrete pour, any ponded water, dirt, or debris that has accumulated on PRECON needs to be removed as this could affect the bond of PRECON to the concrete.



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- In situations where there is water accumulation behind the membrane during installation, the presence of this water may inhibit proper bond formation at the edge and end laps due to the stress resulting from the constant hydrostatic pressure exerted by this water.
- Care needs to be taken in high temperature installation situations, as softening of the elastomeric membrane could occur causing sagging.

STORAGE

- Store materials in a clean, dry area in accordance with manufacturer's instructions.
- Store membrane cartons on pallets and cover if left outside. Keep materials away from sparks and flames.
- Store adhesive at temperatures of 40° F (4.4° C) and above to facilitate handling.
- Do not store at temperatures above 90° F (32° C) for extended periods.

SUBSTRATE PREPARATION

Blindside applications are very challenging which includes the substrate upon which the membrane is installed. There are several types of soil retention systems designed to retain the earth. All of these have their own challenges in installation and preparation prior to installation of the PRECON waterproofing system. Several common shoring wall construction techniques include h-piles and timber lagging, corrugated sheet piles, rock, auger cast caissons, and even cement stabilized soil.

For proper performance of the membrane, it is essential that the surface be addressed to ensure that the membrane is not damaged and will adhere fully to the concrete once poured in place. Overlooking this will allow for water intrusion into the structure.

Regardless of the type of soil retention system, all preparation work is similar and is required to provide a monolithic substrate surface upon which the waterproofing can be installed without damage during installation and concrete placement.

W. R. MEADOWS recommends the use of MEL-DRAIN drainage board for all installations of PRECON, but due to certain site conditions and project requirements, this sometimes cannot be done effectively. The decision to remove the drainage board should be at the discretion of the engineer. In situations where a drainage board is not applied, surface preparation is even more important.

Due to the wide variety of these substrates and their conditions, it is recommended to contact your local W. R. MEADOWS technical representative for any questions prior to installation of PRECON. Following are some standard guidelines for surface preparation:

WOOD LAGGING WITH STEEL PILES:

1. Be sure all lagging board nails are pounded flush or removed.
2. Remove all sharp protrusions, mud, debris, ice, or any other materials that will affect the membrane's performance.
3. Fill or cover any irregularities and voids between lagging board exceeding 1" (25 mm) using spray foam, concrete grout, patching mortar, rigid insulation, or treated plywood to provide a sound substrate.

CAISSONS:

1. If the augered caissons are smooth, PRECON can be installed directly onto the caissons. Any sharp protrusions need to be removed. For the depressed areas between each pile, this area must be filled with a concrete grout prior to PRECON installation.



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2. If the augered caissons are rough and irregular, a minimum 3/4" (19.1 mm) pressure-treated plywood must be installed. The void behind the plywood at the depressed areas shall be filled with sand, aggregate, or grout to provide a solid substrate for PRECON installation. Plywood selection and installation shall be determined by the project engineer.

SHEET PILING:

1. In areas where PRECON is to be in direct contact with the steel piling, all sharp protrusions need to be removed.
2. In areas where the PRECON is to span the sheet piling, a minimum 3/4" (19.1 mm) pressure-treated plywood must be installed. The void behind the plywood at the depressed areas shall be filled with sand, aggregate, or grout to provide a solid substrate for PRECON installation. Plywood selection and installation shall be determined by the project engineer.

SHOTCRETE:

1. Remove all sharp protrusions, mud, debris, ice, or any other materials that will affect the membrane's performance.
2. Fill or cover any voids or irregularities exceeding 1" (25 mm) using a concrete grout or patching mortar.

SLURRY WALL:

1. Remove all sharp protrusions, mud, debris, ice, or any other materials that will affect the membrane's performance.
2. Fill or cover any voids or irregularities exceeding 1" (25 mm) using a concrete grout or patching mortar.

NOTE: For all substrates, if using MEL-DRAIN drainage board prior to PRECON installation, a void of 2" (50 mm) is acceptable.

DETAILING

PENETRATIONS:

1. All penetrations and protrusion surfaces are to be prepared ensuring that all surfaces are clean, rust-free and sound.
2. Ensure that small penetrations, such as nails and fasteners, fully cover the fastener with HYDRALASTIC 836.
3. Larger penetrations:
 - a. Apply HYDRALASTIC 836 onto the fabric face of pre-installed PRECON and the penetration a minimum of 2 1/2" (64 mm) in all directions.
 - b. Form a fillet or cove around the base of the penetration to aid in the transition. Application thickness of this HYDRALASTIC 836 should be 60 mils.
 - c. Embed DETAIL FABRIC into the HYDRALASTIC 836 and press into place, ensuring that the DETAIL FABRIC has been fully wetted out with the HYDRALASTIC 836.

TIEBACKS/SOIL NAILS:

1. Install the PRECON waterproofing membrane up to the tieback as close as possible.
2. Apply HYDRALASTIC 836 onto the fabric face of pre-installed PRECON a minimum of 2 1/2" (64 mm) in all directions. Form a fillet or cove around the base to aid in the transition.
3. Fully coat the tieback with HYDRALASTIC 836. Application thickness of this HYDRALASTIC 836 should be 60 mils.
4. Embed DETAIL FABRIC into the HYDRALASTIC 836 and press into place, ensuring that the DETAIL FABRIC has been fully wetted out with the HYDRALASTIC 836. This should fully encase the tieback.



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CONSTRUCTION JOINTS:

1. Install WATERSTOP EC a minimum of 2" (50 mm) from face of wall.
2. Prior to installation, apply CLAY-TITE MASTIC in all areas to receive WATERSTOP EC or WATERSTOP EC PLUS (below water table). This is used as an adhesive to hold the waterstop in place along with the fasteners.
3. Remove release paper to expose adhesive on WATERSTOP EC.
4. Fasten with nails and washers every 12" (300 mm) O.C.
5. For subsequent applications of WATERSTOP EC, butt ends of waterstop together to ensure continuity.

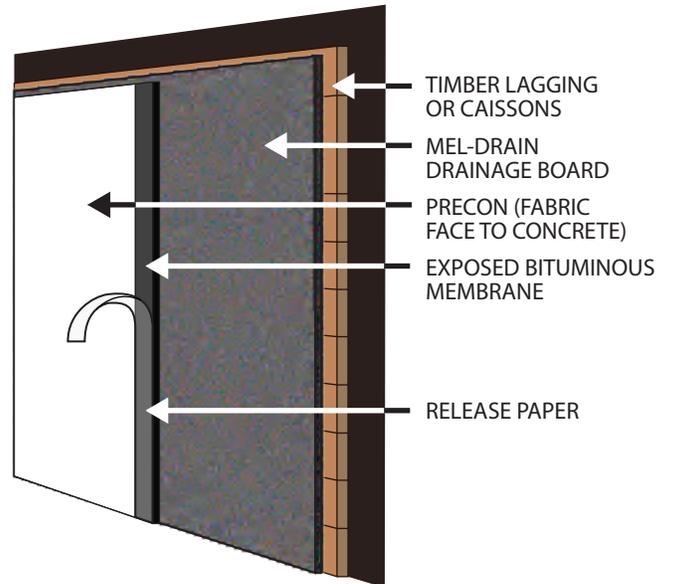
MEMBRANE INSTALLATION

1. Mechanically fasten membrane across the top lagging at 12" (300 mm) on center, ½" (12 mm) from the top, with fasteners and termination bar approved by the manufacturer.
2. Ensure that the fabric side of the membrane is facing the interior side of the installation. This is the side that the concrete is to be poured against.
3. Apply HYDRALASTIC 836 over the areas where the fasteners have been attached.
4. If fasteners are required vertically, install at 24" (600 mm) O.C. in the factory edge of the membrane prior to overlap of subsequent sheet. These fasteners do not need any additional detailing.
5. Any fasteners to be installed in the field of the membrane need to be detailed with HYDRALASTIC 836, fully encasing the fastener.

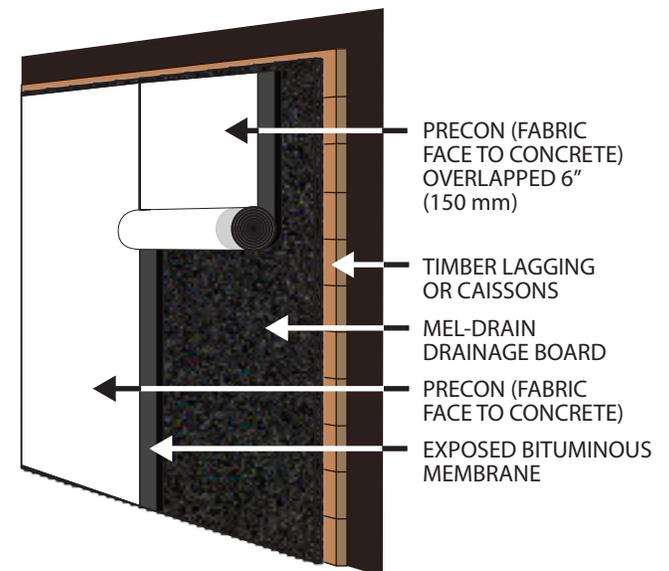
END LAPS/FACTORY EDGE:

FACTORY EDGE

1. Remove release paper on 6" (150 mm) factory edge exposing the bituminous membrane.



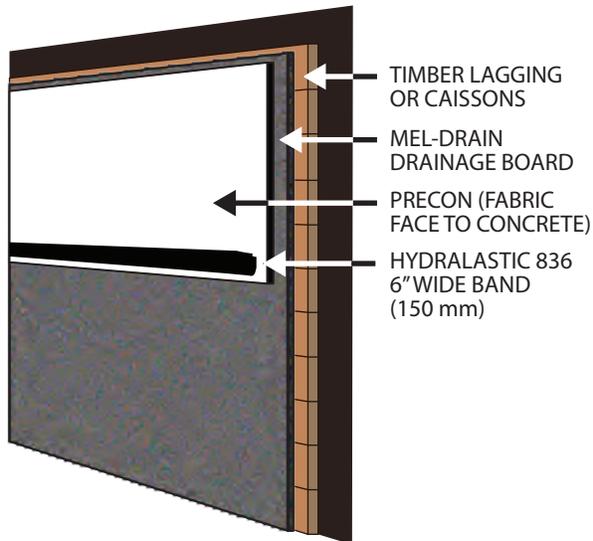
2. Overlap the edge of the subsequent sheet. Roll press into place to ensure good adhesion.



