Expensive approaches to protecting metals that intrinsically have poor resistance to corrosion have met with only limited success. Epoxy coatings, galvanizing, cathodic protection and other methods have not fulfilled their promise. This is particularly true in high road salt usage and in coastal areas or other high chloride and moisture laden environments.

Stainless steels, naturally corrosion resistant, provide the ideal solution to the rust problem. The addition of chromium imparts corrosion-resistant qualities to stainless steels. Chromium, combined with oxygen, forms a thin invisible chromium-oxide protective film on the surface that repels attacks from corrosive agents. Corrosion-resistant stainless steels extend the life of a construction project in most environments to 100 years.

TRANSPORTATION EQUITY ACT FOR THE 21ST CENTURY

This legislation, signed into law on June 9, 1998, offers about 40 percent more federal highway funding over the next six years. Included in the legislation is a first-ever $108 million dollar earmark for an innovative bridge research and construction program. Its focus is on bridge design and the use of corrosion resistant materials like stainless steel. For information on applying for grant money available under the program, contact the U.S. Department of Transportation in Washington, D.C., your state Department of Transportation, or your Member of Congress.

WHY STAINLESS STEELS

Upgrading to more corrosion resistant construction materials like stainless steel is one cost effective approach to the rust problem. Compared to other construction materials, stainless steels have many unique properties that are advantageous not only from a corrosion standpoint, but from a strength and safety viewpoint as well.

Stainless steels are fire and heat resistant, impact and shock loading resistant, can withstand deformation, and require little or no maintenance. Stainless steel’s ease of fabrication, installation, weldability and ductility make it an ideal material for many construction applications.

LIFE CYCLE COSTING ADVANTAGES

Life cycle costing techniques and analysis allow the design engineer and materials specifier to consider the true cost of a project over its useful life. Using upgraded, more costly materials at the very start of a project oftentimes can be justified by pointing to the savings accrued over the project’s life. Reduced maintenance, inspection and repair costs result from initially upgrading material.

The Specialty Steel Industry of North America (SSINA) has available a free computer program and manual on Life Cycle Costing calculations. This easy-to-use program compares the cost of materials over the life of a project, factoring in replacement and repair costs, downtime, lost man-hours and other variables. Contact SSINA for a free diskette and manual.

THE CORROSION PROBLEM IN CONSTRUCTION INFRASTRUCTURE

The “1998 Report Card on America’s Infrastructure,” compiled by the American Society of Civil Engineers, awards a D-minus and C-minus, respectively, to the condition of the nation’s roads and bridges. America’s infrastructure is not making the grade, notwithstanding the continual replacement, renovation and rehabilitation of roads, highways and bridges. This ongoing infrastructure repair is accomplished by digging deep, particularly into the pockets of taxpayers.

Frequently the culprit that triggers the need for repair can be traced to such a familiar sight on roads and bridges that it’s taken for granted . . . rust or corrosion. Corrosion in general is a public policy issue and not just in the infrastructure. Corrosion costs the U.S. more than $300 billion every year, but $100 billion of that waste could be avoided with increased use of corrosion-resistant materials, improvements in corrosion-prevention practices, and investments in corrosion related research.

Nowhere is the corrosion problem more evident than in our bridge and highway systems. It is unsightly, jeopardizes safety, and replacement often becomes necessary in less than half the projected 50 to 75 year design life of a project. In many cases chemical agents such as chlorides used in road salts attack the underpinning metal rebars making them vulnerable to corrosion. Marine and high pollution environments also lead to chemical reactions causing corrosion. Rust, once formed on metal, multiplies the volume of the original material. This expansion causes spalling of concrete, leading to even more widespread corrosion.

THE SPECIALTY STEEL INDUSTRY OF NORTH AMERICA

SPECIALTY STEEL INDUSTRY OF NORTH AMERICA
3050 K Street, N.W.
Washington, D.C. 20007
TEL: (202) 342-8630 or (800) 982-0355
FAX: (202) 342-8451
http://www.ssina.com
**Advantages of Stainless Steel Rebar**

- Durable and Self-Healing to Abrasions and Handling Damage
- Weldable
- No Field Pre-Treatments Necessary
- Shock and Seismic Load Resistant
- Fire and Heat Resistant
- Cost Competitive with other systems over full Life Cycle Cost
- Superior Corrosion Resistance
- Wide Material Selection
- Superior Strength Levels
- Outstanding Ductility at High Strength Levels
- Long Shelf and Service Life
- Minimum Maintenance
- Low Magnetic Permeability
- Resistance to Chloride and Moist Environments
- Alloys Resistant to Localized Corrosion Mechanisms

**APPLICATIONS FOR STAINLESS STEEL CONSTRUCTION PRODUCTS**

- Concrete Reinforcement
- Parapet Anchors and Tie Downs
- Wall Anchors
- Rock Bolts and Anchors
- Concrete Anchors
- Screens
- Studding and Fasteners
- Rebar Spirals for Pilings
- Mesh
- Post Tensioning Strands
- Cages

**STAINLESS ALLOY DESIGNATIONS**

- 304L
- 304LN
- 316L
- 316LN
- XM-19 (Nitronic 50)
- 310 (Duplex 2205)

**LITERATURE REFERENCES for the Behavior of Stainless Steel in Concrete in Chloride Environments**


**TECHNICAL CONTACTS**

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Fax-202-342-8631
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**REBAR CAPABILITIES**

- Contact the following North American Producers
  - Al Tech Specialty Steel (800-735-5661)
  - Atlas Specialty Steels (905-735-5661)
  - Republic Engineered Steels (330-837-6240)
  - Talley Metals (803-335-7540)

**HOW TO ORDER**

Please specify the following:
- Grade
- Size
- Strength Level Required
- No. of Pieces
- Length (Random or CTL)
- Specifications
- Corrosion Testing and Corrosion Environment

**ASTM AND OTHER GOVERNING SPECIFICATIONS**

- ASTM A-955M-96 for Deformed and Plain Stainless Bar for Concrete Reinforcement
- Canadian Standard Can/CSA G30. 18-M92
- British Standard 6744 and BS 6105 (Fasteners and Studs)
- ASTM Related Stainless Product Specifications

**ASTM AMENDMENTS**

- See page 3

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**LITERATURE REFERENCES**