

Sspc Guide 61

Approximately 90% of the steel highway bridges in the United States are protected from corrosion with lead-based paints. A comprehensive study was performed to evaluate the various factors involved with lead-paint removal. Containment and ventilation systems were studied and recommendations were developed for containment materials, design of joints, design of air inputs, negative pressure, and air flow within containment. Waste disposal is a significant issue due to long-term liability and cost. Tests were performed on hazardous waste characterization, waste minimization, methods of generating non-hazardous waste, and long-term stability of lead-containing wastes and stabilized wastes. Alternate surface preparation methods and costs were evaluated. Recyclable steel abrasive was found to be cost-competitive and to reduce the amount of debris by approximately 90% compared to expendable abrasive.

This IBM® Redbooks® publication represents a compilation of best practices for deploying and configuring IBM Midrange System Storage™ servers, which include the DS4000® and the DS5000 family of products. This book is intended for IBM technical professionals, Business Partners, and customers responsible for the planning, deployment, and maintenance of the IBM Midrange System Storage family of products. We realize that setting up DS4000 and DS5000 Storage Servers can be a complex task. There is no single configuration that will be satisfactory for every application or situation. First, we provide a conceptual framework for understanding the hardware in a Storage Area Network. Then we offer our guidelines, hints, and tips for the physical installation, cabling, and zoning, using the Storage Manager setup tasks. After that, we turn our attention to the performance and tuning of various components and features, including numerous guidelines. We look at performance implications for various application products such as DB2®, Oracle, Tivoli® Storage Manager, Microsoft® SQL server, and in particular, Microsoft Exchange with IBM Midrange System Storage servers. Then we review the various tools available to simulate workloads and to measure, collect, and analyze performance data. We also consider the AIX® environment, including High Availability Cluster Multiprocessing (HACMP™) and General Parallel File System (GPFS™). Finally, we provide a quick guide to the storage server installation and configuration using best practices. This edition of the book also includes guidelines for managing and using the DS4000 and DS5000 with the IBM System Storage SAN Volume Controller (SVC).

This IBM® Redbooks® publication is a quickstart guide for implementing an IBM virtual disk system. We use the term IBM virtual disk system to collectively refer to IBM SAN Volume Controller (SVC), System Storage Productivity Center (SSPC), IBM mid range storage (DS3400 in this case), and IBM/Brocade SAN Switches. IBM System Storage SAN Volume Controller (SVC) is a virtualization appliance solution that maps virtualized volumes visible to hosts and applications to physical volumes on storage devices. The IBM virtualization technology improves management of information at the "block" level in a network, enabling applications and servers to share storage devices on a network. With IBM System Storage Productivity Center (SSPC)™, administrators can manage storage along with the other devices in the storage environment. This greatly simplifies management of even the most basic storage environments, and the awareness of environment helps to reduce accidental errors that can cause downtime. SSPC comes

preloaded with IBM Tivoli Storage Productivity Center products, enables end-to-end disk management on single screen, and supports management of heterogeneous systems and devices.

Steelwork Corrosion Control is a comprehensive revision and updating of a similar book by the authors, published in 1985. As with the previous book, it is designed principally for engineers, architects and designers for whom the protection of structural steelwork is an important, albeit a comparatively minor, part of their total professional activities. New materials are being developed constantly by the coatings industry and the number of standards, codes of practice and publications has grown to a stage where it has become increasingly difficult for non-specialists to keep abreast of the situation. The book is to sets out the basic and old-established requirements and at the same time draw attention to recent developments such as long-life coatings, new International Standards on surface preparation, new methods and standards of quality control and the increased awareness of health and safety factors. The book is not intended to be a comprehensive textbook on coating technology but rather as a guide to the principles involved and methods of achieving sound steel protection.

Having written safety and health policies isn't enough. These plans and procedures have to be effectively communicated to the employees expected to follow them or you may be violating OSHA standards. This manual prevents written plans, policies, and procedures you can use, modify, and reproduce for distribution to your employees or keep them in binders where employees can easily refer to them. You can also use the manual as a training tool or as the basis for establishing new safety and health programs or updating existing ones.