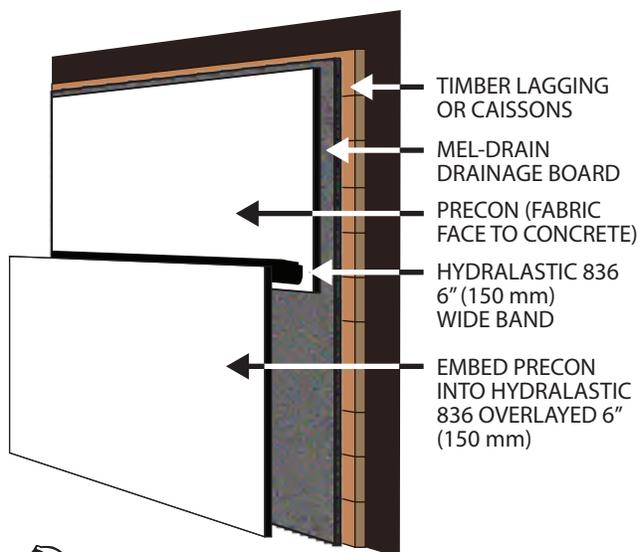
INSTALLATION GUIDELINES PRECON®

END LAP

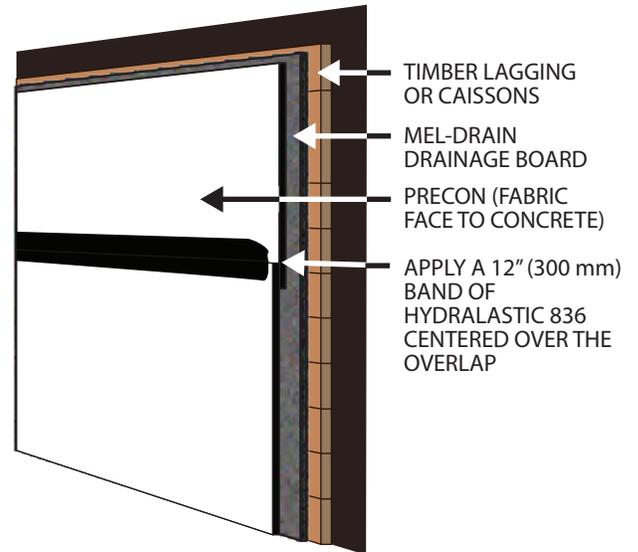
1. Apply HYDRALASTIC 836 in a 6" (150 mm) band onto the fabric face of the PRECON area to be overlapped at approximately 60 mils thickness.



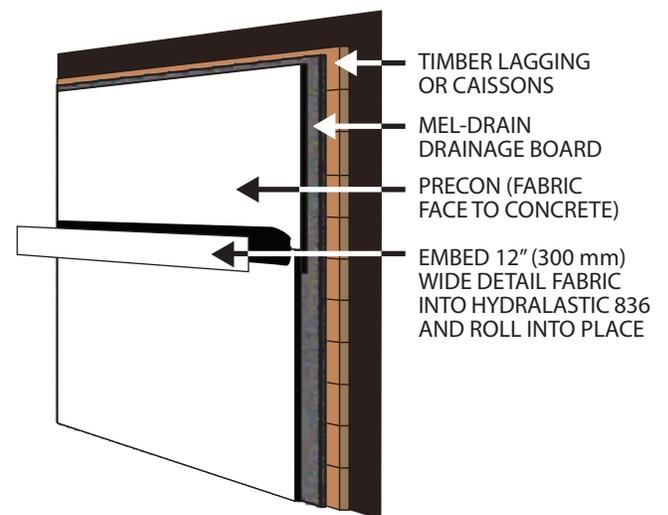
2. Overlap this area with the subsequent sheet of PRECON and roll press into place.



3. Apply HYDRALASTIC 836 in a 12" (300 mm) band centered over the lap edge and while still wet, embed 12" (300 mm) wide DETAIL FABRIC into the HYDRALASTIC 836.



4. Ensure that DETAIL FABRIC is centered over the termination with 6" (150 mm) on each side of lap edge. Press DETAIL FABRIC into place to ensure that the HYDRALASTIC 836 has fully wetted out the fabric.



REPAIRS

1. Small Punctures [1/2" (12.7 mm) or less]
 - a. Apply HYDRALASTIC 836 over the damaged area.
2. Punctures 1/2" to 1" (12.7 - 25.4 mm)
 - a. Apply HYDRALASTIC 836 over the damaged area extending onto PRECON.
 - b. Embed a piece of DETAIL FABRIC into the wet HYDRALASTIC 836.
3. Damaged areas greater than 1" (25.4 mm)
 - a. Remove the damaged portion of PRECON.
 - b. Apply HYDRALASTIC 836 in a 6" (150 mm) band onto the fabric face of the PRECON area to be lapped at approximately 60 mils thickness.
 - c. Install a piece of PRECON extending 6" (300 mm) from the damaged area in all directions and embed into the wet HYDRALASTIC 836. Mechanically fasten to hold into place.
 - d. Apply HYDRALASTIC 836 in a 12" (300 mm) band centered over the termination and while still wet, embed 12" (300 mm) wide DETAIL FABRIC into the HYDRALASTIC 836.
 - e. Ensure that DETAIL FABRIC is centered over the termination with 6" (150 mm) on each side of lap edge. Press DETAIL FABRIC into place to ensure that the HYDRALASTIC 836 has fully wetted out the fabric.

INSPECTION AND PROTECTION

1. Inspect membrane prior to pouring of concrete for any punctures or damage and repair as above.
2. Protect PRECON from other trades prior to concrete placement.
3. Concrete is required to be poured within 60 days of PRECON installation.



W. R. MEADOWS®

SEALTIGHT®

A Family Company Since 1926

QUALITY...SERVICE...INTEGRITY

INSTALLATION GUIDELINES

PRECON® HORIZONTAL APPLICATION

This document has been created as an addendum to our PRECON technical data sheet to provide information regarding the application of PRECON waterproofing/vaporproofing membrane in a horizontal application. Following are the typical installation instructions recommended by W. R. MEADOWS. It is important to review each application as there may be situations that may require this procedure to be modified based on the project requirements. If this situation arises, please contact W. R. MEADOWS technical service.

PRODUCTS REQUIRED

- PRECON waterproofing/vaporproofing membrane: composite sheet membrane comprised of a nonwoven fabric, elastomeric membrane, and W. R. MEADOWS' patented plasmatic core.
- HYDRALASTIC 836: cold-applied, solvent-free, single-component waterproofing compound used for detailing of PRECON at end laps, penetrations, and repairs.
- BEM: one-component, cold-applied, non-slump waterproofing material that can be used as an alternate to HYDRALASTIC 836.
- MEL-ROL LIQUID MEMBRANE (two-component): two component, 100% solids, cold-applied, non-slump waterproofing material that can be used as an alternate to HYDRALASTIC 836 and is recommended for low temperature installations of PRECON LOW TEMP.
- DETAIL FABRIC: polypropylene, staple fiber, needlepunched, non-woven geotextile fabric used for end laps and penetration details.



LIMITATIONS

- Concrete should be poured within 60 days of membrane installation.
- PRECON may be applied at temperatures down to 40° F (5° C); however, in less than ideal environments or marginal conditions, consider the use of PRECON LOW TEMP below 60° F (16° C). PRECON LOW TEMP can be used in temperatures down to 25° F (-4° C). Please refer to the PRECON COLD WEATHER APPLICATION TECHNICAL BULLETIN for proper installation procedures.
- Prior to the concrete pour, any ponded water, dirt, or debris that has accumulated on PRECON needs to be removed as this could affect the bond of PRECON to the concrete.
- In situations where there is water accumulation behind the membrane during installation, the presence of this water may inhibit proper bond formation at the edge and end laps due to the stress resulting from the constant hydrostatic pressure exerted by this water.
- Care needs to be taken in high temperature installation situations, as softening of the elastomeric membrane could occur causing sagging.



W. R. MEADOWS, INC. | P.O. Box 338 | HAMPSHIRE, IL 60140-0338
Phone: 847/214-2100 | Fax: 847/683-4544 | www.wrmeadows.com

INSTALLATION GUIDELINES

PRECON® HORIZONTAL APPLICATION

STORAGE

- Store materials in a clean, dry area in accordance with manufacturer's instructions.
- Store membrane cartons on pallets and cover if left outside. Keep materials away from sparks and flames.
- Store adhesive at temperatures of 40° F (4.4° C) and above to facilitate handling.
- Do not store at temperatures above 90° F (32° C) for extended periods.

