



CITY of NOVI CITY COUNCIL

**Agenda Item H
March 28, 2016**

SUBJECT: Approval to award the Police Station Waterproofing project to RAM Construction for the amount of \$28,763.

SUBMITTING DEPARTMENT: Information Technology- Facilities Management Division

CITY MANAGER APPROVAL: 

EXPENDITURE REQUIRED	\$28,763
AMOUNT BUDGETED	\$30,000
APPROPRIATION REQUIRED	
LINE ITEM NUMBER	101-301.00-976.000

BACKGROUND INFORMATION:

Along the west wall throughout the interior of the police station water issues have occurred. When inspecting the exterior wall it is evident that the existing waterproofing has failed. The water proofing system on the wall has been exposed for some time. The exposure has broken down the integrity of the system allowing water to seep behind the material and through the block wall into the building. This request is for the rehabilitation of the existing water proofing system just below the grade.

The scope of work includes the removal and replacement of the existing waterproofing system, installation of new drainage board, installation of new drain tiles, and the proper backfill allowing storm water to drain away from the facility.

An Invitation for Bids for the Police Station Waterproofing project was posted on the Michigan Intergovernmental Trade Network (MITN) website. A mandatory pre-bid meeting was held on site on February 4, 2016 which was attended by seven firms. We received four bids.

During the review period it was determined that one bidder's substitute product was not an approved equivalent as called in the specifications. After careful review it is the recommendation of this team to award the Police Station Waterproofing project to Ram construction.

RECOMMENDED ACTION: Approval to award the Police Station Waterproofing project to RAM Construction for the amount of \$28,763.

	1	2	Y	N
Mayor Gatt				
Mayor Pro Tem Staudt				
Council Member Burke				
Council Member Casey				

	1	2	Y	N
Council Member Markham				
Council Member Mutch				
Council Member Wrobel				

CITY OF NOVI
Police Department Waterproofing Project
Tuesday, March 15, 2016 2:00 P.M.

Company	Qualified Construction Corp.	RAM Construction	DC Byers Company	National Restoration
Lump sum	\$ 8,835.00	\$ 28,763.00	\$ 42,500.00	\$ 79,000.00
Manufacturer/Product proposed	Meadows Mel-Rol LM	Laurenco Waterproofing System	Laurenco 2 ply	Carlisle, CCW MiraDri 860
Warranties	10 year	10 yr materials, 1 year RAM Construction workmanship	10 yr material warranty, see schedule for additional warranty options	1 year
Days required to do the work	20 days	15	10 working days	15
Product information is included with bid	Yes	Yes	Yes	Yes
Exceptions	Using "Meadows Mel-Rol LM" Waterproofing system in place of Laurenco.	Handling/hauling of any hazardous materials, permits, and any other work which is not defined within bid.	None	Substituting Carlisle CCW MiraDri 860 for the Laurenco system. Consists of CCW 702 Primer, CCW 860 membrane, CCW MiraDrain 6200 protection board.
Comments		RAM will provide a smooth raked landscape once waterproofing has been completed.	Contractor has not included cost to repair landscaping, existing grass or sprinkler heads	
Addenda #1 & #2 acknowledged	Yes	Yes	No	No



cityofnovi.org

CITY OF NOVI
POLICE DEPARTMENT WATERPROOFING PROJECT
BID FORM

We, the undersigned as bidder, propose to furnish to the City of Novi, according to the specifications, terms, conditions and instructions attached hereto and made a part thereof:

WATERPROOFING, AS SPECIFIED \$ 28,763.00 Lump Sum
Addendum #1 2-23-16
Addendum #2 3-09-16
Manufacturer/Product proposed Laurenco Waterproofing System

WARRANTIES Laurenco Waterproofing System 10 Years Material (sample attached)
RAM Construction Services 1 Year Workmanship (sample attached)

Days required to do the work 15

Product information is included with bid: Yes No

EXCEPTIONS TO SPECIFICATIONS (all exceptions must be noted here):

Handling/hauling of any hazardous materials, permits and any other work which is not defined within bid

COMMENTS: RAM will provide a smooth raked landscape once waterproofing has been completed

REFERENCES: Please provide at least three client (3) references for projects of similar scope done in the last 3 years.

Company McKinley Incorporated

Address 201 S. Division - Ann Arbor, Michigan
Phone 248-802-2755 Contact name Beth Anne Beattie

Company Archdiocese of Detroit
Address 12 State Street - Detroit, Michigan
Phone 313-237-5800 Contact name Frank MacDonell

Company Saint Mary Mercy Hospital
Address 36475 Five Mile Road - Livonia, Michigan
Phone 734-655-8639 Contact name Aaron Swackhamer

NON-IRAN LINKED BUSINESS

By signing below, I certify and agree on behalf of myself and the company submitting this proposal the following: (1) that I am duly authorized to legally bind the company submitting this proposal; and (2) that the company submitting this proposal is not an "Iran linked business," as that term is defined in Section 2(e) of the Iran Economic Sanctions Act, being Michigan Public Act No. 517 of 2012; and (3) That I and the company submitting this proposal will immediately comply with any further certifications or information submissions requested by the City in this regard.

THIS BID SUBMITTED BY:

Company (Legal Registration) RAM Construction Services of Michigan, Inc.

Address 13800 Eckles Road

City Livonia State MI Zip 48150

Telephone 734-464-3800 Fax 734-437-6206

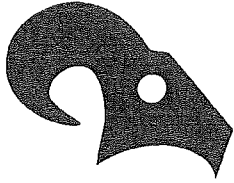
Representative's Name Robert T. Mazur

Representative's Title President

Authorized Signature 

E-mail rmazur@ramservices.com

Date March 15, 2016



RAM[®]
CONSTRUCTION SERVICES

SAMPLE

Date _____

Company Name _____

Attention: Name _____

Regarding: Project Name – **Warranty**
 Type of Work
 City, State
 RAM Job #

Dear _____:

We guarantee that the _____ work completed on the above captioned project will remain free from defects due to defective material or labor on our part for a period of one (1) year starting from the substantial completion date of _____.

We have also enclosed the following manufacture material warranty:

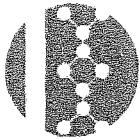
- Laureco Systems – Waterproofing – Ten (10) Year

Defects in the structure or other causes beyond our control are not covered by this guarantee.

This guarantee will not become effective until all bills for installation supplies, and services in connection with the _____ work covered by this guarantee have been paid in full. Either direct or indirect acceptance of and/or payment constitutes approval of and agreement with all terms and conditions of this guarantee by the owner. This guarantee shall be deemed a contract and shall be deemed to be entered into under and pursuant to the laws of the State of _____ and shall be governed as to all matters and questions whatsoever, whether of validity, construction, interpretation, enforcement or otherwise, by and in accordance with such laws.