* Compiles all the data necessary for efficient and cost-effective highway design, building, rehabilitation, and maintenance * Includes metric units and the latest AASHTO (American Association of State Highway Transportation Officials) design codes

Details the proper methods to assess, prevent, and reduce corrosion in the oil industry using today's most advanced technologies This book discusses upstream operations, with an emphasis on production, and pipelines, which are closely tied to upstream operations. It also examines protective coatings, alloy selection, chemical treatments, and cathodic protection—the main means of corrosion control. The strength and hardness levels of metals is also discussed, as this affects the resistance of metals to hydrogen embrittlement, a major concern for high-strength steels and some other alloys. It is intended for use by personnel with limited backgrounds in chemistry, metallurgy, and corrosion and will give them a general understanding of how and why corrosion occurs and the practical approaches to how the effects of corrosion can be mitigated. Metallurgy and Corrosion Control in Oil and Gas Production, Second Edition updates the original chapters while including a new case studies chapter. Beginning with an introduction to oilfield metallurgy and corrosion control, the book provides in-depth coverage of the field with chapters on: chemistry of corrosion; corrosive environments; materials; forms of corrosion; corrosion control; inspection, monitoring, and testing; and oilfield equipment. Covers all aspects of upstream oil and gas production from downhole drilling to pipelines and tanker terminal operations Offers an introduction to corrosion for entry-level corrosion control specialists Contains detailed photographs to illustrate descriptions in the text Metallurgy and Corrosion Control in Oil and Gas Production, Second Edition is an excellent book for engineers and related professionals in the oil and gas production industries. It will also be an asset to the entry-level corrosion control professional who may have a theoretical background in metallurgy, chemistry, or a related field, but who needs to understand the practical limitations of large-scale industrial operations associated with oil and gas production.

The basics are explained along with how to institute a corrosion control program. This manual explains how to evaluate the potential for damage by studying soil content, pipe material, and other variables. Includes information on installing and protecting distribution system pipe.

This synthesis will be of interest to bridge painting contractors, bridge maintenance and construction engineers, environmental engineers, equipment manufacturers and suppliers, and others interested in bridge paint removal. Information is provided on current practices in bridge paint removal, containment, and disposal, with special attention paid to environmental, health, and cost issues, along with a discussion of current environmental regulations governing paint removal practices. The removal of bridge paint is a nationwide problem with sensitive environmental concerns and rapid changes in available technology and regulatory oversight. This report of the Transportation Research Board describes the current state of the practice for bridge paint removal, containment, and disposal, especially with regard to lead-based or other toxic paints. Additionally, current environmental regulations and health concerns in this area are examined.

This detailed, user-friendly approach to assessing and controlling lead hazards in housing, schools, day-care centers, and commercial and industrial settings combines the author's expertise on the subject with a practical approach to real-world procedures, emphasizing key provisions of federal, state, and local regulations. 20 illustrations.

1981- in 2 v.: v.1, Subject index; v.2, Title index, Publisher/title index, Association name index, Acronym index, Key to publishers' and distributors' abbreviations.

A companion volume and sequel to *The Wiley Engineer's Desk Reference*. Covers major areas regarding the technology of engineering and its operational methodology, accentuating questions of schedule and schedule maintenance. Describes professional practice skills and engineering aspects essential to success. Includes a slew of examples, checklists, sample forms and documents to facilitate understanding.

This synthesis will be of interest to state department of transportation (DOT) bridge maintenance engineers, coating specialists, chemists, and researchers. Manufacturers and suppliers of corrosion protection products and systems for exposed structural steel on existing bridges will also find it of interest. This synthesis describes current practice regarding maintenance and protection strategies for exposed structural steel on existing bridges. NCHRP Synthesis 251, *Lead-Based Paint Removal for Steel Highway Bridges* (1997), provides a complementary and more in-depth treatment of maintenance issues involving lead-based paint removal. This report of the Transportation Research Board defines the maintenance management systems and decision making criteria used by transportation agencies for maintaining exposed bridge steel. Material selection criteria, surface preparation and application practices, quality control and quality assurance programs, and funding mechanisms are discussed in detail. The impact of recent and proposed environmental and worker protection regulations on current practice is reported. Information for the synthesis was collected by surveying state transportation agencies and by conducting a literature search. Responses to the survey, Appendix C to this document, are published on the Internet as NCHRP Web Document 11.

Each volume contains proceedings of the annual conference of the American Nuclear Society.

"This synthesis will be of interest to state DOT bridge maintenance and construction engineers; regulators, consultants, and contractors involved with the removal of lead paint from bridges and structures; and structural coatings specialists, chemists, and researchers. This synthesis describes the current state

of the practice for the removal of lead-based paint from existing highway steel bridges."--Avant-propos.

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