Page 5 of 6

Bitunil Highlights



"Proper Site Practice" The key Word to Job Success

The success of bridge deck waterproofing operation is often reliant on site procedures, workmanship and weather conditions.

Professional preparation is as important as the properties of material or system to be used.

Before work commences on site the following major issues need be addressed:

- Availability of properly trained workforce, and qualified supervisors.
- Site engineer must have design detailing and construction records accessible.

BITUNIL Bridge Deck

Waterproofing System

consists of two layers of fully

torch welded heavy duty

APP modified bitumen

membranes with composite

polyester reinforcement,

applied on a primed

- Concrete surface must

have a minimum

acceptable gradient to

ensure drainage on the

surface of the asphalt

- A primer coat must be

applied to concrete deck

System Application:

substrate.

pavement.

- Provision of adequate storage area for material to be used.
- A safe access to bridge deck must be secured for personnel, equipment and materials.
- Established method of statement, and execution program discussed and approved by all parties.
- Review of weather conditions likely to affect the waterproofing operation.
- Preparation of concrete deck to meet strict surface finish requirements (sound, even, uncontaminated, dry, dust free). There

to seal voids, promote

W.P. adhesion, and assure

against blister formation.

Prior to membrane

application, a reinforcing

MBM strip shall be applied

to cover all intersections

- Waterproofing Membrane

shall be applied fully

bonded to bridge deck.

parallel to down slope

direction. Side laps and

end laps shall be 8- 12 cm.

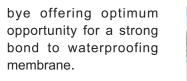
and 12-15cm respectively.

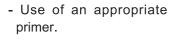
- Second waterproofing

layer shall be applied fully-

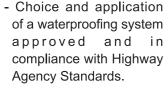
bonded onto the first laver.

with edge beams.





membrane.



- Adequate protection of the waterproofing membrane prior to the application of the asphalt road surfacing.
- Use of approved asphalt road surfacing with low void content mix design

at the same direction of

rolls length, with shifting

the side laps 0.5 meter in

order to secure the

membrane waterproofing

system with maximum

- Flashings must extend

the edge beams.

min. of 10cm up against

- Waterproofing must be

protected against sun light

until asphalt layers, of

drainage, protective, and

wear courses are applied

It is recommended to apply

the asphalt layers as soon

Cont'd on page 6.....

as possible.

overlaps.





Thorough Preparation Leads to Smooth Execution

BITUNIL Bridge Deck Waterproofing System

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Bridge Joints: Selection and Water Management

Based on the predicted movement related to imposed design loads, and temperature variation ranges, the bridge designer specifies the appropriate bridge joints. Selection can pre-fabricated expansion

should ideally overlap the deck waterproofing system used. Combined subsurface drainage outlets serve to discharge water and prevent build-up behind the joint. vary from a wide range of Regular inspection of surfacing and joints is joints, to cast in place necessary to maintain

drainage system for the joint through out bridge service life. Early fault detection. such as blocked drainage or damaged surfacing, is necessary to avoid major remedial work. Inspection and maintenance should be scheduled to coincide with other bridge maintenance work to reduce disruption Asphaltic plug joints. The satisfactory performance and consequential costs.

Cont'd ... (Bitunil Bridge Deck Waterproofing System)

- Thickness and mix design of asphalt courses are as per consultant and project specifications.
- Bridge deck joints must be filled up (Grouted) and covered with 200 mm

MBM cover strip prior to membrane application.

- Our System recommendation is for two layers of MBM fully torch welded onto deck surface, however, for bridges with low daily traffic

(ADT< 2000), with out significant importance to local and regional traffic, and with out frequent breaking and turning traffic, a single layer system is adequately sufficient.

About Our Organization...

The Nile Waterproofing Materials Company S.A.E., BITUNIL. is the product of experience, prudence and knowledge.

The **BITUNIL** plant is built over an area of 20,000 square meters in Al Max Alexandria Port. The

modified bitumen membranes, and is fully equipped to manufacture quality products that comply production plant is state of with internationally the art for manufacturing of recognized standards.