Very truly yours,
 RAM Construction Services of _____

Robert T. Mazur
 President



LAURENCO SYSTEMS OF OHIO, LLC

P.O. BOX 575 - LEAVITTSBURG, OHIO 44430
PHONE: 1-800-321-3337 FAX: 1-800-543-3338
www.laurencosystems.com

LAURENCO SYSTEMS OF OHIO, LLC LAURENCO SYSTEMS GUARANTEE



Building:

Address:

City :

State:

Owner:

Address:

City:

State:

Area of Waterproofing:

Date of Waterproofing:

Registered Laurencosystems Contractor:

LAURENCO SYSTEMS OF OHIO, LLC will cause to be repaired any leak(s) in the Laurencosystem identified above for a period of 10 years from the date of completion, should leak(s) occur as a result of any of the following causes:

- 1.) Splits or breaks in Laurencosystem neoprene asphalt membrane flashing, otherwise known as Laurencosystem not resulting from settlement or structural failure of the building.
- 2.) Deterioration of any sheet Laurencosystem flashing as a result of ordinary wear and tear of the elements.
- 3.) Deterioration of the Laurencosystem membrane as a result of ordinary wear and tear of the elements.
- 4.) Improper workmanship on the part of the above named registered Laurencosystem Waterproofing contractor.
- 5.) Splits or breaks in the Laurencosystem membrane not resulting from settlement or structural failure of the building.

LAURENCO SYSTEMS OF OHIO, LLC will not be responsible for leaks or damage to the Laurencosystem caused by any one or combination of:

- 1.) Natural disasters including but not limited to lightning, hail, hurricanes, windstorms, earthquakes, tornadoes, or vandalism.
- 2.) Failure of any component not specified or supplied by Laurencosystems of Ohio, LLC the waterproofing membrane or flashing.
- 3.) Application of, or repairs to waterproofing membrane or flashing not in accordance with the notice of award & order form furnished to Laurencosystems of Ohio, LLC and/or made without approval of Laurencosystems after original completion of the system.
- 4.) Exposure to chemical(s) and/or substance(s) that have been predetermined by Laurencosystems of Ohio, LLC to be harmful to the Laurencosystem or its components.

There is specifically excluded from this guarantee, any responsibility or liability by Laurenco Systems of Ohio, LLC for:

- 1.) Damage to the building itself and/or to the contents thereof.*
- 2.) Any consequential damages.*
- 3.) Other exclusions:*

In the event any leak should occur within the guarantee period, the owner shall notify Laurenco Systems of Ohio, LLC and confirm notification in writing within thirty (30) days. Laurenco will inspect the building, and if the leak is within the coverage noted before in this document, cause such leak to be repaired.

Should any repair work proceed by any contractor other than the original Registered Systems of Ohio, LLC. Contractor unless designated by Laurenco Systems of Ohio, LLC. and/or with materials not recommended or provided by Laurenco Systems of Ohio, LLC., this guarantee shall cease immediately. Laurenco Systems of Ohio, LLC. and their Registered Laurenco Systems Contractor shall not be required to perform any work necessary to afford access to the claimed defective work or material(s), and the restoration work required thereafter

This guarantee is exclusive of all other, stated, implied and for a particular purpose and is given and accepted in lieu of all other liability or warranties, expressed or implied, in fact or in law. No representative of Laurenco Systems of Ohio, LLC or any other person has the authority whatsoever to assume for Laurenco Systems of Ohio, LLC any other liability or responsibility in connection with the waterproofing described above.

This guarantee shall not become effective until all bills for installation, supplies and services in connection with the waterproofing system covered by this guarantee have been paid in full. Either direct or indirect acceptance of and/or payment constitutes approval of and agreement with all terms and conditions of this guarantee by the owner. This guarantee shall be deemed a contract and shall be deemed to be entered into under and pursuant to the laws of the State of Ohio and shall be governed as to all matters and questions whatsoever, whether of validity, construction, interpretation, enforcement or otherwise, by and in accordance with such laws.

LAURENCO SYSTEMS OF OHIO, LLC

By:

Title: President/Technical Director

Date:

Registered Laurenco Systems Contractor:

Title:

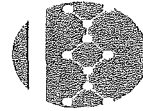
Date:

LAURENCO SYSTEMS OF OHIO, LLC
LEAVITTSBURG, OHIO 44430
(800) 321-3337



Laurenco Waterproofing & Roofing Systems - Celebrating Over 50 Years of Proven Excellence

LAURENCO SYSTEMS SHEET MEMBRANE WATERPROOFING



1 TECHNICAL INFORMATION (Composition of Materials):

- 1.1 Laurencosystems Sheet:
 - 1.1.1 Specially formulated Asphalt modified with Chloroprene Rubber (Neoprene*) plus appropriate fillers, curing agents and plasticizer.
 - 1.1.2 Thickness of Laurencosystems Sheet is 50 mils. plus or minus 5%.
 - 1.1.3 Tensile strength of Laurencosystems Sheet = 75 lbf/in. Min. (ASTM D 146-90, section 13) and (ASTM E 154-99, section 9). Two Ply Laurencosystems Sheet > 180 lbf/in..
 - 1.1.4 Puncture resistance of Laurencosystems Sheet = 215 lbs. (ASTM E 154-99, section 10). Two Ply Laurencosystems Sheet > 450 lbs..
 - 1.1.5 Ductility of Modified Asphalt for use on Laurencosystems Sheet: (ASTM D-113-69) at 39.2°F. using 1 cm. per min. pull-10% to 12.5% plus, at 75°F. using 5 cm. per min. pull = 100% to 125% plus.
 - 1.1.6 Softening point of modified asphalt used on Laurencosystems Sheet: (ASTM D 36-70 using distilled water) = 160° degree F. min.
 - 1.1.7 Penetration of Modified Asphalt used on Laurencosystems Sheet: (ASTM D 5-73) = 30 max. at 77 degree F. using 3 oz. seamless metal container.
 - 1.1.8 Ductility of Sheet: 1.360 degree bend on 1" O.D. bar at 39.2° degree F. at 5cm. per min. flex. minimum.
- 1.2 Laurencosystems Adhesive:
 - 1.2.1 Specially formulated Asphalt modified with compatible rubbers using long fibers and clean aliphatic solvent. (V. M.&P. Rule 66 Naphtha).
 - 1.2.2 Compatible rubbers are combinations of Neoprene, Butyl and/or N.B.R.
 - 1.2.3 Solid Content 55% min.
 - 1.2.4 Holding power 150 lbs. plus per sq.ft. at 90 degree pull on gypsum deck.
 - 1.2.5 Meets or exceeds ASTM D-2823, Type I and Federal Specification SS-A-694D.
 - 1.2.6 Using ASTM Test Method D-1004-70, Tensile Strength and Adhesive shall be 1070 p.s.i. average; using Tear Die C, 77lbs. per inch average of sheets and adhesive.
- 1.3 Laurencosystems (Sheet & Adhesive):
 - 1.3.1 Water Permeability-Inverted cup @ 75° degrees F. 25 day duration (ASTM. E 96-95 Procedure BW) using Laurencosystems Sheet and Laurencosystems Adhesive in System form 0.005grams/hr./sq.ft.
 - 1.3.2 Weather test on Laurencosystems Sheet and Laurencosystems Adhesive in System form (ASTM Test Method D 529-73, Daily Cycle B) 25 days. Hardness range of 60 plus or minus 5 pt. variation of a range of 0-99 Shore A hardness and no further changes after 10 cycles-Materials stable with no cracking or crazing. Cycles continued for 25 days.
 - 1.3.3 Pull Test: Using 1" thick concrete slab and Laurencosystems (2 plies Sheet and Adhesive) pull at rate of 2 inches per minimum. Results = 26.39 lbs. plus p.s.i. or 3800 lbs plus per minimum. (slabs all broke under pull test-1" thick were used