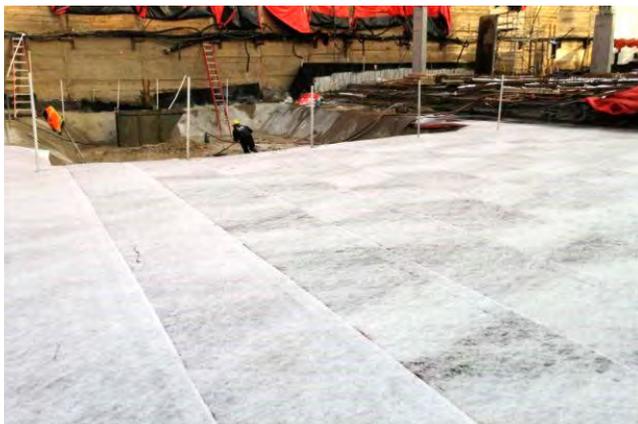
APPLICATION

SURFACE PREPARATION

Inspect all surfaces for any conditions detrimental to the proper completion of the work. Surfaces should be structurally sound. Remove debris or any other foreign material that could damage the membrane.

APPLICATION METHOD

Install PRECON membrane with the fabric side facing towards the concrete floor. Place subsequent rolls of PRECON with a 6" (152.4 mm) overlap. Remove release paper and roll press into place with a tile roller.



When a horizontal application meets a vertical application, ensure this overlap is a minimum of 1' (.3 m) from the base of the wall. Follow the end lap detailing instructions to address the overlap in this area.



END LAPS

Overlap membrane 6" (152.4 mm). Prior to overlap, apply BEM, HYDRALASTIC 836, or MEL-ROL® LIQUID MEMBRANE* (two-component) from W. R. MEADOWS in area to be lapped. Roll press membrane into BEM, HYDRALASTIC 836, or MEL-ROL LIQUID MEMBRANE.

Apply BEM, HYDRALASTIC 836, or MEL-ROL LIQUID MEMBRANE 12" (304.8 mm) wide centered over the termination and while still wet, embed 12" (31 cm) wide DETAIL FABRIC into the HYDRALASTIC 836 or MEL-ROL LIQUID MEMBRANE and roll press into place. Ensure that DETAIL FABRIC is centered over the termination with 6" (152.4 mm) on each side of lap edge. Apply additional HYDRALASTIC 836 on all terminations of DETAIL FABRIC.



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INSTALLATION GUIDELINES

PRECON® HORIZONTAL APPLICATION



PENETRATIONS AND PROTRUSIONS

Detail around all penetrations using BEM or MEL-ROL LIQUID MEMBRANE (two-component) from W. R. MEADOWS. Apply BEM or MEL-ROL LIQUID MEMBRANE by forming a fillet around the pipe or protrusion, overlapping the fabric side of PRECON and the protrusion a minimum of 2.5" (64 mm). If the gap between the protrusion and the membrane is greater than 1/2" (13 mm), apply PRECON FABRIC TAPE over uncured BEM or MEL-ROL LIQUID MEMBRANE. All penetration and protrusion surfaces must be clean, rust-free, and sound prior to application of BEM or MEL-ROL LIQUID MEMBRANE.

*MEL-ROL LIQUID MEMBRANE is a two-component material, not to be confused with MEL-ROL LM.

For horizontal applications involving a cluster of penetrations, consider the use of HYDRALASTIC 836. Prior to application of HYDRALASTIC 836, prepare the surfaces of the penetrations as above and provide a block out using 2' x 4' (.6 x 1.2 m) lumber or other in order to create a "pitch pan" area to receive HYDRALASTIC 836.

PATCHING REPAIRS

SMALL PUNCTURES 1/2" (12.7 MM) OR LESS

- Apply HYDRALASTIC 836 over the damaged area.

PUNCTURES 1/2" TO 1" (12.7 - 25.4 MM) OR LESS

- Apply HYDRALASTIC 836 over the damaged area extending onto PRECON.
- Embed a piece of DETAIL FABIR into the wet HYDRALASTIC 836.

DAMAGED AREAS GREATER THAN 1" (25.4 MM)

- Remove the damaged portion of PRECON.
- Apply HYDRALASTIC 836 in a 6" (150 mm) band onto the fabric face of the PRECON area to be lapped at approximately 60 mils thickness.
- Install a piece of PRECON extending 6" (300 mm) from the damaged area in all directions and embed into the wet HYDRALASTIC 836. Mechanically fasten to hold into place.
- Apply HYDRALASTIC 836 in a 12" (300 mm) band centered over the termination and while still wet, embed 12" (300 mm) wide DETAIL FABRIC into the HYDRALASTIC 836.
- Ensure that DETAIL FABRIC is centered over the termination with 6" (150 mm) on each side of lap edge. Press DETAIL FABRIC into place to ensure that the HYDRALASTIC 836 has fully wetted out the fabric.

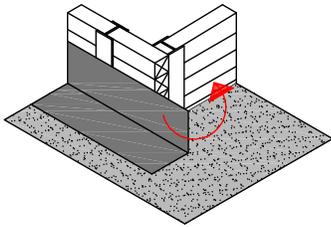
UNDERSLAB APPLICATION

Refer to ACI 302.1R-04: Chapter 4 – Site Preparation and Placing Environment for sub-grade preparation prior to PRECON placement.

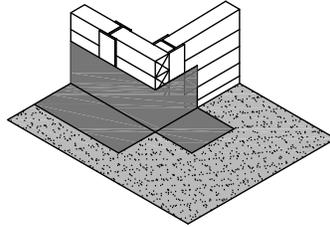


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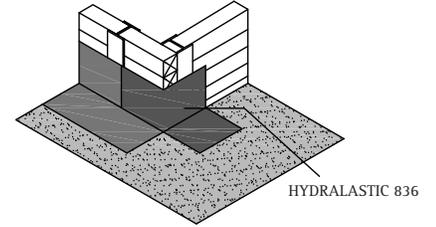
OUTSIDE CORNER INSTALLATION INSTRUCTIONS



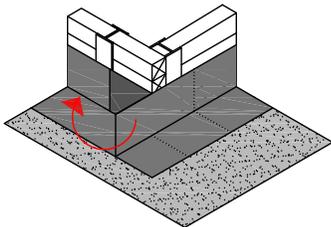
1. Install PRECON according to installation instructions onto soil stabilization system. Allow a minimum of 12" overlap to extend around outside corner.



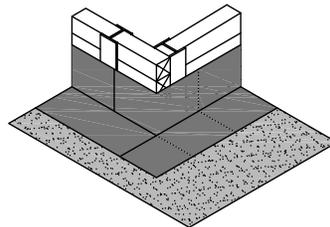
2. Cut PRECON on the horizontal to allow for ease of bending around corner and mechanically fasten according to installation instructions.



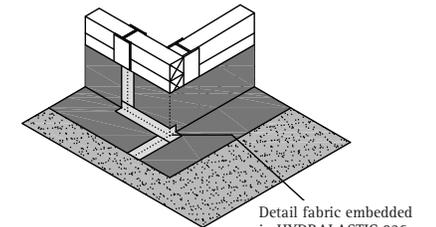
3. Apply HYDRALASTIC 836 to all overlap areas of PRECON that will be accepting the subsequent sheet of PRECON.



4. Install overlapping PRECON according to installation instructions onto soil stabilization system. Cut PRECON on the horizontal to allow for ease of bending around corner.



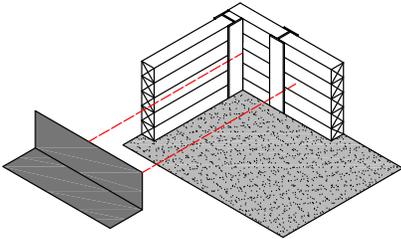
5. Embed overlaps into pre-applied HYDRALASTIC 836 and roll press into place.



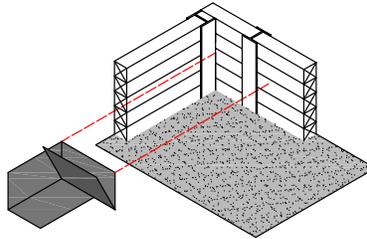
6. Apply HYDRALASTIC 836 at all overlapping joints in a 12" wide application and then fully embed detail fabric into this HYDRALASTIC 836. Terminate all edges with additional HYDRALASTIC 836.



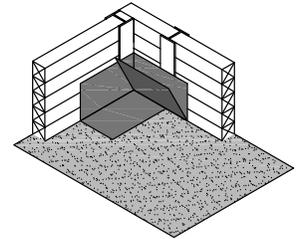
INSIDE CORNER INSTALLATION INSTRUCTIONS



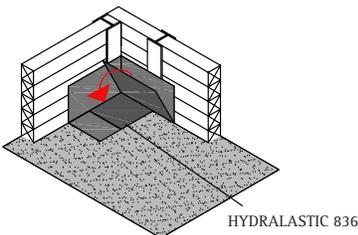
1. Install PRECON according to installation instructions onto soil stabilization system.



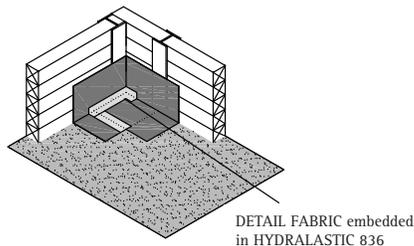
2. Cut PRECON on the horizontal to allow for ease of bending around corner.



