



# *Corrosion Resistant Structures*

*PRODUCTS & SERVICES*

*Precast & Cast-In-Place*

*“Full-Service Provider”*



# PRECAST





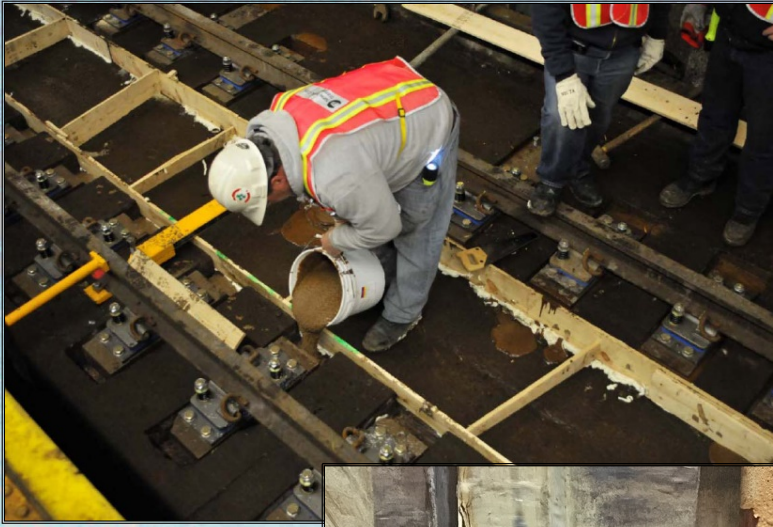
# PRECAST



- *Manholes*
- *Wetwells*
- *Pipe*
- *Tunnel Segments*
- *Railroad Ties & Rail Grade Crossings*
- *Chemical Containment*
  - *Trenches*
  - *Sumps*
  - *Floors*



# CAST-IN-PLACE





# *CAST-IN-PLACE*



- *Sanitary Sewer Structures*
  - *Manholes*
  - *Inverts & Benches*
  - *Wastewater Treatment Structures*
- *Chemical Processing*
  - *Flooring*
  - *Foundations*
  - *Trenches*
- *Rail Transportation*
  - *Railroad Ties*



# *REHABILITATION*



- *Cast-In-Place*
- *Grouts & Mortars*



# *SERVICES*



- *Engineering & Design Services*
- *Construction Services*
- *Technical Services*



## *PRECAST & CAST-IN-PLACE Features*

- ***CORROSION RESISTANT***
- ***IMPERMEABLE***
- ***RUGGED & DURABLE***
- ***REINFORCED***
- ***LIGHTER WEIGHT***
- ***ENVIRONMENTALLY RESPONSIBLE***
- ***LONG-TERM LIFE EXPECTANCY***





# “CORROSION RESISTANT”



- *RockHardscp<sup>tm</sup> is corrosion resistant thru and thru*
- *RockHardscp<sup>tm</sup> never needs protective linings, coatings or gel coats*
- *RockHardscp<sup>tm</sup> can handle thermal shock in excess of 250° F*





# *LIFE EXPECTANCY TESTS*

## *300+ YEARS*



*(50 Year Corrosion Warranty)*

### *Long-Term Chemical Resistance Tests*

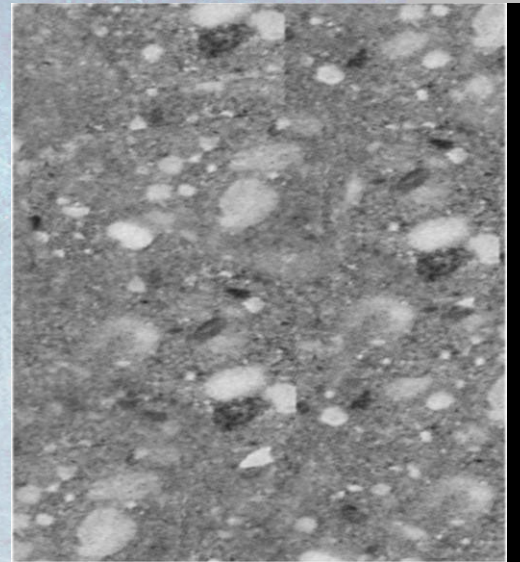
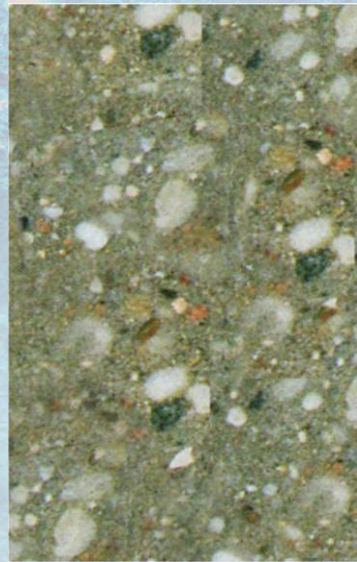




# Peace of Mind (50 Year Corrosion Warranty)

*RockHardscp™*

*Portland Cement Concrete w/liner*

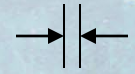


VS.