to accommodate machine) See No. 7, Tensile Strength.

- 1.3.4 Waterhead Test: Results incomplete as 210 foot limit of machine was reached at end of 28 days with no leakage. (Pictures available showing test set up which incorporated a construction joint).
- 1.3.5 Mullens Burst Test: (Sheets and Adhesive) shall attain 160 p.s.i. minimum.

2 PACKAGING:

- 2.1 Laureco Systems Sheet:
 - 2.1.1 220 sq.ft. per roll on cores using disposable release sheet and some powdered release agents. Shipped in heavy boxes weighing @ 70 pounds.
 - 2.1.2 Width of roll: 36 inches plus or minus one inch.
 - 2.1.3 Net weight of roll: 65 lbs minimum.
 - 2.1.4 Length of roll: 73.3 ft, plus or minus 1%.
- 2.2 Laureco Systems Adhesive:
 - 2.2.1 Available in 5 gallon pails and 55 gallon drums.
 - 2.2.2 Minimum shipping weight of pails 42 lbs; drums 475 lbs.

3 STORAGE INFORMATION:

- 3.1 Boxes containing the Laureco Systems Sheet must be stored flat at all times, approximately 5 boxes high, on pallets or other means to keep off the ground.
 - 3.2 If indoor or trailer storage is not available, tarp in with canvas tarpaulins only. DO NOT USE POLYETHYLENE OR OTHER NON-BREATHING FILMS TO COVER THE BOXES.
 - 3.3 Remove rolls of Laureco Systems Sheet from boxes when ready to use.
 - 3.4 Store in cool places only. If trailer storage is used, it should be well ventilated for summer storage and only a maximum of 60°F heat for winter storage is recommended(for ease of roll out).
 - 3.5 Shelf life for usual spring, fall and winter is a recommended 3 months. For summer storage shelf life is a recommended limit to 3 to 4 months including in transit time. This shelf life applies to on job site storage facilities available. It is usually 1 year in controlled warehousing conditions.
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Material Safety Data Sheet



QUICK IDENTIFIER: SHEET MEMBRANE
IN PLANT COMMON NAME:
MODIFIED ASPHALT WOVEN GLASS MEMBRANE

MANUFACTURER:
LAURENCO, INC.
P.O. BOX 471
GARRETTSVILLE, OHIO 44231

Emergency Telephone No.: (800) 321-3337
Technical Information No.: (330) 898-7037

PREPARED BY: Jonathan M. Lawrence

DATE PREPARED: JANUARY, 2003

SECTION I-IDENTITY

TRADE NAME: LAURENCO SHEET (ALL GRADES) CAS# NONE (MIXTURE)
CHEMICAL NAME: MODIFIED ASPHALT LAMINATED FIBROUS GLASS
CHEMICAL FAMILY: ASPHALT FABRIC
FORMULA: MODIFIED RUBBERIZED ASPHALT LAMINATED WOVEN GLASS MESH

SECTION II-HAZARDOUS INGREDIENTS

PRINCIPAL HAZARDOUS COMPONENTS & COMMON NAMES	%	OSHA PEL	THRESHOLD LIMIT VALUE
ASPHALT BASE CAS# 8052-42-4	<72	5MG/M ³ CEILING OF	5MG/M ³ 10MG/M
FIBROUS GLASS (VIABLE TEXTILE FIBERS) CAS# NONE	<19	NOT LISTED	NOT LISTED
NEOPRENE CAS# NONE	>3	5MG/M ³	5MG/M ³
CARBON BLACK CAS#1333-86-4	>1	AS DUST	2MG/M ³
BUTYL RUBBER CAS#142-77-8	>2	NOT LISTED	NOT LISTED
PLASTICIZER CAS# NONE	>1	NOT LISTED	NOT LISTED

SECTION III- PHYSICAL CHEMICAL CHARACTERISTICS (FIRE AND EXPLOSION DATA)

BOILING POINT: N/A;
SPECIFIC GRAVITY (H₂O=1): <1;
VAPOR PRESSURE (MM Hg): NF;
PERCENT VOLATILE BY VOLUME (%): N/A;
VAPOR DENSITY (AIR=1): NF;
EVAPORATION RATE: NF;
SOLUBILITY IN WATER: INSOLUBLE;

SHEET MEMBRANE (2)

REACTIVITY IN WATER: NONE;

APPEARANCE & ODOR: DARK COLOR, MESH FABRIC, ASPHALT/PETROLEUM ODOR;

N.E.P.A.: N/A SETA;

FLAMMABLE LIMITS IN AIR % BY VOLUME LOWER N/A ; UPPER N/A; EXTINGUISHER MEDIA: DRY CHEMICAL, FOAM; AUTO IGNITION TEMPERATURE N/A.

SPECIAL FIRE FIGHTING PROCEDURES: USE SELF-CONTAINED BREATHING EQUIPMENT AND PROTECTIVE CLOTHING TO PROTECT FROM ACIDIC HYDROGEN CHLORIDE FUMES.

