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White Plains, NY 10601
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May 16, 2018

Mr. Matthew Hubicki
Project Manager
NYSDEC
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233-7016

Subject: **Slurry Wall, CSO Collars, and Re-lining Design Submittal**
Submittal #14
Polychrome West (C360099)
City of Yonkers, Westchester County
BCP Site Number C360099

Dear Mr. Hubicki:

The following Submittal #14 has been prepared to document the design requirements for the Anti-Seep collars along the combined sewer overflow (CSO) pipe specified in the Polychrome West Remedial Action Workplan (RAWP) in addition to the Slurry Wall dimensions, layout and CSO re-lining for the Polychrome West Site at 137-145 Alexander Street in Yonkers, New York (the "site"). AKRF, Inc. has prepared this submittal on behalf of Avalon Yonkers Sun Sites, LLC (AVB) for review and approval from the New York State Department of Environmental Conservation (NYSDEC).

Slurry Wall Layout and Dimensions

Light non-aqueous phase liquid (LNAPL) has been documented at or near the water table in remedial activities (e.g. soil borings, test pits, etc.) within the ATI Peninsula, Excavation Area H, and Excavation Area I, which are upgradient of the proposed Slurry Wall. The main component of remediation for these areas will be excavation; however, some LNAPL and/or impacted groundwater is anticipated to remain following the excavation activities. The objective of the proposed Slurry Wall is to contain the residual LNAPL that that cannot be removed via excavation, as well as to contain LNAPL that could be mobilized during the excavation activities.

The Slurry Wall is anticipated to extend an approximate 200 linear feet and connect the proposed steel bulkhead at the adjacent ATI Site (BCP Site Number C360090) to an existing subgrade timber bulkhead observed during test pitting activities in May of 2018 as shown on Figure 1. The AVB project team will attempt to keep the Slurry Wall as close to the shoreline as practical, but will require offsets due to the poor condition of the existing bulkhead along the Polychrome West and ATI site shoreline. The Slurry Wall will be constructed to and above the CSO pipe, keeping an approximate 6-inch clearance, and the annulus filled at a later point as discussed in the Anti-Seep CSO Collar Design section below.

Construction of the Slurry Wall will be similar (i.e., bucket mixing) to construction of the in-situ soil stabilization (ISS) units and will be a minimum of 2-feet in width and extend vertically down to an

approximate final elevation of -7 feet msl (NAVD88). It is anticipated the Slurry Wall will start at approximately +3 feet msl. The mix design for the Slurry Wall is proposed to have a 0.8 to 1 water to cement ratio and will be comprised of 50% blast furnace slag and 50% Portland cement (consistent with the ISS Unit mix design). It is anticipated that the grout addition rate will be 20% by weight of soil for the Slurry Wall.

Additional source removal is anticipated on the ATI Peninsula between the proposed Slurry Wall and the Excavation Area H and Excavation Area I on the Polychrome West Site as shown on Figure 1. Source removal will be completed via excavation down to a depth of 1 to 2 feet below the water table, depending on the extent of contamination observed. Note that final depths for excavation will also be contingent on maintaining the integrity of the adjacent CSO pipe structure. Oxygen Release Compound (ORC) will be applied as necessary to the backfill of LNAPL impacted excavation areas in accordance with the Polychrome West RAWP and Submittal #5.

During construction activities for the Slurry Wall, the AVB project team will deploy a turbidity curtain, hard booms, and oil absorbent booms/pads (if necessary) to contain the potential mobilization of fines and/or LNAPL to the Hudson River.

Anti-Seep CSO Collar Design Package

The objective of the Anti-Seep Collars is to prevent the CSO pipe (owned by the City of Yonkers) from becoming a preferential pathway for LNAPL and associated groundwater contamination. The proposed composition of the Anti-Seep Collars is Uretek, which is a two component polyurethane injectable rigid foam. Uretek was specifically designed for lifting settled pavement, stabilizing weak soil and for encapsulating void space (See Attachment A). Injections will be completed at low pressure (~30 pounds per square inch) with steel rod injection points and in consultation with the selected injection contractor. The exact quantity of injection rods for each Collar will be finalized in consultation with the injection contractor.