3. Mechanically fasten according to installation instructions.



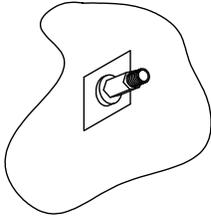
4. Apply HYDRALASTIC 836 to the area of PRECON that will be accepting the PRECON overlap, fold down overlap and embed in the HYDRALASTIC 836. Roll press into place.



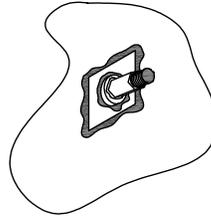
5. Apply HYDRALASTIC 836 at all overlapping joints in a 12" wide application and then fully embed DETAIL FABRIC into this HYDRALASTIC 836. Terminate all edges with additional HYDRALASTIC 836.



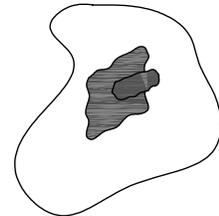
INSTALLATION INSTRUCTIONS



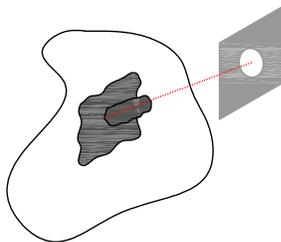
1. Ensure soil nail is clean and clear of any contaminants that could be detrimental to the bond of the HYDRALASTIC 836.



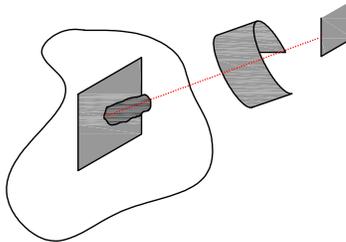
2. Apply BEM around all edges of the soil nail plate and all areas around the nut.



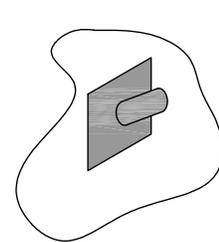
3. Apply HYDRALASTIC 836 over complete soil nail and plate, totally covering the area of the soil nail.



4. Cut a piece of DETAIL FABRIC to the dimensions of the soil nail plate and embed the fabric into the previously applied HYDRALASTIC 836.



5. Cut another two pieces of DETAIL FABRIC, one for the shaft of the soil nail, the other for the top, and embed this fabric into the previously applied HYDRALASTIC 836.



6. Ensure the soil nail is totally encapsulated in the HYDRALASTIC 836 and DETAIL FABRIC prior to application of PRECON blindside membrane.

* Installation guidelines does not show installation of MEL-DRAIN™ or PRECON for ease of viewing each step. Refer to W. R. MEADOWS installation instructions or Technical Services for complete instructions.



W. R. MEADOWS has developed a low-temperature version of PRECON for applications below 40° F (5° C). The minimum ambient and substrate temperature for PRECON LOW TEMP is 25° F (-4° C).

PRECON LOW TEMP and any accessory products must be stored in their original, unopened packaging at temperatures above 40° F (5° C). For optimal performance, store materials at temperatures at or near room temperatures until just prior to application.

Installation of PRECON LOW TEMP should not occur in the presence of rain, snow or ice, or if there is any ponded water as a result of melting. The presence of water on the membrane during its installation will prevent the proper adhesion of the joints. Certain environmental conditions may cause the formation of dew on the plasmatic core, which could impede the bond at the selvage edge. This may occur at temperatures above or below 40° F (5° C) and will necessitate the use of MEL-PRIME (solvent-based versions) on the selvage edge to insure a good bond at the seams.

Concrete placement should be completed within 60 days of the installation of the PRECON LOW TEMP and it is recommended it be done as soon as possible to prevent damage to the membrane. After installation, the membrane should be protected from damage.

During installation of PRECON LOW TEMP at lower temperatures and under certain environmental conditions, additional steps in the installation need to be followed to ensure that proper adhesion of the joints and overlaps is obtained.

1. MEL-PRIME (solvent-based versions) is required to be used at all factory edge joints. MEL-PRIME is to be applied at a width of 6" (152.4 mm) and allowed to dry prior to overlap of the adjoining sheet of PRECON. Following this, all areas of this overlap need to be pressure rolled for proper adhesion.
2. For optimum performance, HYDRALASTIC 836 or MEL-ROL LIQUID MEMBRANE (two-component) are to be used for all end lap details and terminations. The procedure is as follows:
 - a. Apply HYDRALASTIC 836 or MEL-ROL LIQUID MEMBRANE (two-component) in the area to be lapped at a width of 3" (7.6 cm) and roll press the overlapping PRECON while still wet.
 - b. Apply HYDRALASTIC 836 or MEL-ROL LIQUID MEMBRANE (two-component) at the termination of this overlapping sheet 12" (30 cm) wide centered over the termination.
 - c. While the HYDRALASTIC 836 or MEL-ROL LIQUID MEMBRANE (two-component) is still wet, embed 12" (30 cm) wide strip of PRECON and roll press into place. Then place DETAIL FABRIC from W. R. MEADOWS centered over the termination with 6" (152.44 mm) on each side of lap edge.
 - d. Apply additional HYDRALASTIC 836 or MEL-ROL LIQUID MEMBRANE (two-component) on all terminations of the DETAIL FABRIC.
3. Prior to placement of the concrete, ensure that the substrate is clean, dry and frost-free. The temperature of the membrane at time of concrete placement needs to be above 40° F (5° C).

Please note that HYDRALASTIC 836 can only be applied in temperatures above 30° F (-1° C). MEL-ROL LIQUID MEMBRANE (two-component) may be used on end laps, penetrations and terminations down to 25° F (-4° C).

It is important to review each application as there may be situations that would require either of these procedures to be modified based on the project requirements. If there are any concerns during the installation, contact technical support for assistance.



MEL-DRAIN™
Rolled Matrix Drainage System

DESCRIPTION

MEL-DRAIN drainage products combine geotextile filter fabrics with specially designed drainage cores. This geocomposite allows the passage of moisture through the fabric while preventing fine soils from entering the drainage channel. Various drain designs are available, depending on compressive strength and flow rate requirements. (An optional polyester backing film is available when used in conjunction with flexible waterproofing material.) The family of MEL-DRAIN products provides excellent protection and drainage performance for vertical, horizontal, or site drainage applications.

USES

Used in conjunction with a total W. R. MEADOWS moisture protection system, MEL-DRAIN is the ideal choice for enhanced waterproofing protection of basement walls, plaza decks, earth-sheltered homes, commercial buildings, retaining walls, underground parking, site drainage, etc.

FEATURES/BENEFITS

- High flow capacity, without clogging/Relieves hydrostatic pressure buildup.
- High compressive strength/Dependable, long life performance.
- Easy to install; durable under jobsite conditions/Lower total installed cost.
- Chemically resistant to all naturally occurring soil conditions/Wide variety of applications.
- Provides protection for waterproofing materials/Enhances waterproofing performance.
- Part of a complete W. R. MEADOWS moisture protection system/Worry-free, single-source solution.

INSTALLATION

For vertical, below-grade applications, unroll MEL-DRAIN with flat, core side against the wall or waterproofing material. POINTING MASTIC or MEL-PRIME™ from W. R. MEADOWS are excellent adhesives compatible with this installation. The flat side core lip is overlapped to provide a continuous drainage layer. Extra filter fabric is provided at the edges for overlapping with the next sheet. MEL-DRAIN is easily cut with construction knives or scissors.

For horizontal applications, unroll and overlap so that water runs with overlap. Add appropriate ballast as needed to hold down drainage board.

PRECAUTIONS

Store materials in protected environment until time of installation. Materials not shipped in UV-resistant bags must be stored indoors or under separate UV-protective cover to protect materials from exposure to direct sunlight. UV-resistant bagged materials may be stored in outdoor UV-exposed environments for a cumulative maximum of 180 days. Limit unpackaged material UV exposure to a cumulative maximum of 14 days during installation. Do not install materials during high wind events. Do not expose materials to chemicals that are strong acids, strong bases, or high in solvents content. Protect materials from site construction damage, flames, and other environmental conditions that may damage the materials. It is not recommended that installation take place when the ambient temperature is below 20° F (-6.6° C) or above 100° F (37.8° C). Do not install in applications where the long term operational temperature is expected to be below -20° F (-18.9° C) or above 150° F (65.6° C).

CONTINUED ON REVERSE SIDE ...

TECHNICAL DATA

MEL-DRAIN PRODUCTS			5012	5035	7555	7955	9055	9072
			5012-B	5035-B	7555-B	7955-B	9055-B	9072-B
Physical Properties ¹	ASTM Test Method	Unit of Measure						
FABRIC								
Material ²			PP, NPNW	PP, NPNW	PP, WM	PP, WM	PP, NPNW	PP, NPNW
Water Flow Rate	D 4491	gpm/ft ²	165	165	160	145	90	90
		Lpm/m ²	6,724	6,724	6,520	5,907	3,668	3,668
Grab Tensile Strength	D 4632	lbs	100	100	385x220	365 x 200	205	205
		N	445	445	1,713x979	1624 x 890	912	912
CBR Puncture	D 6241	lbs	275	275	725	675	600	600
		kN	1.22	1.22	3.22	3.00	2.66	2.66
Apparent Opening Size	D 4751	sieve	70	70	45	40	80	80
		mm	0.210	0.210	0.350	0.43	0.177	0.177
CORE								
Material ²			HIPS	HIPS	HIPS	PP	HIPS	HIPS
Thickness	D 1777	in	0.25	0.44	0.44	0.40	0.44	0.25
		mm	6.35	11	11	10	11	6.35
Compressive Strength	D 1621	psf	11,000	15,000	18,000	18,000	18,000	30,000
		kPa	527	718	862	862	862	1,436
Flow Rate ³	D 4716	gpm/ft	12.5	17	21	21	21	13
		Lpm/m	155	211	261	261	261	161
COMPOSITE								
Recycled Content ⁴		%	70	75	74	70	65	65
Roll Size		ft	4x50	4x50	4x50	6x50	4x50	4x50
Roll Weight		lbs	28, 29-B	38, 39-B	47	73, 74-B	53, 50-B	49, 50-B

¹ Unless otherwise noted, all physical and performance properties listed are Typical Values as defined in ASTM D 4439.

