4) Certification

NX-SCR is produced in conformance with AASHTO MP-13-04. All batches are tested and certified to this specification. Statistical process control techniques are utilized to ensure product quality and conformance to the specification. Mechanical properties, cladding properties and excellent corrosion resistance have been verified through 3rd party testing, DOT evaluation, and FHWA analysis ("Corrosion Resistant Alloys for Reinforced Concrete" -Publication No. FHWA A-HRT-07-039, July 2007).

5) Applications

NX-SCR can be used in a variety of civil engineering applications that require extended corrosion resistance. These include but are not limited to bridges, roads, canals, dams, ports, airports, wind-mill farms, water and waste treatment plants and buildings. NX-SCR is the optimal choice when building in chloride rich environments as it provides a 75-100 year design life as required by the FHWA Requirement for Bridge Projects (1995).

6) NX-SCR Advantages

- Offers corrosion resistance equivalent to solid stainless steel, as confirmed through FHWA research, at a fraction of the up-front cost.
- Lowest life cycle cost in the industry, offering annualized cost savings of 15% and 11% versus solid 316L stainless steel and epoxy coated rebar respectively.
- Can be bent up to 180 degrees using standard equipment and can be saw cut on site to fulfill unexpected design changes.
- Durable cladding does not require "touch-ups" after fabrication and can withstand nornal conditions presented on a job site.
- Can be used in conjunction with black bar without risk of galvanic corrosion.
- Produced utilizing an innovative "green" technology, expending 30-40% less energy during production relative to a conventional rebar manufacturing process, with negligible emissions of hazardous slag and dust, and corresponding limited disposal of these hazardous materials.

7) Availability

NX-SCR is currently produced in Wales while our US manufacturing facility is under construction.

Inventory in a full range of sizes is available domestically at our fabrication warehouse and distribution center in Lorain, Ohio.

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NX INFRASTRUCTURE NX-SCR SPECIFICATION SHEET

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1) Manufacturer

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2) Product Description

NX-SCR™ is a corrosion resistant steel reinforcement bar ("rebar") produced exclusively by NX Infrastructure Ltd (NXIL) for use in reinforced concrete. NX-SCR provides a 316L stainless steel outer cladding that is metallurgically bonded to a carbon steel core. A patented solid-state production process is utilized to manufacture NX-SCR.

3) Product Features

- NX-SCR conforms to AASHTO MP13M/MP 13-04 (2006) Standard Specification for Stainless Clad Deformed and Plain Round Steel Bars for Concrete Reinforcement, which is based on ASTM A 955 and ASTM A 615.
- NX-SCR is produced in 1/8" diameter increments ranging from a #4 (1/2") (13mm) through to a #10 (1-1/2") (32mm).
- The minimum specified cladding thickness is 0.007" (175 microns). NX-SCR is typically anywhere from 2-5 times thicker than this requirement.
- The standard length is 39.5 feet (12.0 m). NXIL provides fabrication and cut-to-length services to cut and form bars to meet a project's particular needs.
- Our trademark (NX-SCR), bar designation and type of steel is rolled into the surface of each bar.

Table 1

Deformed bar designation numbers, nominal masses, nominal dimensions and deformation requirements, U.S. Customary Units

		Nominal Dimensions [a]			Deformation Requirements, in.		
Bar designation no. [b]	**Nominal mass. lb/ft**	**Diameter, in.**	**Cross sectional area in.²**	**Perimeter, in.**	**Maximum average spacing**	**Minimum average height**	**Maximum gap (chord of 12.5% of nominal perimeter)**
4	0.668	0.500	0.20	1.571	0.350	0.020	0.191
5	1.043	0.625	0.31	1.963	0.437	0.028	0.239
6	1.502	0.750	0.44	2.0356	0.525	0.038	0.286
7	2.044	0.875	0.60	2.749	0.612	0.044	0.334
8	2.670	1.000	0.79	3.142	0.700	0.050	0.383
10	4.303	1.270	1.27	3.990	0.889	0.064	0.487

[a] The nominal dimensions of a deformed bar are equivalent to those of a plain bar having the same mass per meter as the deformed bar.
[b] Bar designation numbers approximate the number of millimeters of the nominal diameter of the bar.
AASHTO Specification MP13M/MP 13-04 (2006).

Table 2

Deformed bar designation numbers, nominal masses, nominal dimensions and deformation requirements, SI units

		Nominal Dimensions [a]			Deformation Requirements, mm		
Bar designation no. [b]	**Nominal mass. Kg/m**	**Diameter, mm**	**Cross sectional area mm²**	**Perimeter, mm**	**Maximum average spacing**	**Minimum average height**	**Maximum gap (chord of 12.5% of nominal perimeter)**
13	0.994	12.7	129	39.9	8.9	0.51	4.9
16	1.552	15.9	199	49.9	11.1	0.71	6.1
19	2.235	19.1	284	59.8	13.3	0.97	7.3
22	3.042	22.2	387	69.8	15.5	1.12	8.5
25	3.973	25.4	510	79.8	17.8	1.27	9.7
32	6.404	32.3	819	101.3	22.6	1.63	12.4

[a] The nominal dimensions of a deformed bar are equivalent to those of a plain bar having the same mass per meter as the deformed bar.
[b] Bar designation numbers are the number of millimeters of the nominal diameter of the bar.
AASHTO Specification MP13M/MP 13-04 (2006).

NX-SCR is tailor-made to combine the very high corrosion resistance of stainless steel with the yield strength and elastic modulus characteristics of low alloy carbon steel, and has the lowest life cycle cost in the industry. Specified chemical compositions of the cladding and core are provided below:

Table 3

Chemical requirements of core steel

Element	% of Element by weight
Carbon	0.45 max
Manganese	1.40 max
Phosphorus	0.040 max
Sulfur	0.050 max
Silicon	0.04 - 0.40
Chromium	-
Nickel	-
Molybdenum	-

Note: Where a dash appears, there is no requirement.
AASHTO Specification MP13M/MP 13-04 (2006).

Table 4

Chemical requirements of 316L stainless steel*

Element	% of Element by weight
Carbon	0.03 max
Manganese	2.00 max
Phosphorus	0.045 max
Sulfur	0.03 max
Silicon	0.75 max
Chromium	16.0 - 18.0
Nickel	10.0 - 14.0
Molybdenum	2.00 - 3.00
Nitrogen	-
Other elements	-

Note: Where a dash appears, there is no requirement.
AASHTO Specification MP13M/MP 13-04 (2006).
ASTM A276-06: Standard Specification for Stainless Steel Bars and Shapes.