



THE APPLICATIONS OF SHELL SLURRY/MICROSURFACING SYSTEM IN WORLDWIDE RURAL/CITY ROADS 壳牌稀浆封层/微表处在农村公路的应用

IRF/CHTS/gTKP 2nd International Convention
on Rural Roads

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马云蓉 壳牌沥青

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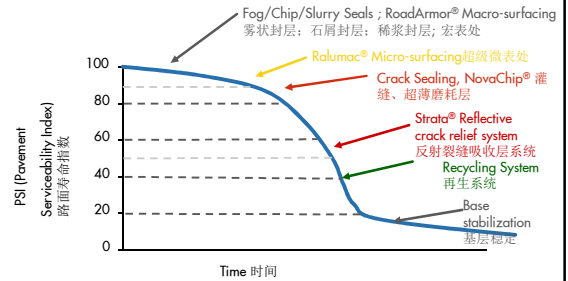
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Maintenance & Rehabilitation Strategies 道路养护和修复策略



FOG SEAL 雾状封层

Light application of diluted, slow-setting asphalt emulsion without aggregate cover
少量使用稀释的慢裂乳化沥青，不加石料

- Seal pavement 密封
- Inhibit raveling 控制松散
- Enrich hardened/oxidized asphalt 保护老化/氧化的沥青
- Provide delineation with shoulder 恢复路面与路肩颜色的区别



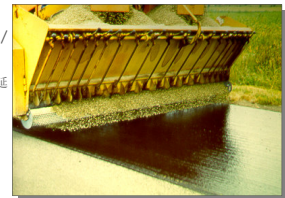
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CHIP SEAL 石屑封层

Application of asphalt and aggregate chips rolled onto the pavement
喷洒沥青和石屑经碾压嵌入路面

- Seal pavement 密封路面
- Enrich hardened/oxidized asphalt 保护老化/氧化的沥青
- Retard reflection cracking on HMA overlays 延迟反射裂缝的扩展
- Improved surface texture 改善表面纹理



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ROADARMOR® MACRO-SURFACING 宏表处

Synchronized continuous application of ultrafast polymer asphalt emulsion & single sized, durable aggregate Surface Treatment
同步连续喷洒超快聚合物改性乳化沥青和单

一粒径坚硬石料的表面处置

- Low cost surface treatment for low to high volume roads 适用于任何交通量的低成本的表面处置
- Seals & protects pavement 封盖和保护道路
- Improves macro-texture 改善宏观纹理
- Quick traffic return - typically less than 1 hr 一小时内开放交通
- Low risk of vehicle damage 提高行驶安全系数



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CHIP SEAL 石屑表处

1.) Single-sized gradation aggregate 单一粒径石料



Macro-surfacing Emulsion 宏表处乳化沥青



2.) Ultra-fast setting polymer modified emulsion 超快聚合物改性乳化沥青



Conventional Chip Seal Emulsion 普通石屑封层乳化沥青



3.) Continuous Synchronized Application Process 同步连续施工过程



4.) Performance-related Specifications 基于性能的规范

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RALUMAC® MICRO-SURFACING 超级微表处

High-quality fine aggregates & polymer-modified emulsion mixed & placed with special machine

使用专用设备摊铺高品质的集料和聚合物改性乳化沥青混合料

- Inhibits raveling & surface oxidation 控制松散和表面氧化
- Improves surface texture 改善表面纹理
- Fill ruts/minor surface irregularities 填补车辙和细小的表面变形
- Seals & protects pavement surface 封存和保护道路表面
- Quick traffic return 快速开放交通



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INSTAPAVE SYSTEM 壳牌INSTAPAVE系统

- Shell developed new cold application system specific for rural road
Shell 为农村公路的发展推出的新型乳化沥青冷施工系统
- Simply construction, easily application
施工方便、简单易行
- Cost saving, environment friendly
节约成本、环保



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INSTAPAVE SYSTEM 壳牌INSTAPAVE系统

- Low transportation costs 减少运输费用
- Low energy costs 减少能源消耗
- Less expensive equipment 廉价的设备
- Simple mixing procedure 简便的拌合工艺
- Effective for low volume applications
适用于低交通量道路



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INSTAPAVE SYSTEM 壳牌INSTAPAVE系统

- Instapave Project at Hagonoy, Davao Del Sur, Mindanao 1.7 Kms of National Road
Instapave 在菲律宾国道Hagonoy项目
- Classified as Farm To Market Roads (Rural Roads) Traffic: > 300 Vehicles per day
with Heavy Trucks > 50% 农村公路，日交流通量大于300重车大于50%
- Technology: Instapave System 采用壳牌Instapave系统 技术
- Ordinary Base Preparation with Double Chipseal 普通基层+二层石屑封层
- Topped with 2 Layers of Latex Modified Slurry Seal 加铺两层改性乳化稀浆封层
- Completed DEC 2008 2008年12月完工

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INSTAPAVE SYSTEM HAGONOY PROJECT 项目