² PP = Polypropylene; HIPS = High Impact Polystyrene; NPNW = Needle-Punched Nonwoven; WM = Woven Monofilament

³ In-plane flow rate measured at 3,600 psf (172 kPa) compressive load and a hydraulic gradient of 1.0.

⁴ Post-industrial recycled content by weight.

"-B" products include a polymeric backing film.

W. R. MEADOWS offers MEL-DRAIN products with AASHTO Classified Geotextiles. All technical information contained in this document is accurate as of time of publishing. W. R. MEADOWS reserves the right to make changes to products and literature without notice. For more detailed information, please request specific MEL-DRAIN model

LEED INFORMATION

May help contribute to LEED credits:

- EAp2: Minimum Energy Performance
- EAc2: Optimize Energy Performance
- MRc9: Construction and Demolition Waste Management

For most recent data sheet, further LEED information, and SDS, visit www.wrmeadows.com.



LIMITED WARRANTY

W. R. MEADOWS, INC. warrants at the time and place we make shipment, our material will be of good quality and will conform with our published specifications in force on the date of acceptance of the order. Read complete warranty. Copy furnished upon request.

Disclaimer

The information contained herein is included for illustrative purposes only, and to the best of our knowledge, is accurate and reliable. W. R. MEADOWS, INC. cannot however under any circumstances make any guarantee of results or assume any obligation or liability in connection with the use of this information. As W. R. MEADOWS, INC. has no control over the use to which others may put its product, it is recommended that the products be tested to determine if suitable for specific application and/or our information is valid in a particular circumstance. Responsibility remains with the architect or engineer, contractor and owner for the design, application and proper installation of each product. Specifier and user shall determine the suitability of products for specific application and assume all responsibilities in connection therewith.



SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product: Drainage Board Products (Mel-Drain... Part Number: 5750150
 Total Drain, Drainage Board, Mel-Drain... 7002

Manufacturer: W. R. Meadows®, Inc. Address: 300 Industrial Drive
 Hampshire, Illinois 60140

Telephone: (847) 214-2100 In case of emergency, dial (800) 424-9300 (CHEMTREC)

Revision Date: 5/17/2019

Product Use: Drainage Board Product

SECTION 2: HAZARDS IDENTIFICATION/EXPOSURE LIMITS

HMIS

 Health 	0	Product is classified as non-hazardous per OSHA 1910.1200. These products are defined by OSHA as an "article." A manufactured item that is formed to a specific shape or design during manufacture that does not release or result in exposure to a hazardous chemical under normal use conditions.
 Flammability 	0	
 Reactivity 	0	
 Personal Protection 		

SECTION 3: HAZARDS COMPONENTS

<u>Chemical Name:</u>	<u>CAS Number</u>	<u>% by Weight</u>	<u>SARA 313</u>	<u>Vapor Pressure (mm Hg@20°C)</u>	<u>LEL (@24°C)</u>
1. None					

Under the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1966 (SARA) and 40 CFR Part 372, chemicals listed on the 313 List (40 CFR Part 373.65) are identified under the heading "SARA 313."

SECTION 4: EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Not expected to be an exposure route.
SKIN CONTACT: Not expected to be an exposure route.
INHALATION: Not expected to be an exposure route.
INGESTION: Not expected to be an exposure source.
MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND CHRONIC: See Section Eleven for Symptoms/Effects

SECTION 5: FIRE AND EXPLOSIVES HAZARDS

FLASHPOINT: Not applicable; product is a solid.
EXTINGUISHING MEDIA: Water fog, foam, dry chemical.
CHEMICAL/COMBUSTION HAZARDS: Carbon monoxide, carbon dioxide, and incomplete combustion products.
PRECAUTIONS/PERSONAL PROTECTIVE EQUIPMENT: Avoid smoke inhalation. Use appropriate respiratory protection.

SECTION 6: ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK PROCEDURES: Not applicable. Product is a solid.

SECTION 7: HANDLING AND STORAGE

SAFE HANDLING PROCEDURES: None.
SAFE STORAGE: Prevent job-site damage.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

<u>Chemical Name:</u>	OSHA					ACGIH		
	<u>PEL</u>	<u>PEL/CEILING</u>	<u>PEL/STEL</u>	<u>SKIN</u>	<u>TLV</u>	<u>TLV/CEILING</u>	<u>TLV/STEL</u>	<u>SKIN</u>
1. None								

ENGINEERING CONTROLS: None required under normal use conditions.
PERSONAL PROTECTIVE EQUIPMENT: None required under normal use conditions.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: N/A	VAPOR DENSITY: N/A	% VOLATILE BY VOLUME: N/A
EVAPORATION RATE: N/A	pH LEVEL: N/A	% VOLATILE BY WEIGHT: N/A
WEIGHT PER GALLON: N/A	PRODUCT APPEARANCE: Black Solid	VOC CONTENT: N/A
ODOR: None	ODOR THRESHOLD: N/D	MELTING/FREEZING POINT: N/D
FLASH POINT: See Section 5	FLAMMABILITY: N/D	UEL/LEL: N/D
VAPOR PRESSURE: N/D	RELATIVE DENSITY: N/D	SOLUBILITY: N/D
PARTITION COEFFICIENT: N/D	AUTOIGNITION TEMPERATURE: N/D	DECOMPOSITION TEMPERATURE: N/D
VISCOSITY: N/D		<i>N/D: Not Determined</i>

GUIDE SPECIFICATION FOR MEL- DRAIN™ DRAINAGE SYSTEM

SECTION 07 10 00

DAMPPROOFING AND WATERPROOFING

Specifier Notes: This guide specification is written according to the Construction Specifications Institute (CSI) Format. The section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project. Coordinate this section with other specification sections and the drawings.

Specifier Notes: W. R. MEADOWS® MEL-DRAIN Drainage System is a dimple raised, molded polystyrene sheet bonded to a high strength polypropylene fabric. The geocomposite allows the passage of moisture through the fabric while preventing fine soils from entering the drainage channel. Various drain designs are available, depending on soil pressures and flow specifications.

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Application of a geocomposite drainage system.

1.02 RELATED SECTIONS

Specifier Notes: Edit the list of related sections as required for the project. List other sections dealing with work directly related to this section.

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 07 21 00 – Thermal Insulation.
- C. Section 07 60 00 – Flashing and Sheet Metal.
- D. Section 07 92 00 – Joint Sealants.
- E. Section 31 50 00 – Excavation Support and Protection.

1.03 REFERENCES

- A. ASTM D1621 (modified) – Standard Test Method for Compressive Properties Of Rigid Cellular Plastics.
- B. ASTM D1777 - Standard Test Method for Thickness of Textile Materials.
- C. ASTM D3776 - Standard Test Methods for Mass Per Unit Area (Weight) of Fabric.
- D. ASTM D3786 - Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics- Diaphragm Bursting Strength Tester Method.
- E. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
- G. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
- H. ASTM D4716 – Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.

- I. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile.

1.04 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Submit manufacturer's product data and application instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in a clean dry area in accordance with manufacturer's instructions.
- C. Protect materials during handling and application to prevent damage or contamination.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Product not intended for uses subject to abuse or permanent exposure to the elements.
- B. Protect rolls from direct sunlight until ready for use.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. W. R. MEADOWS, INC., PO Box 338, Hampshire, Illinois 60140-0338. (800) 342-5976. (847) 683-4500. Fax (847) 683-4544. Web Site www.wrmeadows.com.

2.02 MATERIALS

Specifier Notes: Drainage board selection should be performed on a project basis and should depend on the application. Various types are available based on type of application, soil pressures and flow specifications. Select performance requirements from the chart below. Many types are available; consult W. R. MEADOWS for assistance in selecting the correct system.