Summer, 2007 Volume 1. Issue 2



Special Interest

Bridge Decks &

Highlights:

BituNil Highlights

News from Egypt's leading Modified Bitumen Membranes Manufacturer-Bitunil S.A.E.

The Traditional BUR: Pros and Cons.

of lavers of bitumen saturated felts, either fiberglass or organic, and layers of oxidized bitumen mopping in-between, are still very popular in Egypt. It has been in use for ages, and known to have reasonable strength. Roofers have experience with its

application, it is cost

effective, and is suitable for

Yet, among the most common problems associated with BUR is **Blistering**. Blisters are voids little or no advance warning.

inside it. .A large blister can puncture from foot traffic or dropped tools. The sloping sides of a blister can cause roof surfacing to slide. exposing membrane, and resulting in impeded degradation, brittleness and cracks. Eventually, the w.p. element is compromised.



A less frequent, yet more serious problem, is Splitting. A split develops from the bottom up, offering

Built-Up Roofing, composed entrapped between felt Movements caused by plies. The void will grow as structural settlement. LWC the water vapor expands shrinkage, or movement of under laying insulation boards, along with BUR membrane limited elasticity will cause splitting failure.



Ridging, a third common problem with only organic felt built-ups, is caused by moisture absorption of vapor traveling up from the building interior. The cyclic wetting and drying of felts manifest as ridges in the membrane. Fatique will cause the membrane to crack and its strength to

Guide lines for BUR System Upgrade

BUR is field fabricated, and - The Type of Bitumen, thus is subject to many application errors. Proper international application standards have to be strictly enforced, to end up with a reliable BUR system.

Follow international recommendations for bitumen heating.

- Proper heating kettles must be used at application sites, no other primitive hazardous methods should be allowed.

temperature range at which bitumen attains the proper viscosity for built up membrane application), and the Flash Point should be furnished by manufacturer and printed on asphalt packages.

the**EVT**(The optimum

- If the EVT information is not supplied on packages, application temperature ranges recommended by international standards, should be used as guide lines.
- since it has detrimental effect on bitumen quality Bitumen should never be heated above flash point. and material should

- Excessive prolonged

heating should be avoided

circulate while heating.

 Asphalt fumes during the heating process raises concerns of pollution and potential health hazards.

> It should be considered that fume control systems be an integral part of bitumen heating equipment.



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Bitunil Highlights Page 2 of 6 Page 3 of 6 **Bitunil Highlights**



BituNil Booth attracted

lots of visitors who

showed interest in our

wide range of products.



Bitunil Highlights

Page 4 of 6

Asphalt Fumes and Health Concerns





Asphalt fumes released from hot asphalt, during BUR application raise lots of health concerns. Besides the fact that it contributes to



workers and surroundings, especially when executed on school or hospital roofs were people are sensitive to such fumes. Potential environmental pollution, it health hazards are allergies also has adverse impact on including headache, skin



rash, fatigue, eye and throat irritation and cough, while long term exposure increases risks for respiratory ailments.

MBM. A Contemporary Update of the Classic BUR

"Polymer modified membranes, a forward leap in low slope roofing."



modified bituminous membrane products in the 80's, a forward leap in low slope roofing was achieved.

 They are compatible with traditional roofing practices. Their use resulted in considerable labor saving over the more traditional BUR system.

And they are cost effective.

The single largest mode of failure for MBM is defective lap seams. Open seams usually occur due to

With the advent of polymer - They are easy to apply and inadequately heated asphalt at the time of application. Conversely overheating the membrane during torch application will cause its damage and will also result in poor bonding.

Occurrence of such problem

can be highly avoided when skilled, trained workmen handle the job, under qualified and experienced roofing contractor supervision.

APP or SBS Modified Membranes. Which to choose ?

Polymer modified bituminous sheets are based on the use of either APP polymer modifier, which gives the bitumen compound its "plasticized" characteristics, or SBS polymer modifier, which gives the compound its "rubberized" quality.

Whether torch applied, hot

mopped, or self-adhered,

polymer modified

waterproofing membranes

have matured into reliable,

popular low-slope roof

They possess enhanced

physical and mechanical

systems.

properties.