*CORROSION PROTECTION*

*(100%)*



*CORROSION PROTECTION*

*(Less than 5%)*



***“IMPERMEABLE”***



***RockHardscp<sup>tm</sup> is completely non-porous***

***The perfect synergy between resin & aggregate:***

- Eliminates ground water infiltration*
- Eliminates chemical & waste exfiltration*
- Requires no special linings or coatings inside or out*
- Requires no seams or welds*



Are your polymer manholes & structures  
*IMPERMEABLE??*



*Or is a coating covering up;*

- *Porous matrix imperfections*
- *Micro-cracking due to shrinkage*





*“STRONG, RUGGED & DURABLE”*



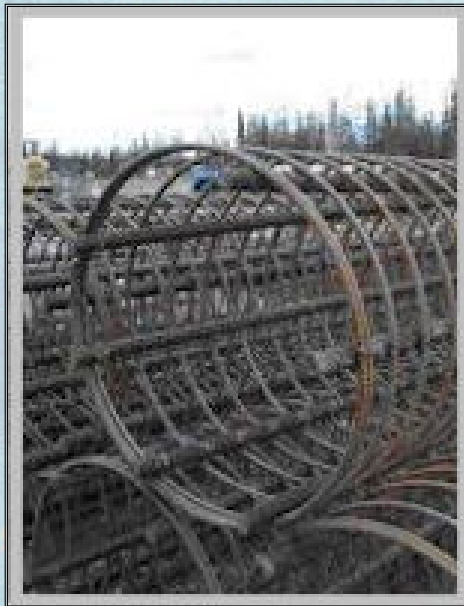
- *RockHardscp<sup>tm</sup> requires no special bedding*
- *RockHardscp<sup>tm</sup> products are durable and resilient*
- *RockHardscp<sup>tm</sup> breaks up to 15,000 psi*





## *“REINFORCED”*

- *Reinforcement shall be steel or fiberglass. Steel facilitates thinner-walled and stronger structures*
- *Reinforcement is critical in the prevention of catastrophic failure*





# Are your polymer manholes & structures *REINFORCED??*



- *Some polymer manhole manufacturers do not incorporate any reinforcement!*







## *“LIGHTER WEIGHT”*



- *RockHardscp<sup>tm</sup> structures are easier and safer to handle & install*
- *RockHardscp<sup>tm</sup> structures are lighter than concrete resulting in the utilization of lighter-duty equipment, increasing jobsite productivity*

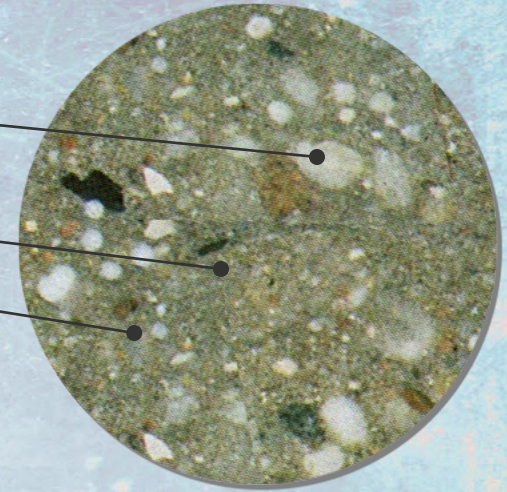


# Matrix

*PRECAST · CAST-IN-PLACE · REHABILITATION*

*RockHardscp™ Products are made from:*

- *Chemically inert mineral fillers*
- *Polymer resins*
- *Select Reinforcing Media*



*RockHardscp™ does not contain Portland cement!*



## *Features Include:*

- *Superior corrosion resistant from pH = 1 to 14 in continuous service*
- *Physical properties exceed that of Portland cement concrete by 3 - 5 times*
- *High strength-to-weight ratio vs. precast concrete*
  - *30% to 50% lighter than Portland cement concrete*
- *Designed as rugged & durable structures*