PHYSICAL PROPERTIES	Test Method	Unit of Measure	5012	5012-B	5035	5035-B	7955	7955-B	9055	9055-B
FABRIC										
Material ²			PP,NPNW	PP,NPNW	PP,NPNW	PP,NPNW	PP, WM	PP, WM	PP,NPNW	PP,NPNW
Grab Tensile Strength	ASTM D 4632	Lbs N	100 445	100 445	100 445	100 445	365 x 200 1624 x 890	365 x 200 1624 x 890	205 912	205 912
Grab Elongation	ASTM D 4632	%	65	65	65	65	24 x 10	24 x 10	70	70
CBR Puncture	ASTM D 6241	Lbs kN	275 1.22	275 1.22	275 1.22	275 1.22	675 3.00	675 3.00	600 2.66	600 2.66
Water Flow Rate	ASTM D 4491	gpm/ft ² Lpm/m ²	165 6,724	165 6,724	165 6,724	165 6,724	145 5,907	145 5,907	90 3,668	90 3,668
Permittivity	ASTM D 4491	sec ⁻¹	2.4	2.4	2.4	2.4	2.1	2.1	1.5	1.5
Apparent Opening Size	ASTM D 4751	Sieve Mm	70 0.210	70 0.210	70 0.210	70 0.210	40 0.430	40 0.430	80 0.177	80 0.177
UV Resistance	ASTM D 4355	% 500 Hrs	70	70	70	70	90	90	70	70
Survivability	AASHTO M 288-06	Class	-	-	-	-	-	-	1	-
CORE										
Material ²			HIPS	HIPS	HIPS	HIPS	PP	PP	HIPS	HIPS
Thickness	ASTM D 5199	in mm	0.25 6.35	0.25 6.35	0.44 11	0.44 11	0.40 10	0.40 10	0.44 11	0.44 11

Compressive Strength	ASTM D 6364	psf KPa	11,000 527	11,000 527	15,000 718	15,000 718	18,000 862	18,000 862	18,000 862	18,000 862
Compressive Strength	ASTM D 1621	psf kPa	11,000 527	11,000 527	15,000 718	15,000 718	18,000 862	18,000 862	18,000 862	18,000 862
In-Plane Flow Rate	ASTM D 4716 ³	gpm/ft Lpm/m	12.5 155	12.5 155	17 211	17 211	21 261	21 261	21 261	21 261
Perforated			No							
Backing Film			No	Yes	No	Yes	No	Yes	No	Yes
COMPOSITE										
Recycled Content ⁴	Calculated	%	> 70	>70	> 75	> 70	> 70	> 70	> 65	>65
Roll Size	Measured	ft	4 x 50	4 x 50	4 x 50	4 x 50	6 x 50	6 x 50	4 x 50	4 x 50
Roll Weight (approx.)	Measured	lbs	28	29	38	39	73	74	53	50
TYPICAL VALUES FOR ALL TEST RESULTS										

- A. Performance Based Specification: Geocomposite Drainage Board shall consist of a dimple raised core bonded to a high strength geotextile fabric. Drainage board shall consist of the following physical properties:
1. Core
 - a. Thickness, ASTM D5199: [XXXX]
 - b. Core Compressive Strength, ASTM D6364 or ASTM D1621: [XXXX]
 - c. In-Plane Flow Rate, ASTM D4716: [XXXX]
 2. Fabric
 - a. Grab Tensile Strength, ASTM D4632: [XXXX]
 - b. Grab Elongation, ASTM D4632: [XXXX]
 - c. CBR Puncture, ASTM D6241: [XXXX]
 - d. Water Flow Rate, ASTM D4491: [XXXX]
 - e. Permittivity, ASTM D4491: [XXXX]
 - f. UV Resistance, ASTM D4355: [XXXX]
- B. Proprietary Based Specification:

Specifier Notes: Drainage board selection should be performed on a project basis and should depend on the application. Select specific version of MEL-DRAIN drainage board based on the project requirements and delete the remaining version in the listing. Consult W. R. MEADOWS for assistance in selecting the correct version.

1. MEL-DRAIN 5012: dimple raised moulded polystyrene core with a non-woven geotextile fabric bonded to the dimples of the core.
2. MEL-DRAIN 5012-B: dimple raised moulded polystyrene core with a non-woven geotextile fabric bonded to the dimples of the core. Attached to the back side of the dimples is a polyethylene sheet designed to prevent soft waterproofing membranes from working their way into the back-side of the dimples.
3. MEL-DRAIN 5035: high strength dimple raised moulded polystyrene core with a non-woven geotextile fabric bonded to the dimples of the core.
4. MEL-DRAIN 5035-B: high strength dimple raised moulded polystyrene core with a non-woven geotextile fabric bonded to the dimples of the core. Attached to the back side of the dimples is a polyethylene sheet designed to prevent soft waterproofing membranes from working their way into the back-side of the dimples.
5. MEL-DRAIN 7955: high strength dimple raised moulded polypropylene core with a high strength woven geotextile fabric bonded to the dimples of the core.
6. MEL-DRAIN 7955-B: high strength dimple raised moulded polypropylene core with a high strength woven geotextile fabric bonded to the dimples of the core. Attached to the back side of the dimples is a polyethylene sheet designed to prevent soft waterproofing membranes from working their way into the back-side of the dimples.
7. MEL-DRAIN 9055: high strength dimple raised moulded polystyrene core with a monofilament fabric bonded to the dimples of the core. Used for horizontal deck and landscaping applications.
8. MEL-DRAIN 9055-B: high strength dimple raised moulded polystyrene core with a monofilament fabric bonded to the dimples of the core. Used for horizontal deck and landscaping applications. Attached to the back side of the dimples is a polyethylene

sheet designed to prevent soft waterproofing membranes from working their way into the back-side of the dimples.

2.03 ACCESSORIES

- A. Termination Bar: TERMINATION BAR from W. R. MEADOWS.
- B. Pointing Mastic: POINTING MASTIC from W. R. MEADOWS.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive membrane. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

- A. Protect adjacent surfaces not designated to receive drainage system.
- B. Clean and prepare surfaces to receive drainage system in accordance with manufacturer's instructions.

3.03 APPLICATION

- A. Vertical Application
 1. Unroll drainage board with flat, core side against the wall or waterproofing membrane. Drainage board can be fastened at the top side with a suitable mechanical fastening system that is compatible with the substrate.
 2. Adhere remainder of drainage board with mastic, compatible with this installation.
 3. Overlap the flat side core lip with second sheet of drainage board to provide a continuous drainage layer (shingle fashion). Ensure excess filter fabric is overlapped with this next sheet.
- B. Horizontal Application
 1. Unroll drainage board and apply from high point to low point ensuring that overlap is in such a way so that water runs with the overlap.
 2. Add appropriate ballast as needed to hold down drainage board.

3.04 PROTECTION

- A. Backfill immediately using care to avoid damaging drainage layer and to ensure permanent placement of the drainage board.

END OF SECTION



W. R. MEADOWS®

SEALTIGHT®

A Family Company Since 1926

QUALITY...SERVICE...INTEGRITY

W. R. MEADOWS, INC.

P.O. Box 338 • Hampshire, IL 60140-0338

Phone: 847/214-2100 • Fax: 847/683-4544

1-800-342-5976

www.wrmeadows.com • info@wrmeadows.com

HAMPSHIRE, IL / CARTERSVILLE, GA / YORK, PA

FORT WORTH, TX / BENICIA, CA / POMONA, CA

GOODYEAR, AZ / MILTON, ON / SHERWOOD PARK, AB



Project: Boise VA Hospital Parking Garage
 Location: Boise, Idaho, USA
 Architect: ZGA Architects & Planning
 General Contractor: Winspear Construction
 Subcontractor: Petra Concrete
 Salesperson: Bryon Allen

Products: MEL-ROL®
 MEL-DRAIN™ 5035
 BEM
 DUOGARD® CITRUS
 1100
 Scope: 20,000 sq. ft.



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GOODYEAR, AZ / MILTON, ON / SHERWOOD PARK, AB



Project: Arizona State University Biodesign Institute Building B
Location: Phoenix, Arizona, USA
Architect: Gould Evans
Contractor: McCarthy
Subcontractor: Firestop Southwest
Salesperson: Greg Neundorfer

Product: HRM 714
MEL-ROL®
MEL-DRAIN™ 5035
MEL-DRAIN 9055-B
HYDRALASTIC™ 836
PRECON® FABRIC TAPE
Scope: 22,000 square feet

This project is the first project to earn LEED Platinum certification in Arizona. HYDRALASTIC 836 was used for vertical substrates and transitions. MEL-ROL with MEL-DRAIN 5035 was used for foundation walls.



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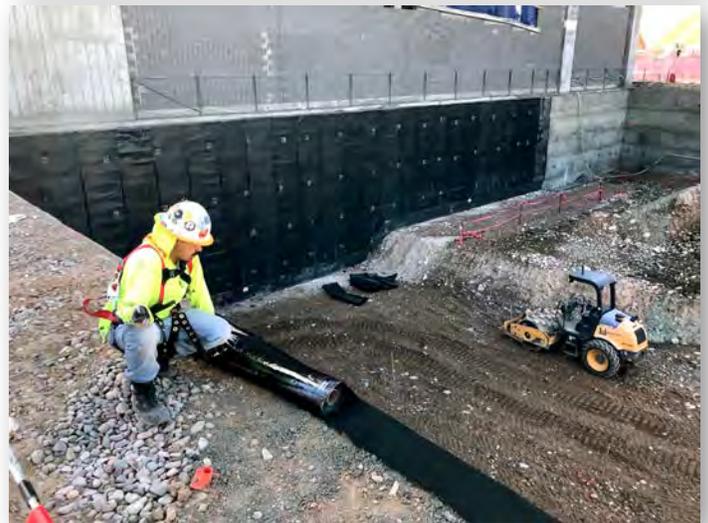
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GOODYEAR, AZ / MILTON, ON / SHERWOOD PARK, AB



Project:	The Westin Tempe
Location:	Tempe, Arizona, USA
Architect:	RSP Architects
Contractor:	Sundt
Subcontractor:	Firestop Southwest
Salesperson:	Greg Neundorfer
Product:	PRECON, MEL-DRAIN™, 5035 MEL-DRAIN TOTAL-DRAIN™, HYDRALASTIC™, 836 BEM DETAIL FABRIC
Scope:	68,000 square feet

INSTALLATION GUIDELINES MEL-DRAIN™

ACCESSORIES:

W. R. MEADOWS offers several accessory products to help with the proper installation of MEL-DRAIN. PERMINATOR TAPE is recommended for the sealing, seaming, terminating and connecting details referenced in this document. Any tape designed for underground use is acceptable provided it offers a strong bond that will not deteriorate over time in typical or anticipated subsurface conditions.