The purpose of application 项目应用目的

- Prevent water intrusion and damages due to oxidation 防止氧化破坏和水损害
- Increase the level of road safety by increasing skid resistance of the surface 提高路表抗滑系数提高了道路的安全等级
- Arrest the increase lift of road surfaces 符合道路标高限制
- Leave the existing drainage system unaffected 不影响现有道路排水系统

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INSTAPAVE SYSTEM HAGONOY PROJECT 项目

Shown is the base Preparation
基层的准备



Shown is the completed project after 6 months during the Rainy season
显示项目完工后6个月经过一个雨季



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INSTAPAVE SYSTEM HAGONOY PROJECT 项目

Shown in the picture is the completed project after the Rainy season (Summer)
项目完工经过一个雨季后的夏天



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INSTAPAVE SYSTEM APAYAO PROJECT 项目

- Instapave Project at Apayao, NORTH LUZON 1.0 Kms of National Road Instapave 在菲律宾国道Apayaoy项目
- Classified as Farm To Market Roads (Rural Roads) Traffic: < 100 Vehicles per day with Heavy Trucks < 10% 农村公路，日交通流量 小于100重车小于10%
- Technology: Instapave System 采用壳牌Instapave系统 技术
- Ordinary Base Preparation with Single Chipseal 普通基层+一层石屑封层
- Topped with 2 Layers of Latex Modified Slurry Seal 加铺两层改性乳化稀浆封层
- Completed March 2009 2009年3月完工

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INSTAPAVE SYSTEM APAYAO PROJECT 项目

Shown is the completed Road Section During Shell Final Inspection(the yellow shade in the Road are Corns , Farmers used paved roads for sundrying their produce)
经过壳牌最终检测完工后路段（黄色部分为当地农民晒的玉米）



Shown is the completed project (Rural Road Upgrade can spurs economic growth in the remote areas)
项目完工后（农村公路的升级可以促使偏远地方的经济发展）



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INSTAPAVE SYSTEM CREATIVE METHOD 创新的方案

New Technology 新技术

- Polymer Modified Asphalt 聚合物改性沥青
- Asphalt Emulsion technology 乳化沥青技术
- Application method应用方法
- Preventive maintenance 预防性养护
- Performance testing methods 性能试验方法



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INSTAPAVE SYSTEM MATERIAL 材料

Polymer Modified Asphalt 聚合物改性沥青

- Improve resistance to aging and oxidation.改善抗老化和氧化性能
- Lengthen pavement life, and therefore reduce user delay costs for pavements under repair. 延长道路使用寿命，减少因道路养护造成交通堵塞而带给使用者的损失。



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AFFECTION OF MATERIAL FOR MICROSURFACING 材料对微表处混合料影响

- Controllable of raw material source 原材料来源的可控性
- Controllable of emulsion formulation and production 乳化沥青的配方及生产可控性
- Reliable mix design method 混合料设计方法的可靠性
- Controllable of construction 施工的可控性

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EMULSION SELECTION 乳化沥青选择

Emulsion selection 乳化沥青的选择

- Have to easy for storage, pump and transportation 必须便于储存、泵送、运输
- Have to quick setting and curing with aggregates 必须与骨料快速凝聚成型

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EMULSION SELECTION 乳化沥青选择

- Special technology formulates for specific aggregate 针对不同的骨料需要特定的乳化沥青配方
- Film coating must be carefully monitored to assure quality 油膜的裹附必须严格的检测以确保质量



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AGGREGATE SELECTION 骨料选择

- Aggregate quality determines mix quality 骨料的质量决定混合料的质量
- Moisture content affects the quality 含水量影响混合料质量
- Measures to account for aggregate moisture 骨料含水量参与计算
- Too much moisture can cause leaching 太多的水分导致沥青析出
- Too little moisture affects workability 太少的水分会影响工作性



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AGGREGATE SELECTION 骨料选择

It's a optimal judgment of construction economy, supply source and engineering quality. 施工的经济性、供应来源及工程质量三者之间的一种平衡。

- Aggregate dominate the system 在系统中骨料所占比例最大
- Successful project highly depends on aggregate selection and quality control. 施工的成功很大程度上取决于骨料的选择和质量控制。

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BASE PREPARATION 基层准备

Erosion control 污染控制

- Silt fence 淤泥隔离
- Soil berms 泥土路堤



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BASE PREPARATION 基层准备

Base stabilization 基层稳定



Base grading 基层平整



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BASE PREPARATION 基层准备

Base width 基层宽度



Base compaction 基层压实度



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THE MEMBRANE 粘层

- Standard emulsion tack 常规乳化沥青粘层洒布
- Prevents moisture intrusion 防止水分侵入
- Bonds mat to existing roadway 联结基层和面层



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FILLING THE HOPPER 卸料到收料斗

Directing trucks to the paver 料车与摊铺机
保持同一方向
Monitoring aggregate flow 观察骨料的流动



Signaling truck drivers 给料车司机信号



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REPAIRS TO UNACCEPTABLE AREAS 修补缺陷

- Remove unacceptable material 铲除有缺陷的材料
- Prepare a quantity of mix 准备一定数量的混合料
- Haul to repair 停下进行修补
- Place material by hand 进行手工填补料
- Compact 压实

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Q & A

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