UNUSUAL FIRE & EXPLOSION HAZARDS: IN A SUSTAINED FIRE, COMBUSTIBLE

DECOMPOSITION PRODUCTS MAY BE RELEASED. THESE PRODUCTS INCLUDE CARBON DIOXIDE, CARBON MONOXIDE AND LOW MOLECULAR WEIGHT HYDROCARBONS. THE SOLID POLYMER CAN BE COMBUSTED ONLY WITH DIFFICULTY.

SECTION IV- PHYSICAL HAZARDS

STABILITY: UNSTABLE CONDITIONS TO AVOID; SUSTAINED OPEN FLAME.

INCOMPATIBILITY (MATERIALS TO AVOID): OXIDIZERS.

HAZARDOUS DECOMPOSITION PRODUCTS: BURNING ASPHALT MAY EMIT TOXIC OXIDES OF CARBON, NITROGEN AND SULFUR.

HAZARDOUS POLYMERIZATION: N/A

SECTION V- HEALTH HAZARDS

THRESHOLD LIMIT VALUE: MIXTURE;

PRIMARY ROUTE(S) OF ENTRY TO BODY: SKIN, EYE.

SIGNS AND SYMPTOMS OF EXPOSURE: 1. ACUTE OVEREXPOSURE; ITCHING DRY SKIN.
2. CHRONIC OVEREXPOSURE; IRRITATION OF SKIN.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: REPEATED-CONTINUOUS EXPOSURE CAN AGGRAVATE SKIN IRRITATION.

CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN: NATIONAL TOXICOLOGY; NO I.A.R.C. MONOGRAPHS; NO OSHA; NO OSHA PERMISSIBLE

EXPOSURE LIMIT: MIXTURE,

ACGIH THRESHOLD LIMIT VALUE: MIXTURE

OTHER EXPOSURE LIMIT USED: SEE LOWEST INGREDIENT LEVEL.

EMERGENCY AND FIRST AID PROCEDURES: EXPOSURE TO/CONTACT WITH LARGE AMOUNTS MAY REQUIRE MEDICAL TREATMENT.

INHALATION: GET TO FRESH AIR.

EYES: FLUSH EYES FOR 15 MINUTES WITH CLEAN WATER. GET MEDICAL TREATMENT.

SHEET MEMBRANE (3)

SKIN: WASH WITH SOAP AND WATER OR WATER-LESS HAND CLEANER. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.

INGESTION: NOT LIKELY TO OCCUR THROUGH NORMAL USE.

SECTION VI- SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): NONE

VENTILATION: 1. OUTSIDE LOCAL EXHAUST: NONE;
2. MECHANICAL (GENERAL): NONE;
3. INSIDE SPECIAL: NONE

PROTECTIVE GLOVES: FOR WORKERS WITH SENSITIVE SKIN OR CONTACT DERMATITIS.

EYE PROTECTION: NONE NEED BUT SUGGESTED STRONGLY FOR GOOD SAFETY PRACTICE.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: LONG SLEEVE SHIRT; LONG PANTS.

SECTION VII- SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: STORE IN DRY, COOL AREA.

OTHER PRECAUTIONS: WEAR GLOVES AND GOGGLES. KEEP CLOTHES CLEAN TO PREVENT IRRITATION. DO NOT HEAT MATERIAL FOR APPLICATION.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: N/A.

WASTE DISPOSAL METHODS: CONSULT LOCAL, STATE AND FEDERAL REGULATION FOR PERMITTED LANDFILL DISPOSAL OR INCINERATION.

LAURENCO SYSTEMS ADHESIVES

TECHNICAL DATA

1 PRODUCTS:

- 1.1 Adhesive, V.O.C. Maximum 250g/l (all temperature grades).
- 1.2 Rubberized Flashing Coating, V.O.C. Maximum 250g/l (Trowel Grade only).
- 1.3 W60LA, V.O.C. Maximum 250g/l (all temperature grades).
- 1.4 Rubberized Roof Coating, V.O.C. Maximum 250g/l (all temperature grades).
- 1.5 Cavity Wall Vapor Retarder-C.V.R., V.O.C. Maximum 250g/l (all temperature grades).

2 SCOPE: Laurenco Systems Adhesives are specially formulated to adhere to the following:

- 2.1 All sheet rubber materials of 45 mils. or more.
- 2.2 Polyvinyl chloride (PVC) sheet materials.
- 2.3 Insulations:
 - 2.3.1 Polystyrene Bead Board.
 - 2.3.2 Styrofoam Board.
 - 2.3.3 Urethane Board. (polyisocyanurate)
 - 2.3.4 Foamglas.
 - 2.3.5 All Laurenco Waterproofing and Roofing Systems.
 - 2.3.6 Woven Glass Fabric, Cotton, Jute and all Roofing Felts.

3 COMPOSITION OF ADHESIVES: Laurenco Systems Adhesives for all of its applications are comprised of the following:

- 3.1 Specially formulated asphalt.
- 3.2 An aliphatic naphtha solvent using only V. M.&P. Rule 66. which has a minimum 400 parts per million parts of air toxicity rating (comparison: Benzene= 10, Toluene and xylene=100 and all toxic to skin).
- 3.3 Compatible synthetic rubbers for plasticity and adherence.
- 3.4 Appropriate fillers including carbon blacks for Ultra-Violet Ray resistance.
- 3.5 Meets and exceeds ASTM D-2823-81, Type One.

4 TEST RESULTS: Standard Laurenco Systems Adhesive applied at the rate of two gallons per square (100 sq.ft.) yields the following test results.

- 4.1 ASTM D-529-82, Weathering Daily Cycle B. No cracking or crazing. No slump. Turns a slight gray color.
- 4.2 Hardness: Attains a Shore Hardness of 60 max.
- 4.3 Ductility; ASTM D-113-79; at 1 cm per minute (39.2°F=4°C) 125% elongation min.
- 4.4 Wind up-lift pull=150 lbs. using test apparatus.
- 4.5 Water permeability; ASTM E-96-80; 0.005 perms/hr/sq.ft.
- 4.6 Excellent adherence to concrete, metals, glass, insulations, wood, coal tar pitch and Felts, rubber sheeting, etc. Exceptions: silicones, certain acrylics and animal fats(tallow).
- 4.7 Dry Film Thickness: 9 mils per gallon per 100 sq.ft. min. when not used with the Laurenco Systems Sheet.