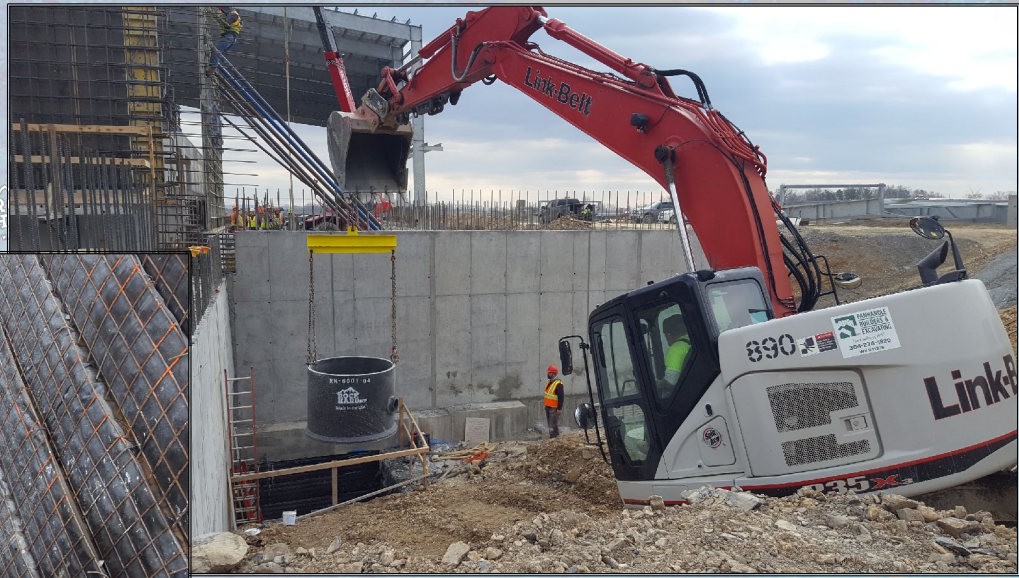
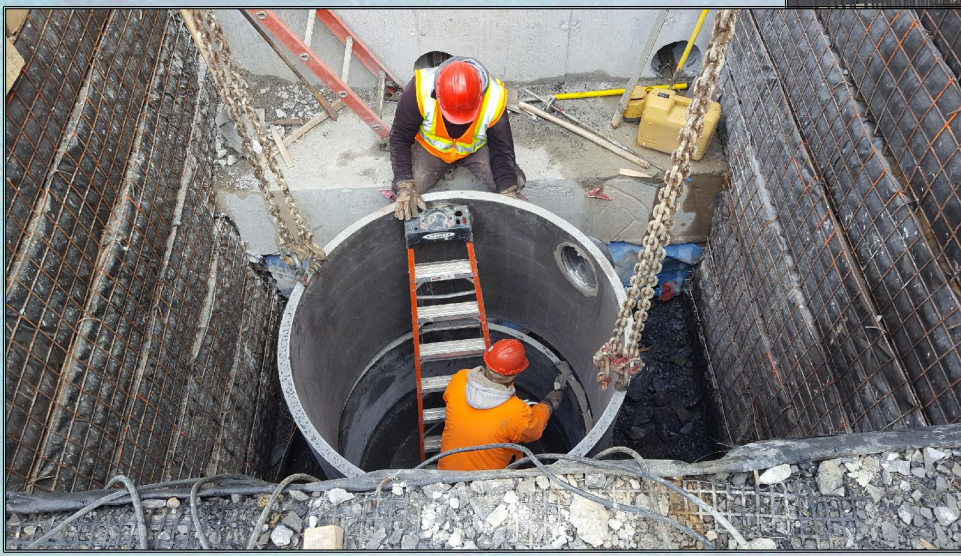
# Benefits Include:

## Physical Properties (RockHardscp<sup>tm</sup> vs. Concrete)

Physical	Test	Portland Cement Concrete Properties	RockHard SCP Properties
Precast Manhole Construction	ASTM C478	Comply	Comply
Compressive Strength	ASTM C579	4,000 psi	12,000+psi
Flexural Strength	ASTM C580	500 psi	3,500 psi
Tensile Strength	ASTM D307	400 psi	1,500 psi
Modulus of Elasticity	ASTM C1609	$2.5 \times 10^6$	$3.4 \times 10^6$
Water Absorption	ASTM C497	4	< 0.1
Shrinkage		$6 \times 10^{-4}$ psi	$6 \times 10^{-8}$ psi
Shear Strength	ACI 318	700	4,500
Flammability Rating	ASTM E162	Class 1A	Class 1A
Electrical Conductivity		Non-Conductive	Non-Conductive
Abrasion Resistance		Low Abrasion Resistance	High Abrasion Resistance
Corrosion Resistance	ASTM C580	Low Corrosion Resistance	High Corrosion Resistance
Life Expectancy	ASTM C580		+ 300 Years
Density (lbs/ft <sup>3</sup> )		140 - 150	140
Inspection & Testing	ASTM C1244	Comply	Comply
pH Range			1 to 14