ATTACHMENT METHODS:

Common attachment methods for drainage products include TERMINATION BAR with mechanical fasteners, construction adhesives, double-sided tapes, insulation anchors, and nails through washers or wood lathing. Construction adhesives with high solvent contents should be avoided as they may damage MEL-DRAIN. Acceptable attachment methods are dependent upon substrate. POINTING MASTIC or MEL-PRIME™ can be used as an adhesive for installation of MEL-DRAIN. Please consult W. R. MEADOWS Technical Services for additional information.

CONCRETE OR WOOD: Construction adhesives, double-sided tape, or mechanical fasteners.

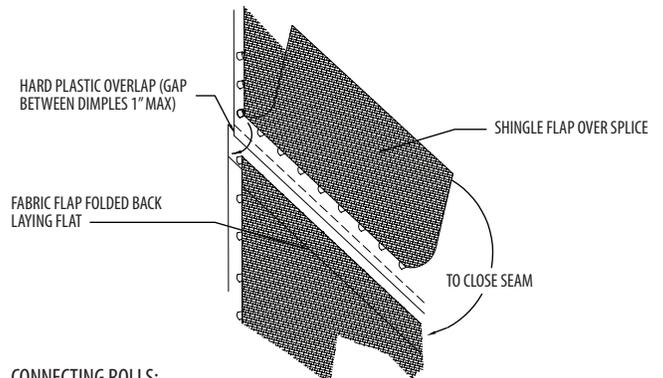
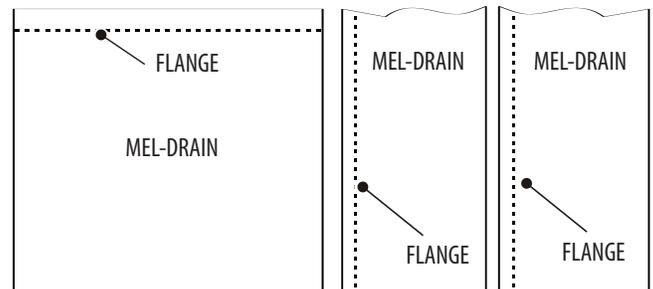
SOIL: 4-inch to 8-inch long galvanized nails on approximately 4-foot spacing. Nail length will vary depending upon the surface to which MEL-DRAIN is being attached. Nails should have flat heads, and washers or wood lathing may be used to prevent the nail head from being driven through the prefabricated drain.

WATERPROOFING MEMBRANES: Construction adhesives, double-sided tape, or insulation anchors are suitable attachment methods. Check with W. R. MEADOWS for compatibility before using construction adhesives in conjunction with W. R. MEADOWS waterproofing materials. When using anchors, make sure waterproofing material is not penetrated or damaged in any way.

DRAINAGE CONNECTION FLANGE:

MEL-DRAIN is manufactured with a core flange on each roll. The flange is a flat section of plastic that extends beyond the molded dimples on one side. The flange is designed to connect rolls to each other to facilitate water flow and transportation. Rolls are designed with integrated fabric flaps that extend beyond the flange edge to secure seams and terminate edges, preventing soil intrusion into the water flow channel.

Rolls can be installed vertically (in columns) or horizontally (in rows) against the installation surface. All rolls should be installed with flanges oriented in a consistent manner.



CONNECTING ROLLS:

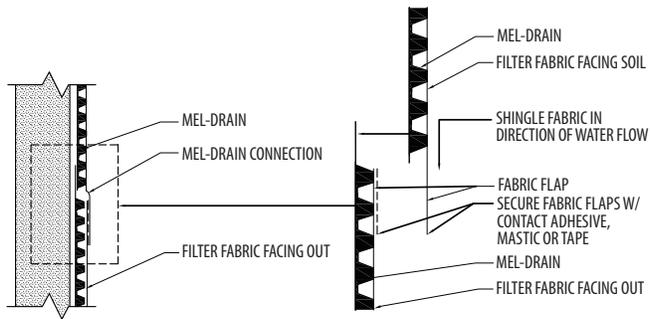
1. Attach the first roll of sheet drain to the wall using recommended attachment method.
2. Attach additional rolls by placing the flush edge of the roll over the connection flange on the adjacent roll.
3. Use fabric flaps to secure seams.
4. Seal all edges of drain prior to backfill.



INSTALLATION GUIDELINES MEL-DRAIN

When installed horizontally (rows), the core flange should be at the upstream edge. Additional rolls should be oriented in a consistent manner with the non-flanged edge installed over the flange edge of the previously installed roll. Integrated fabric flaps are used to cover the seams prior to backfill. Fabric flaps should be seamed in a downstream direction when possible.

PERMINATOR TAPE or spray adhesives can be used to secure fabric flaps at seams.



SEALING EDGE TERMINATIONS & PENETRATIONS:

MEL-DRAIN products are installed in subsurface applications and care should be taken when backfilling to ensure soil is not able to enter the prefabricated drainage core through roll seams or edges.

SEAMS AND EDGES:

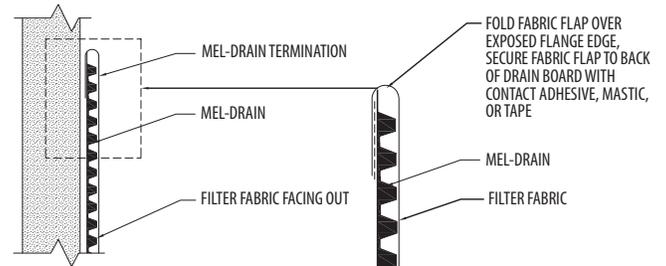
Fabric flaps are provided on MEL-DRAIN to facilitate seam and edge terminations.

- MEL-DRAIN has fabric flaps on the long edges of each roll.
- MEL-DRAIN products provide fabric flaps on the top/flange open edge to facilitate the connection of additional rolls.

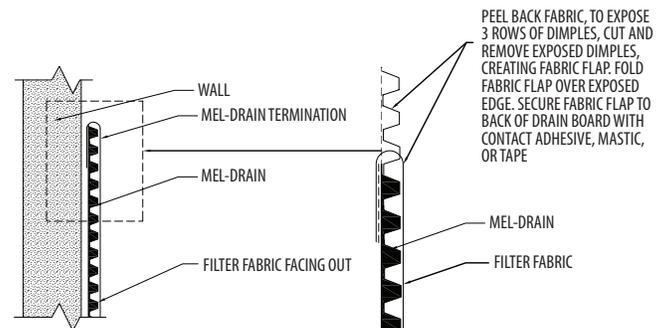
For additional security, spray adhesive or PERMINATOR TAPE can be used to secure fabric flaps in place prior to backfill.

NOTE:

The ends of all rolls/products without fabric flaps must be secured with tape or fabric prior to backfill.



TERMINATION - Flange Edge - Vertical



TERMINATION - Non-Flange Edge - Vertical

PENETRATIONS:

Penetrations (such as pipes) through MEL-DRAIN should be sealed using PERMINATOR TAPE to insure backfill material is not able to enter the drainage core.

FABRIC CUTS:

Cuts in the fabric less than 2" (25.4 mm) wide should be sealed using PERMINATOR TAPE. Cuts in the fabric larger than 2" (25.4 mm) wide require a patch of filter fabric (of the same type used on the drainage



INSTALLATION GUIDELINES MEL-DRAIN

product) extending a minimum 3" (76.2 mm) in all directions beyond the damaged fabric be used to cover the cut. The patch should be secured in place over the cut using PERMINATOR TAPE or spray adhesive.

BACKFILLING:

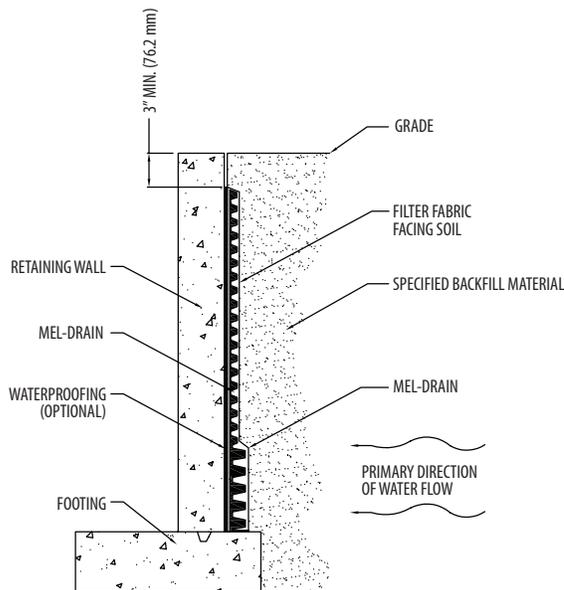
Soil should be placed and compacted directly against MEL-DRAIN at the compaction requirement specified by the designer. Direct compactor exhaust away from MEL-DRAIN to prevent damage. Backfill to a minimum of 3" (76.2 mm) above MEL-DRAIN to allow for coverage after settlement.

VERTICAL APPLICATIONS

When using MEL-DRAIN sheet drains in vertical applications, the area of installation should be clear of debris. Limit foot traffic and/or heavy equipment directly on MEL-DRAIN during horizontal installations to avoid damage to the drainage channel.