- 5 **PACKAGING:** Laurencos Systems' Adhesives are normally furnished in the following:
- 5.1 55 gallon size drums-weight approx. 475 lbs. per drum.
 - 5.2 5 gallon size pails-weight approx. 43 lbs. per pail.
 - 5.3 May be furnished in other sized containers at an additional cost per gallon.
 - 5.4 Adhesive shipped as noted: Combustible Liquid N.O.S. (Contains Naphtha, Solvent), NA 1993, PG 111 Item 144760 Guide #27
 - 5.5 Availability: Laurencos Systems' Adhesives are available in Summer, Spring/Fall and Winter service grades, **V.O.C. Maximum 250g/l for all grades:**
 - 5.5.1 Squeegee/roller: for use with wood head rubber squeegees, window washer type squeegees and roller applicators using a mohair nap sleeve with a solvent resistant core.
 - 5.5.2 Brush: for use with roofers brush, white wash brush(shorten bristles by 1/3 the length) or smooth edge metal float.
 - 5.5.3 Trowel: for use by gloved hand or trowel.
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Material Safety Data Sheet



QUICK IDENTIFIER: ASPHALT ADHESIVE, BUTYL RUBBER
IN PLANT COMMON NAME: ADHESIVE
(SUMMER & WINTER GRADE)

MANUFACTURER:
LAURENCO, INC.
P.O. BOX 471
GARRETTSVILLE, OH 44231

EMERGENCY TELEPHONE NO: (800) 321-3337
TECHNICAL INFORMATION: (330) 898-7037

PREPARED BY: Jonathan M. Lawrence

DATE PREPARED: JANUARY, 2003

SECTION I - IDENTITY

TRADE NAME: LAURENCO ADHESIVE CAS# NONE (MIXTURE)
CHEMICAL NAME: BUTYL RUBBER ASPHALT COATING.
CHEMICAL FAMILY: ASPHALT COATING.
FORMULA: SOLVENT BASED ASPHALT ROOF COATING/ ADHESIVE WITH BUTYL RUBBER.

SECTION II - HAZARDOUS INGREDIENTS

PRINCIPAL HAZARDOUS COMPONENTS AND COMMON NAMES		%	OSHA PEL	THRESHOLD LIMIT VALUE
ASPHALT BASE	CAS# 8052-42-4	>60	5MG/M ³ CEILING OF	5MG/M ³ 10MG/M ³
MINERAL SPIRITS	CAS# 8032-32-4	>5	100 PPM MAX. 1/4HR.	350MG/M ³ 1800MG/M ³
V. M.&P RULE #66 NAPHTHA	CAS# 8032-32-4	>6	400 PPM MAX. 1/4HR.	1400MG/M ³ 7200MG/M ³
BUTYL RUBBER	CAS# 9010-85-9	<18	N/A	N/A
NBR	CAS# 9003-18-3	>10	N/A	N/A
TALC	CAS# 14807-96-6	>1	AS DUST	2MG/M ³
CARBON BLACK	CAS# 13333-86-4	>1	AS DUST	2MG/M ³
NEOPRENE	CAS# NONE	>2	5MG/M ³	5MG/M ³

INFORMATION FOR MIXTURES IS BASED IN CONSTITUENT MSDS WHICH ARE AVAILABLE UPON REQUEST.

SECTION III - PHYSICAL & CHEMICAL CHARACTERISTICS (FIRE EXPLOSION DATA)

BOILING POINT: 313F
SPECIFIC GRAVITY (H₂O=1): <1
VAPOR PRESSURE (MM HG): NF
PERCENT VOLATILE BU VOLUME (%): <40
VAPOR DENSITY (AIR=1): NF

ADHESIVE (2)

EVAPORATION RATE: NF

SOLUBILITY IN WATER: INSOLUBLE

REACTIVITY IN WATER: NONE

APPEARANCE & COLOR: DARK COLOR, HEAVY VISCOUS LIQUID, PETROLEUM ODOR

N.E.P.A.: HEALTH=1, FLAMMABILITY=2, REACTIVITY=0, PERSONAL PROTECTION=NF

FLASHPOINT: 141F SETA

FLAMMABLE LIMITS IN AIR % BY VOLUME: LOWER 0.9%, UPPER 6.0%

EXTINGUISHER MEDIA: DRY CHEMICAL FOAM

AUTO IGNITION TEMPERATURES: >400F

SPECIAL FIRE FIGHTING PROCEDURE: DRY CHEMICAL, FOAM, WATER FOG

UNUSUAL FIRE & EXPLOSION HAZARDS: PETROLEUM BASED COMPOUNDS CAN FLOAT ON WATER

SECTION IV - PHYSICAL HAZARDS

STABILITY: UNSTABLE

CONDITIONS TO AVOID: KEEP FROM HEAT, SPARKS, OPEN FLAME

INCOMPATIBILITY (MATERIALS TO AVOID): ACID, CAUSTICS, OXIDIZERS

HAZARDOUS DECOMPOSITION PRODUCTS: NITROGEN OXIDES, CARBON OXIDES

HAZARDOUS POLYMERIZATION: N/A

SECTION V - HEALTH HAZARDS

THRESHOLD LIMIT VALUE: MIXTURE

PRIMARY ROUTE OF ENTRY TO BODY: INHALATION, SKIN, INGESTION, EYE

SIGNS OF SYMPTOMS OF EXPOSURE: 1. ACUTE OVEREXPOSURE; ITCHING, DRY SKIN, NAUSEA, DIZZINESS.
2. CHRONIC OVEREXPOSURE DIFFICULTY BREATHING, IRRITATION OF SKIN.

MEDICAL CONDITIONS LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN: REPEATED CONTINUOUS EXPOSURE CAN AGGRAVATE EMPHYSEMA, CAUSE CHEMICAL PNEUMONIA, LIVER AND/OR KIDNEY DAMAGE.

CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN: NATIONAL TOXICOLOGY; NO I.A.R.C. MONOGRAPHS; NO OSHA; NO OSHA PERMISSIBLE

EXPOSURE LIMIT: MIXTURE

ACGIH THRESHOLD LIMIT VALUE: MIXTURE

OTHER EXPOSURE LIMIT USED: SEE LOWEST INGREDIENT LEVEL

EMERGENCY AND FIRST AID PROCEDURES: EXPOSURE TO/CONTACT WITH LARGE AMOUNTS MAY REQUIRE IMMEDIATE EMERGENCY TREATMENT

ADHESIVE (3)

INHALATION: GET TO FRESH AIR; ADMINISTER OXYGEN OR ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED OR BECOME DIFFICULT

EYES: FLUSH EYES FOR 15 MINUTES WITH CLEAN WATER. GET MEDICAL TREATMENT

SKIN: WASH WITH SOAP AND WATER OR WATER LESS HAND CLEANER. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION

INGESTION: DO NOT INDUCE VOMITING!!! GET MEDICAL ATTENTION QUICKLY!