Injection volumes for each CSO Collar will be provided to NYSDEC after the completion of the work and documentation will be included within the Final Engineering Report (FER). The specific plan for each CSO Anti-Seep collar is discussed in further detail below.

CSO Collar 1 Location

The first proposed location (labeled as “CSO Collar 1” on Figure 1) will be beneath a proposed manhole, which will be installed as part of the CSO re-lining activities (see the following section). Prior to installation activities, the area will be excavated (likely in conjunction with Excavation Area H of the Polychrome West RAWP), and dewatered as necessary, to create a workspace suitable for placement of the manhole structure. The base of the manhole structure is anticipated to be at the approximate midpoint of the CSO pipe as shown on the Section B view of DET-1 (provided and designed by Milone & MacBroom). Plans regarding the manhole were submitted as a permit modification to NYSDEC, the City of Yonkers, and the Army Corps of Engineers. Approval from the various agencies will be provided to NYSDEC Division of Remediation prior to commencing construction activities.

After placement of the manhole structure, steel injection rods will be angled beneath and the excavation will be backfilled. Rods will be placed in consultation with the injection contractor so that the void space within approximately one foot of the CSO pipe, beneath the manhole structure (see DET-2), is filled with Uretek. The manhole will be opened during injection activities to monitor the integrity of the CSO pipe.

CSO Collar 2 Location

The second proposed CSO collar location (labeled as “CSO Collar 2” on Figure 1) is designed to fill the void spaces in the annulus between the slurry wall and CSO pipe as well as below the CSO pipe (down to approximately 1 foot below the CSO pipe invert). Due to the age and integrity of the CSO pipe,

excavation activities will be required to stop approximately 6 inches from the CSO pipe. Similar to CSO Collar 1, steel injection rods will be placed during test pitting activities and maintained through construction of the Slurry Wall (see DET-3). Injection will be completed following construction of the Slurry Wall.

CSO Re-lining

An additional component of remedial work in and around the CSO pipe is the internal re-lining of the CSO pipe from the manhole located on Alexander Street to the CSO Collar 1 Location (see Figure 1 and DET-1 for additional profile detail). The re-lining will be completed with a copolymer polypropylene plastic.

The general procedure will be to: 1) clean and evacuate the CSO pipe, 2) plug the CSO pipe at both the upgradient manhole on Alexander Street and the downgradient newly installed manhole at CSO Collar 1, and 3) insert the copolymer sleeve into the CSO pipe and expand the sleeve via water or air which in turn will bind the sleeve to the internal components of the CSO pipe to provide additional strength as well a reduction in permeability. Similar to the CSO Collars, the re-lining of the CSO pipe will help prevent the CSO from becoming a preferential pathway for LNAPL.

The rationale for the CSO Collar 1 Location is twofold:

1) The CSO pipe transitions from a brick-lined pipe to a timber encased pipe (See Attachment B) at this approximate location. This has been observed during test pitting activities and it is unlikely re-lining of a combined timber/brick structure is feasible; and

2) Downgradient (to the west) from CSO Collar 1 Location is an area that is proposed for excavation. The majority of LNAPL impacted soil will be removed downgradient from this location.

The CSO re-lining will be completed by a separate re-lining contractor. The Slurry Wall, CSO Collars, and re-lining are designed to be a comprehensive removal and containment remedy for observed LNAPL contamination at the Polychrome West and ATI Sites.

Please contact me at (914) 922 -2356 or Patrick McHugh at (914) 922-2387, if you have any questions or require additional information.