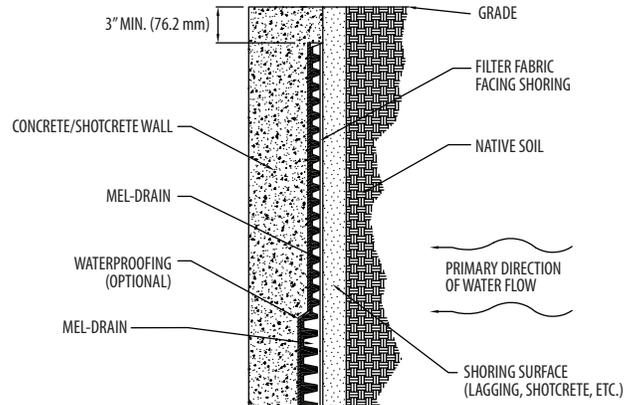
BACKFILLED WALL:

Install MEL-DRAIN with fabric side toward soil.



SHORING WALL (BLINDSIDE WALL):

Install MEL-DRAIN with fabric side toward shoring. Concrete or gunite/shotcrete may be placed against the core side of the drain.



The geotextile filter fabrics used in MEL-DRAIN are designed specifically for use in subsurface drainage applications and are designed to allow backfilling directly against the fabric side. MEL-DRAIN is offered with various geotextile filter fabrics to meet specific application requirements. For example, standard-weight non-woven fabrics are commonly used in vertical wall applications with soil/aggregate backfill, medium-weight non-woven fabrics for applications such as angular rock backfill, and heavyweight woven or non-woven fabrics for horizontal and/or concrete pour applications. Physical and performance properties for the fabrics are listed on the MEL-DRAIN data sheet, and include strength properties, such as grab tensile strength and CBR puncture strength, so designers can specify heavier-grade (stronger) fabrics if desired based on their specific application requirements.

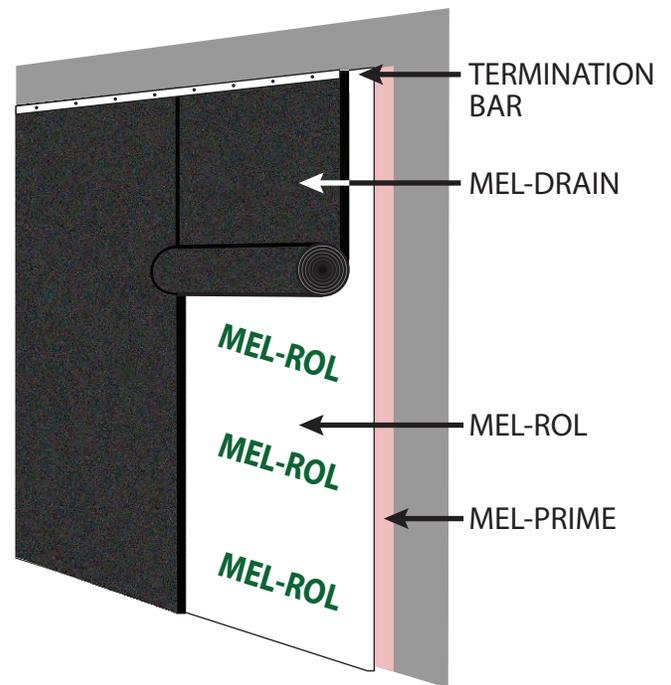


During MEL-DRAIN installation in vertical and near-vertical applications, it is necessary to temporarily secure MEL-DRAIN in place prior to soil backfill or wall formation. Common attachment methods include construction adhesives, mechanical fasteners (typically using nail gun), double-sided tapes, insulation anchors, and nails through washers or wood lathing. Construction adhesives with high solvent contents should be avoided as they may damage MEL-DRAIN products. Acceptable attachment methods are dependent upon what kind of substrate MEL-DRAIN is being attached to and are discussed below.

For attaching MEL-DRAIN to concrete or wood, the most common methods are construction adhesives, double-sided tape, or mechanical fasteners.

For attaching MEL-DRAIN to soil, the most common method is the use of 4" - 8" (101.6 - 203.2 mm) long galvanized nails on approximately 4' (1.2 m) spacing. Nail length will vary depending upon the surface to which the MEL-DRAIN is being attached. Nails should have flat heads and washers or wood lathing may be used to prevent the nail head from being driven through the MEL-DRAIN.

At the top edge, take special care when installing fasteners. Use TERMINATION BAR from W. R. MEADOWS in all installations. Fasteners should only be used at the top edge of the installation. Do not use fasteners in the field of the waterproofing membrane installation below the top edge. Do not damage the waterproofing membrane under any circumstance. Any penetrations will need to be repaired. If fasteners are required to penetrate the waterproofing membrane, please see the FASTENER PENETRATION TECHNICAL BULLETIN for proper recommendations.



W. R. MEADOWS MEL-DRAIN™ sheet drain products offers drainage solutions for paver deck applications as part of a complete waterproofing system. There are various paver deck system types and designs available, requiring selection and compatibility of products to be made by designers based on project specific application requirements. MEL-DRAIN sheet drain products for paver deck applications are available with compressive strengths ranging from 18,000 psf to 30,000 psf and offers various geotextile filter fabric options to meet a variety of paver deck system applications.

PRODUCT RECOMMENDATIONS:

Below are general product recommendations for various paver system designs. These recommendations are provided as a starting point for project-specific evaluation purposes. Product selection and suitability for specific application is the sole responsibility of the designer.

Pedestrian Traffic Decks:

- Sand-set pavers:
MEL-DRAIN 9055 (4' x 50', 1.22 m x 15.24 m) or
MEL-DRAIN 7922 (6' x 50', 1.83 m x 15.24 m)
- Grout-set pavers:
MEL-DRAIN 9055 (4' x 50', 1.22 m x 15.24 m) or
MEL-DRAIN 7955 (6' x 50', 1.83 m x 15.24 m)
- Tray system:
MEL-DRAIN 9055 (4' x 50', 1.22 m x 15.24 m) or
MEL-DRAIN 7955 (6' x 50', 1.83 m x 15.24 m)
- Pedestal system:
MEL-DRAIN 9072 (4' x 50", 1.22 m x 15.24 m)

Vehicular Traffic Decks:

- Sand-set pavers with $\geq 4"$ (101.6 mm) -thick sand bed: MEL-DRAIN 9072 (4' x 50', 1.22 m x 15.24 m)
- Grout-set pavers with $\geq 4"$ (101.6 mm) -thick sand bed: MEL-DRAIN 9072 (4' X 50', 1.22 m x 15.24 m)
- Tray system with $\geq 4"$ (101.6 mm) -thick sand bed: MEL-DRAIN 9072 (4' X 50', 1.22 m x 15.24 m)

Please contact W. R. MEADOWS Technical support for Data Sheets if you need additional information.

PAVER SYSTEMS AND POINTS OF CONSIDERATION:

Below are common paver system types and points for consideration during evaluation:

Pedestrian Traffic Decks:

- General:
 - Maximum static and dynamic surface loads must be determined
 - Maximum distributed and point loads to the drain mat must be determined
 - Some pedestrian traffic decks require emergency vehicle access, which must be accounted for in system design



TECHNICAL BULLETIN

MEL-DRAIN IN PAVER DECK APPLICATIONS

- Paver System Type:
 - Sand-set pavers:
 - Loose-laid pavers:
 - Surface loads may impart point loads to the drain mat. Typically not a restricting factor in pedestrian deck applications.
 - Interlocking pavers:
 - Surface loads typically impart a distributed load to the drain mat. Typically not a restricting factor in pedestrian deck applications.
 - Sand layer thickness:
 - Determined by the paver system designer. A 1" (25 mm) -minimum sand layer is recommended to help distribute the load and insure the paver and drain mat remain separated. Per Interlocking Concrete Pavement Institute Tech Spec Number 14 ("ICPI Tech Spec #14") design recommendations for bedding and joint sand for pedestrian applications, "The typical sand thickness is nominal one inch (25 mm)."
 - Sand layer composition:
 - Determined by the paver system designer. Per ICPI Tech Spec #14 design recommendations for bedding and joint sand for pedestrian applications, "The gradation of the bedding sand should conform to ASTM C33 or CSA A23.1 "FA 1". "It is important that no material (fines) pass the No. 200 (0.075 mm) sieve as the presence of this size of material will greatly slow the movement of water through the bedding sand...Limestone screenings or stone dust should not be used..."
- Grout-set pavers:
 - Surface loads typically impart a distributed load to the drain mat. Typically not a restricting factor in pedestrian deck applications.
- Tray system:
 - Area of tray in contact with drain mat must be determined in order to determine the loads imparted to the drain mat. The larger the surface area of the tray bottom, the more distributed the load will be. Typically not a restricting factor in pedestrian deck applications.
- Pedestal system:
 - Area of pedestal base in contact with drain mat must be determined in order to determine the loads imparted to the drain mat. The larger the surface area of the pedestal base, the more distributed the load will be. If greater load distribution to the drain mat is desired, rigid metal or plastic plates of sufficient size (larger than the pedestal base) may be placed below the pedestal base.



Vehicular Traffic Decks:

- General:
 - Maximum static and dynamic loads must be determined
 - Maximum distributed and point loads to the drain mat must be determined
 - Maximum wheel loads must be determined
- For sand bed thickness $\geq 4"$ (101.6 mm) (all paver system types)
 - Sand bed thicknesses of $\geq 4"$ (101.6 mm) are typically sufficient to distribute the load to the drain mat and protect the drain mat from typical unstable surface conditions that may form over time.
- Sand layer composition
 - Determined by the paver system designer. Per ICPI Tech Spec #14 design recommendations for bedding material for vehicular applications, "Bedding materials for vehicular applications need to freely drain water so that they do not become saturated...An example is material conforming to the gradation of ASTM No. 9 or No. 89 aggregate."