SECTION VI - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): ORGANIC VAPOR CARTRIDGE IF IN CONFINED OR ENCLOSED AREA.

VENTILATION: OUTSIDE; **LOCAL EXHAUST:** IF INSIDE: AVOID VAPORS

MECHANICAL (GENERAL): IF INSIDE **SPECIAL:** AVOID VAPORS

PROTECTIVE GLOVES: IMPERIOUS TO SOLVENTS

EYE PROTECTION: CHEMICAL GOGGLES FOR VAPORS

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: LONG SLEEVED SHIRT; LONG PANTS

SECTION VII - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: USE IN WELL VENTILATED AREA. STORE IN DRY, COOL PLACE

OTHER PRECAUTIONS: WEAR GLOVES AND GOGGLES. KEEP CLOTHES TO PREVENT IRRITATION. DO NOT HEAT MATERIAL FOR APPLICATION.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: USE NON SPARKING TOOLS. USE OIL ABSORBENT OR SAND-SHOVEL UP AND PLACE IN CLOSED CONTAINERS.

WASTE DISPOSAL METHODS: RCA REGULATED MATERIAL. CONSULT LOCAL, STATE AND FEDERAL REGULATION PERMITTED LANDFILL DISPOSAL OR INCINERATION.

PRODUCT DATA

W. R. MEADOWS,

SEALIGHT

CSI Code: 07 10 00

NO. 712

MARCH 2006
(Supersedes January 2004)

PROTECTION COURSE

Waterproofing protection

DESCRIPTION

PROTECTION COURSE from W. R. MEADOWS is a multi-ply semi-rigid core composed of a mineral-fortified asphalt core formed between two outside layers of asphalt-impregnated reinforced mats, manufactured in accordance with ASTM D 6506.

When properly applied by personnel trained in good waterproofing techniques, PROTECTION COURSE will absorb the impact of aggregate shock and normal jobsite foot traffic. It also protects the membrane waterproofing from penetration by sharp aggregate during backfilling and later settlement. PROTECTION COURSE is available in two types: PC-2, Standard Duty and PC-3, Heavy Duty. Both types are economical and convenient to use.

USES

PROTECTION COURSE is used in between-slab construction, such as plaza decks, roof terraces, promenade decks, pedestrian concourses, tunnels, bathroom floors, showers, kitchens and mechanical rooms, parking garage decks, planter boxes, reflective pools and foundation walls. PROTECTION COURSE from W. R. MEADOWS is compatible with most currently popular dampproofing and waterproofing materials.

FEATURES/BENEFITS

- Tough, durable and lightweight ... panels are easily handled, quickly installed.
- Full width fiberglass matting improves flexural strength.
- Highly resistant to chemical action.
- Performance is equally effective in above or below-grade installations.
- Unique dual-facing offers compatibility with most currently popular waterproofing materials.
- Economical and convenient to use.

PACKAGING

4' X 8' (1.22m X 2.44m) panels

PHYSICAL PROPERTIES AND TEST RESULTS

ASTM D 6506

PROTECTION BOARD REQUIREMENTS

	TYPE 2	TYPE 3
Puncture Strength (Classes A & B)	312 N (70 lbf) minimum	365 N (82 lbf) minimum
Thickness (Classes A & B)	2.4 to 3.9mm (0.095 to 0.155in.)	5.6 to 7.1mm (0.220 to 0.280in.)
Water Absorption (Classes A & B)	10.0% maximum	10.0% maximum
Asphalt, % by weight (Class A)	65% minimum	65% minimum
Asphalt, % by weight (Class B)	40% minimum	40% minimum
Resistance to Decay (Classes A & B)	Meets puncture requirements after completion of test	Meets puncture requirements after completion of test

CONTINUED ON REVERSE SIDE...

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

HAMPSHIRE, IL / CARTERSVILLE, GA / YORK, PA
FORT WORTH, TX / BENICIA, CA / POMONA, CA
GOODYEAR, AZ / MILTON, ON / ST. ALBERT, AB

APPLICATION

NOTE: Prior to application, consult the waterproofing manufacturer to determine whether the polyethylene film facing on one side, or the asphalt-impregnated reinforced mat on the other side of PROTECTION COURSE, is approved as "compatible" to the specific waterproofing product being protected.

PROTECTION COURSE is installed to form a continuous protective layer over the membrane waterproofing. The sheets can be easily cut with a roofer's knife for fitting at protrusions.

Surface condition ... The waterproofing membrane must be free of sharp projections, dirt and dust. If water testing is desired, it should be made prior to placing PROTECTION COURSE. Note: PROTECTION COURSE should be applied at the end of each day's waterproofing to both horizontal and vertical surfaces.

Horizontal Surfaces ... PROTECTION COURSE should be installed over the waterproofing membrane as soon as permissible by the membrane applicator or manufacturer. PROTECTION COURSE sheets should be butted together and cut to fit all intersecting surfaces and protrusions. If desired, joints may be covered with DETAIL STRIP from W. R. MEADOWS or roofer's glass reinforced tape embedded in hot asphalt as a secondary waterproofing system. (See point 2 under Precautions.)

Vertical Surfaces ... For dampproofed and/or waterproofed vertical walls to receive backfill, the PROTECTION COURSE should be butt jointed and, if necessary, temporarily held in place while backfilling.

Backfilling ... Backfilling against vertical walls should be done immediately using care and caution to avoid damaging the waterproofing application. Backfill material should not be dropped against the PROTECTION COURSE in such a manner that it could drag the sheet down as the backfill drops. For horizontal applications, the waterproofing and PROTECTION COURSE should be installed just prior to the installation of the wearing surface.

Application Tools



Trowel



Roofer's Knife

PRECAUTIONS

1. Where PROTECTION COURSE is adhered to waterproofing membrane, use the adhesive recommended by the membrane manufacturer.
2. Where taped joints are desired with tape set in hot asphalt, consult membrane manufacturer.
3. PROTECTION COURSE is shipped on pallets with the polyethylene anti-stick sheet on the top or exposed side. PROTECTION COURSE should be stored on pallets and placed on a level surface.
4. CAUTION... Do not apply PROTECTION COURSE over liquid waterproofing membranes containing volatile solvents until all of the solvent has evaporated. Consult membrane manufacturer for specific application details prior to placing PROTECTION COURSE from W. R. MEADOWS. Read and follow application information and precautions. Refer to Material Safety Data Sheet for complete health and safety information.