APP modified membranes attacks, and is better suited

will have the advantage of for applications where elevated softening points, and thus more resistance to high temperatures than SBS modified membranes. On the other hand, SBS modified membranes have a richer compound that better resists aging, weathering, and chemical

greater flexibility at low temperatures is a desirable criteria. Your choice of membrane shall depend on project nature, location, surrounding environmental conditions, and desired membrane serviceability.

Exhibitions & International Exposure



The Big 5 Show Exhibition, Dubai, UAE.

BITUNIL has participated in the past year 2006 in a number of international exhibitions presenting its wide range of roofing and waterproofing systems.

Among the major exhibitions were the Big 5 Show, in Dubai, The China International Exhibition in Shanghai, the Build Con Expo in Ahmedabad, India, and the ACE-Tech in Bombay. Thousands of attendees came from every segment of the roofing market, including commercial, residential and metal roofing contractors, builders, building owners, consultants, architects, designers and other industry professionals.

Hundreds of exhibitors from all around the world participated in the events with various types of roofing materials including waterproofing materials, insulations, adhesive sealants, shingles, and metal roofing.



ACE- Tech Exhibition, Bombay, India.



Build Con Expo Exhibition, Ahmedabad, India.

In attendance were decision makers and senior level professionals from the world's leading roofing companies. The events provide the construction professionals with the opportunity to meet experts from all over the world, share knowledge and best practice with them, and source essential products, techniques, and expertise.

BITUNIL Booth, at the Egyptian Pavilion, with its attractive professional set up, and dedicated marketing staff, has attracted lots of visitors, and was admired by attendees.

BITUNIL's successful participation has given an excellent opportunity to establish networking between our roofing professionals and their counterparts abroad, build business relationships, promote products, and penetrate new markets.



China International Exhibition, Shanghai

Bridge Decks, And the Waterproofing Choice

The waterproofing of bridge concrete causing severe decks is recognized in many European countries as a vital and necessary operation to enhance the durability and longevity of the bridge.

of water, road de-icing salts, steel reinforcing bars in the refurbishment. Concrete will

Some countries with mainly

worm weather and dry climates choose not to waterproof their bridge decks but, a recent analysis, It represents the first line of in the USA showed that defense against the ingress 200,000 decks are suffering from corrosion resulting in and aggressive chemicals direct cost of \$2 billion for which would corrode the replacement and

always have a degree of porosity and, allied with surface wear and hair line cracking, will allow water and corrosive materials to penetrate and attack the steel reinforcement. The primary defense against such destructive agents is good dense concrete, along with a proven waterproofing system installed by a qualified contractor.



"Waterproofing is the first

line of defense against the

ingress of water."

1- Sheet Systems:

Are Polymer Modified Bituminous sheets bonded to the bridge deck, using torch application, hot mopping asphalt, or through self adhesion.

developed systems that

2- Liquid (Sprayed) Systems:

requirements of the bridge

deck waterproofing market.

They largely fall into acrylics and Polyurethanes. The systems normally consist of Manufacturers have three elements:

would satisfy the enhanced Primer, Membrane applied

membrane to the surfacing mix.

in one or two coats, and tack

coat specially developed to

enhance the bond of the



System Performance Requirements

Bridge Deck Waterproofing Systems

"Irrespective of system choice, it has to rise up to the challenge.'

Independent of the bridge deck waterproofing system choice, certain performance criteria has to be met in order to avoid potential concerns regarding leakage, poor bonding, embrittlement or softening of the membrane in service.

Such performance criteria

- Impermeability to water under all conditions.

Good adhesion to deck.

- Good adhesion to surfacing.

- Capable of bridging shrinkage cracks in concrete.

- High mechanical properties to handle traffic loads including shear forces in curves and during braking and accelerating.

and details.

- Tolerant of deck texture

- Tough to withstand site damage and operations.

- Safe to apply

- Able to withstand elevated surface temperatures.

- Can be applied over a wide range of ambient conditions.

Non Degradable.