# *PRECAST & CAST-IN-PLACE MANHOLES*





# Products



## *PRECAST MANHOLE RISERS*





# Products



## *PRECAST & CAST-IN-PLACE WETWELLS*

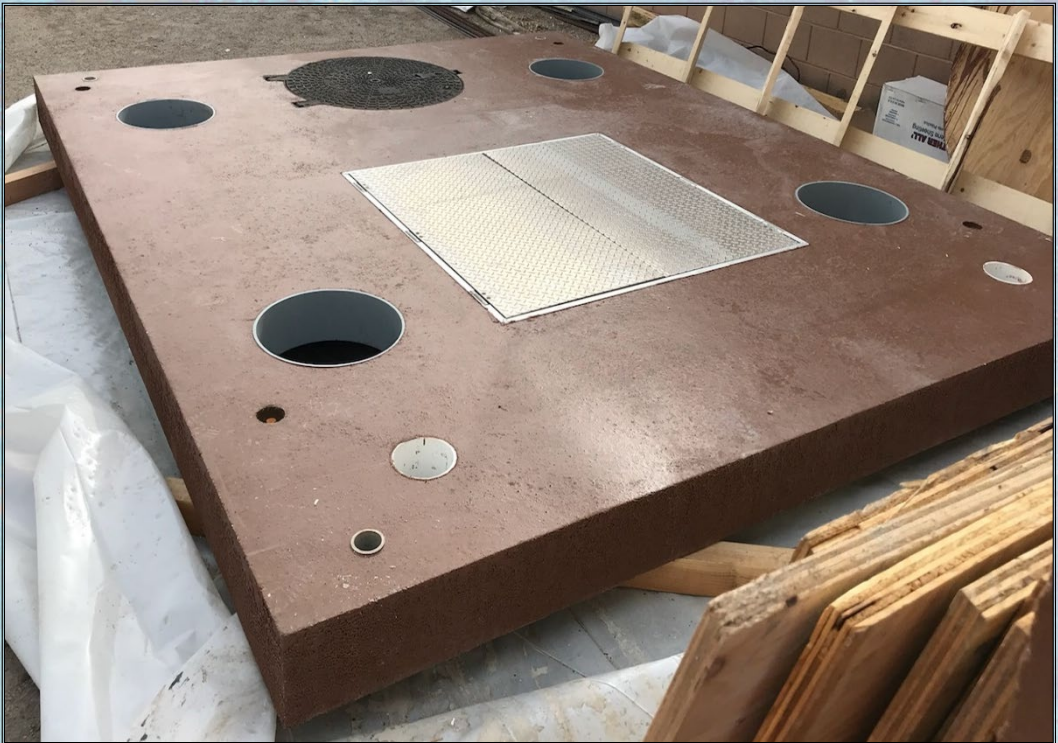




# Products



## *PRECAST & CAST-IN-PLACE FLATLIDS*







# *PRECAST & CAST-IN-PLACE*



Options Include:

Boots, Inverts, Bench/Invert Channels





# Joint Materials



- *Polymer Mortars / Adhesives*
  - *Same physical properties*
  - *100% corrosion resistant*
  - *No gasket or mastic seal*
- *Ensures one (1) solid structure from base to rim*



# VALUE PROPOSITION



- **REDUCES INSTALLATION COST:**
  - *Equipment and Labor: Down to 25%*
  - *Field Production: Up to 15%*
  - *Scheduling Coordination: No more T-Lock welds*
  - *Safety: Few concerns regarding the handling of heavy precast concrete manholes*
  
- **LIFE EXPECTANCY: 300+ Years**
  - *No On-Going Maintenance Costs*
  - *No Replacement Costs*
  
- **PATENTED TECHNOLOGY**
  - *Resin System – NOVOC (Green-Seal Approved)*
  - *QOR-TEQ<sup>tm</sup> System*



# MANUFACTURING



*RockHardscp™ Manufacturing facilities utilize proprietary automated continuous mixing systems designed to produce RockHardscp™ products while adhering to stringent quality assurance and quality control standards.*

*RockHardscp™ products are designed, engineered, and manufactured in the USA.*





# *Optional UNPARALLELED QUALITY CONTROL AND TRACKING*



*Every RockHardscP™ PRECAST PRODUCT can be quality checked at every phase of the process with the Idencia RFID Tracking Solution. RockHardscP™ is light years ahead of other materials of construction.*

*From manufacturing, to storage, to delivery, and installation – the manholes are tracked. RFID tracking tags are embedded into the structure and can be GPS tracked. Each step is signed off on. Batch numbers and dates will provide critical information if a problem occurs to identify if it was a unique failure*

*Manhole location, pipe sizes and directions will be ideal for Cities GIS programs*





# Recent WetWell Project



## *Continental Ranch Regional Pump Station Pima County AZ*



- 13.3'L x 11'W x 20' H
- 4" Thick Walls
- 3 Sections plus
- 6" Thick Flatlid
- Doghouse section to fit 36" pipe



# Recent Wetwell Project



*Continental Ranch Regional Pump Station  
Pima County AZ*





*PRECAST · CAST-IN-PLACE · REHABILITATION*  
*“Polymer Solutions for Life”*