FOR THE MOST CURRENT PRODUCT INFORMATION, VISIT OUR WEBSITE:
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.

Date of preparation: 07/01/04

SECTION I

Manufacturer : W. R. MEADOWS, INC.
Address : 300 Industrial Drive
: Hampshire, Illinois 60140

Telephone # : (847) 683-4500
Emergency # : 1-800-424-9300 Chemtrec

- H M I S -
|Health : 0 |
|Flammability : 1 |
|Reactivity : 0 |
|Personal Protection : |

(Hazard Rating: 0=Least,1=Slight,2=Moderate,3=High,4=Extreme,*=Chronic)

Product Class : DIVISION 7
Mfg. code I.D. : 5720480
Trade Name : PROTECTION COURSE WATERPROOFING MEMBRANE TYPE 2

SECTION II-A HAZARDOUS COMPONENTS

No. Component	CAS#	% by Weight	SARA 313	VAPOR PRESSURE (mm Hg @ 20 C)	LEL (@ 25 C)
1. Petroleum Asphalt	8052-42-4	80 - 90	NO	N/A	N/A
2. Fiberglass Mat	65997-17-3	1 - 10	NO	N/A	N/A

SEALTIGHT Protection Course Waterproofing Membrane Type 2 is defined by OSHA (29CFR Part 1910) as an "Article". A manufactured item which is formed to a specific shape or design during manufacture which does not release or otherwise result in exposure to a hazardous chemical under normal conditions of use.

None of the components of this product are recognized as carcinogenic. N/A: Not Applicable

Under the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (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 II-B OCCUPATIONAL EXPOSURE LIMITS

No.	OSHA				ACGIH			
	PEL/TWA	PEL/CEILING	PEL/STEL	SKIN	TLV/TWA	TLV/CEILING	TLV/STEL	SKIN
1.	5 mg/m3*	N/E	N/E	N/E	5 mg/m3*	N/E	N/E	N/E
2.	5 mg/m3+	N/E	N/E	N/E	10 mg/m3++	N/E	N/E	N/E

N/E: Not established * = Asphalt Fumes + = Respirable Dust ++ = Total Dust

SECTION III PHYSICAL DATA

Boiling Point : Not applicable % Volatile by volume : Not applicable
Evaporation Rate : Not applicable % Volatile by weight : Not applicable
Vapor Density : Not applicable Weight per gallon : Not applicable
pH Level : Not applicable

SECTION IV HEALTH INFORMATION

EYE CONTACT: This product may cause mechanical irritation of the eye.

SKIN CONTACT: This product may cause mechanical irritation of the skin.

INHALATION: This product is not hazardous via inhalation with normal product use.

INGESTION: This product has a low order of toxicity. If symptoms of gastrointestinal irritation develop, seek medical attention.

SIGNS AND SYMPTOMS: None known with normal product use.

AGGRAVATED MEDICAL CONDITIONS: None known with normal product use.

OTHER HEALTH EFFECTS: From skin painting studies in laboratory animals, it has been concluded that some asphalts may possess weak carcinogenic activity. This means that workers who practice poor personal hygiene, and who are repeatedly exposed by direct skin contact with petroleum asphalt over many years, may potentially be at risk of developing skin cancer. Intermittent or occasional skin contact with petroleum asphalt is not expected to have serious health effects as long as good personal hygiene measures, such as those outlined in this material safety data sheet, are followed. In addition, asphalt vapors may contain polycyclic aromatic hydrocarbons, some of which are known to be carcinogenic. Therefore, prolonged breathing of vapors should be avoided.

SECTION V EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Flush eyes with water to remove fibers.

SKIN CONTACT: Flush with water to remove fibers. Wash affected area with soap and water if available.

INHALATION: None normally required.

INGESTION: None normally required.

Date of preparation: 07/01/04

SECTION VI FIRE AND EXPLOSION HAZARDS

FLAMMABILITY CLASSIFICATION - NFPA : None
- DOT : Not regulated

FLASH POINT: Greater than 400 degrees F.

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical, or Carbon Dioxide.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS: None recognized.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None recognized.

SECTION VII REACTIVITY

STABILITY: Stable HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS AND MATERIALS TO AVOID: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Combustion may yield Carbon Dioxide, Carbon Monoxide, and/or incomplete combustion products. Do not breathe smoke or fumes. Wear appropriate protective equipment.

SECTION VIII EMPLOYEE PROTECTION

RESPIRATORY PROTECTION: None required with normal product use. If abraded, use of a dust filter respirator is recommended to prevent inhalation of airborne material.

PROTECTIVE CLOTHING: Cotton work gloves/safety glasses.

ADDITIONAL PROTECTIVE MEASURES: None required.

SECTION IX ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES: Not applicable, product is a solid.

WASTE DISPOSAL: In some areas this product may be considered a non-hazardous special waste if disposed of in a permitted landfill.

Consult all Federal, State and local regulations regarding proper disposal.

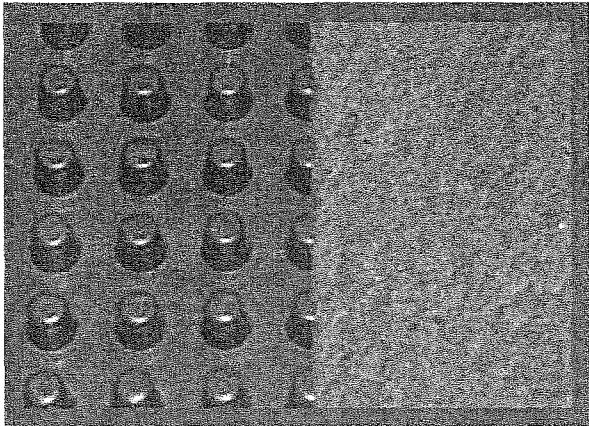
SECTION X ADDITIONAL PRECAUTIONS

Prevent contact with fire. Prevent "Job-Site" damage.

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 the product described herein.

J-DRain[®] 200

Prefabricated Drainage Composites



APPLICATIONS

BASEMENT FOUNDATIONS

RETAINING WALLS

PLANTERS

BRIDGE ABUTMENTS

J-DRain[®] 200 Series

ESR-1901



J-DRain 200 Series Performs a multi-faceted role by providing protection for waterproofing systems and managing sub-surface water around building foundations. Soil back fill is retained by a filter fabric while allowing water to pass into the drainage core providing hydrostatic relief. Collected water is then conveyed to a proper collection system.

J-DRain[®] 200

Consists of a light duty impermeable polymeric sheet cusped under heat and pressure to form a high flow dimpled drainage core. The core is then bonded to a layer of non-woven filter fabric. The filter fabric retains soil or sand particles as well as freshly placed concrete or grout, allowing filtered water to pass into the drainage core. Limited to 20 feet of backfill.

J-DRain[®] 220

The identical properties as **J-DRain 200** with the addition of a protection sheet bonded to the back side of the cusped core providing protection for soft membrane waterproofing systems. **J-DRain 220** is compatible with waterproofing systems without the use of a protection board. Limited to 20 feet of backfill.

info@j-drain.com

www.j-drain.com

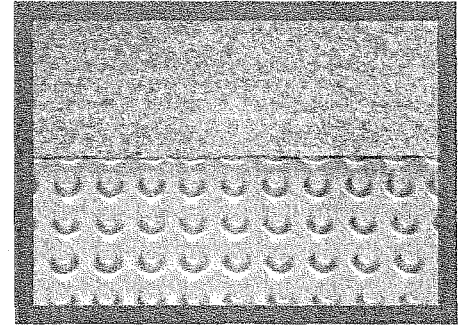
JDR Enterprises, Inc.

292 S. Main St., Suite 200 Alpharetta, GA 30009
(800) 843-7569 (770) 442-1461 Fax: (770) 664-7951

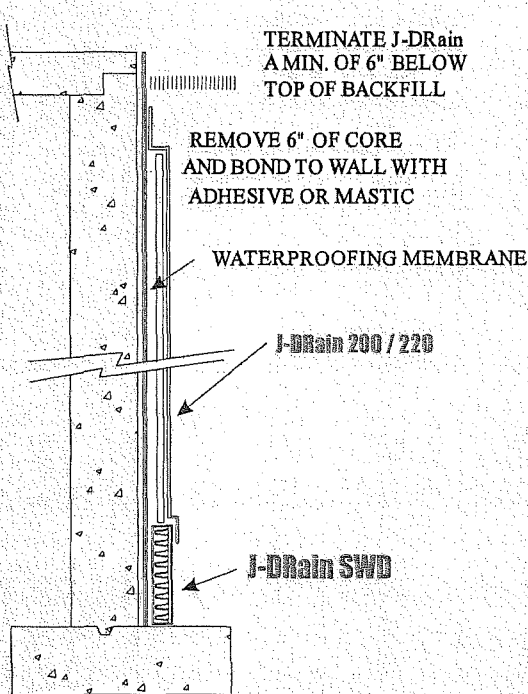
J-DRain[®] 200

Prefabricated Drainage Composites

ESR-1901



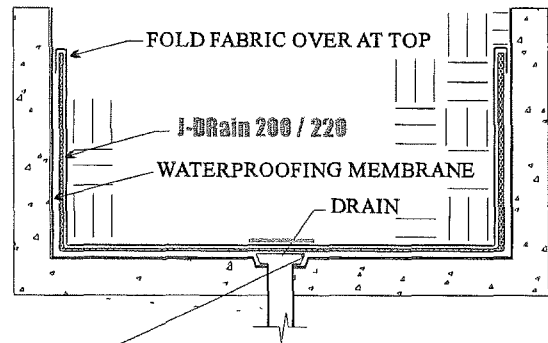
*Alternate J-DRain 200 is available upon request.



APPLICATIONS:
FOUNDATION WALL / RETAINING WALL

APPLICATIONS:

PLANTERS & ROOF GARDENS



NOTE: When using J-DRain 200 / 220 cut and remove drainage core and cover with an aluminum plate as shown.

Physical Properties

Core

	Standard	Alternate
Compressive Strength (ASTM D-1621)	11,000 psf (528 kNm ²)	11,000 psf (528 kNm ²)
Thickness (ASTM D-1777)	.40 in. (10.16 mm)	.25 in. (6.35 mm)
Flow (Hydraulic gradient =1) (ASTM D-4716)	18 g/min/ft (223 L/min/m)	9 g/min/ft (112 L/min/m)
Roll Weight	38, 61, 80 lbs.	17, 27, 35 kgs.
Roll Width	4, 6.5, 8.5 ft.	1.22, 1.98, 2.59 meters
Roll Length	50 ft.	15.24 meters

Fabric

Flow (ASTMD-4491)	140 g/min/ft ²
Puncture (ASTMD-4833)	5704 l/min/m ²
AOS(EOS)	65 lbs.
Grab Tensile(ASTMD-4632)	.30 kN
	70 U.S.Sieve
	.212 mm
	100 lbs.
	.45 kN

Alternate J-DRain 200 not available in 6.5' & 8.5' roll widths.

*Alternate J-DRain 200 is available upon request.

The information contained herein is believed by JDR Enterprises, Inc. to be accurate and is offered solely for the customer's consideration, investigation and verification. Determination of suitability for use is the responsibility of the user.

info@j-drain.com

www.j-drain.com

JDR Enterprises, Inc.

292 S. Main St., Suite 200 Alpharetta, GA 30009
(800) 843-7569 (770) 442-1461 Fax: (770) 664-7951

EFFECTS OF OVEREXPOSURE:

Eyes: Dust may cause mechanical irritation.

Skin: No known effect.

Inhalation: Dust may produce mechanical irritation to the mucous membranes of the nose, throat and upper respiratory tract.

Chronic: No anticipated chronic effects.

Existing health conditions affected by exposure: No known effects.

EMERGENCY AND FIRST AID PROCEDURES:

Eyes: Flush with water.

Skin: Rinse with water.

Inhalation: Remove from exposure.

Ingestion: N/A.

Burns from molten material: Cool with water, do not remove material, call physician

FIRE PROTECTION:

Flash Point (Method): Greater than 400 degrees (COC, ASTM D-92)

Fire Extinguishing Media: Dry chemical, foam, carbon dioxide.

Special Fire Fighting Procedures: For large fires in confined area use N10SH/MSHA approved self-contained breathing apparatus. Use water fog or spray to exposed equipment and containers.

REACTIVITY DATA:

Stability: Stable

Incompatibility: None known

Hazardous Decomposition Products: Will not occur.

Hazardous Polymerization: Will not occur.

PHYSICAL DATA:

Physical State: Solid

Odor: Negligible

Viscosity: N/A

Solubility in Water: Negligible

Boiling Point: N/A

SPILL, LEAK & DISPOSAL INFORMATION:

Spill or Leak Procedures: Solid material, normal clean-up procedure.

Waste Disposal: Insure conformity with all applicable disposal regulations. Product does not meet the definition of hazardous waste.

STORAGE:

No special requirements for storage.