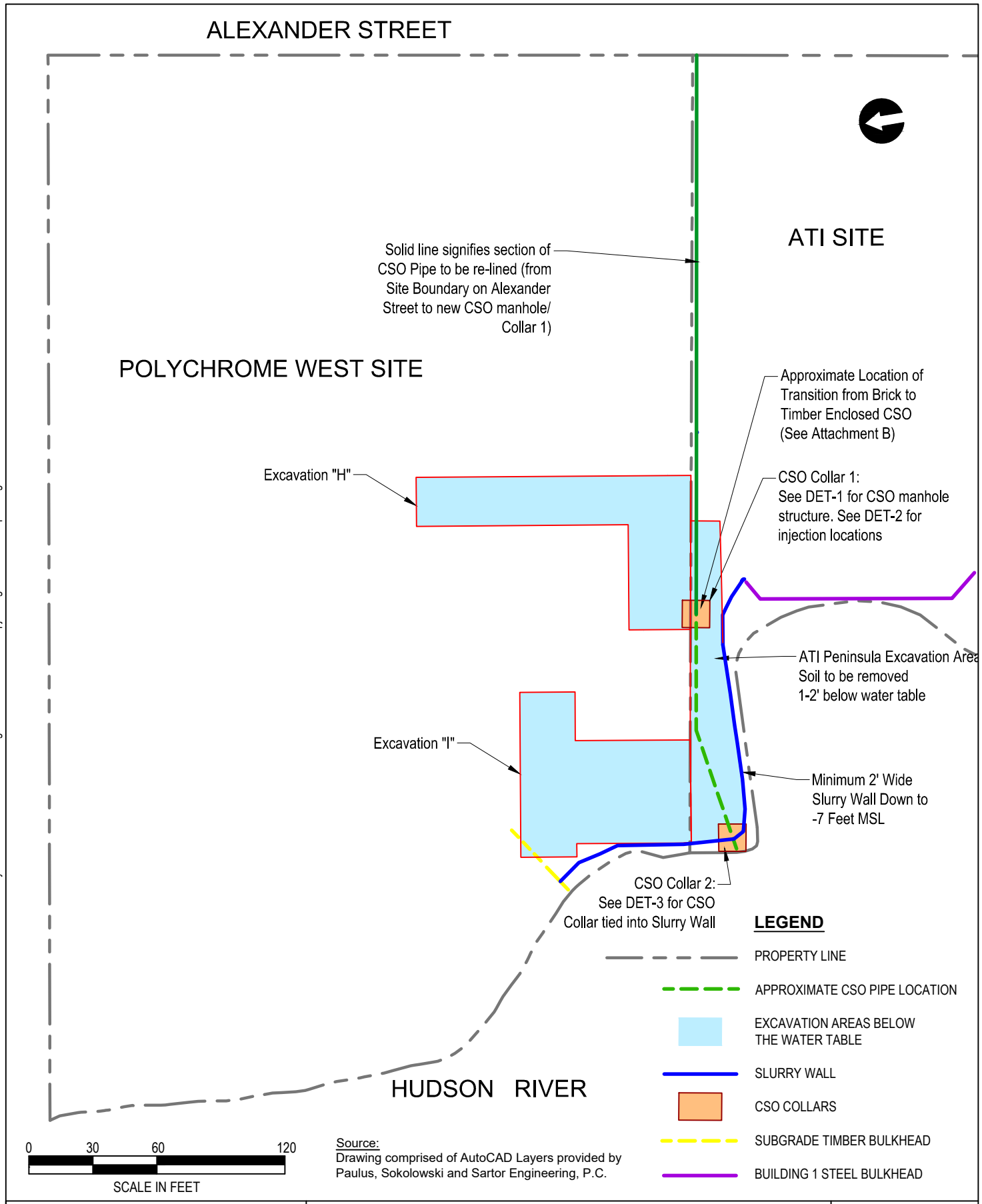
Sincerely,
AKRF, Inc.

Marc S. Godick, LEP
Sr. Vice President

cc: David Crosby – NYSDEC
Scott Deyette – NYSDEC
Aaron Levy – AVB
Barry White – AVB
Chris Capece – AVB
Patrick McHugh – AKRF
Steven Grens – AKRF

Attachments:
Figure 1 – SLURRY WALL AND CSO COLLAR PROFILE
DET 1 – 48" BRICK COMBINED SEWER OVERFLOW IMPROVEMENTS (Milone & MacBroom)
DET 2 – CSO MANHOLE COLLAR 1 DETAIL
DET 3 – SLURRY WALL AND CSO COLLAR 2 DETAIL
Attachment A – Uretek SDS
Attachment B – 1888 City of Yonkers Plan and Profile for CSO

Figure 1 - SLURRY WALL AND CSO COLLAR PROFILE



Source:
Drawing comprised of AutoCAD Layers provided by Paulus, Sokolowski and Sartor Engineering, P.C.

AKRF
34 South Broadway, Suite 401
White Plains, NY 10601

Polychrome West
NYSDEC Site C360099
Yonkers, New York

SLURRY WALL AND CSO COLLAR PROFILE

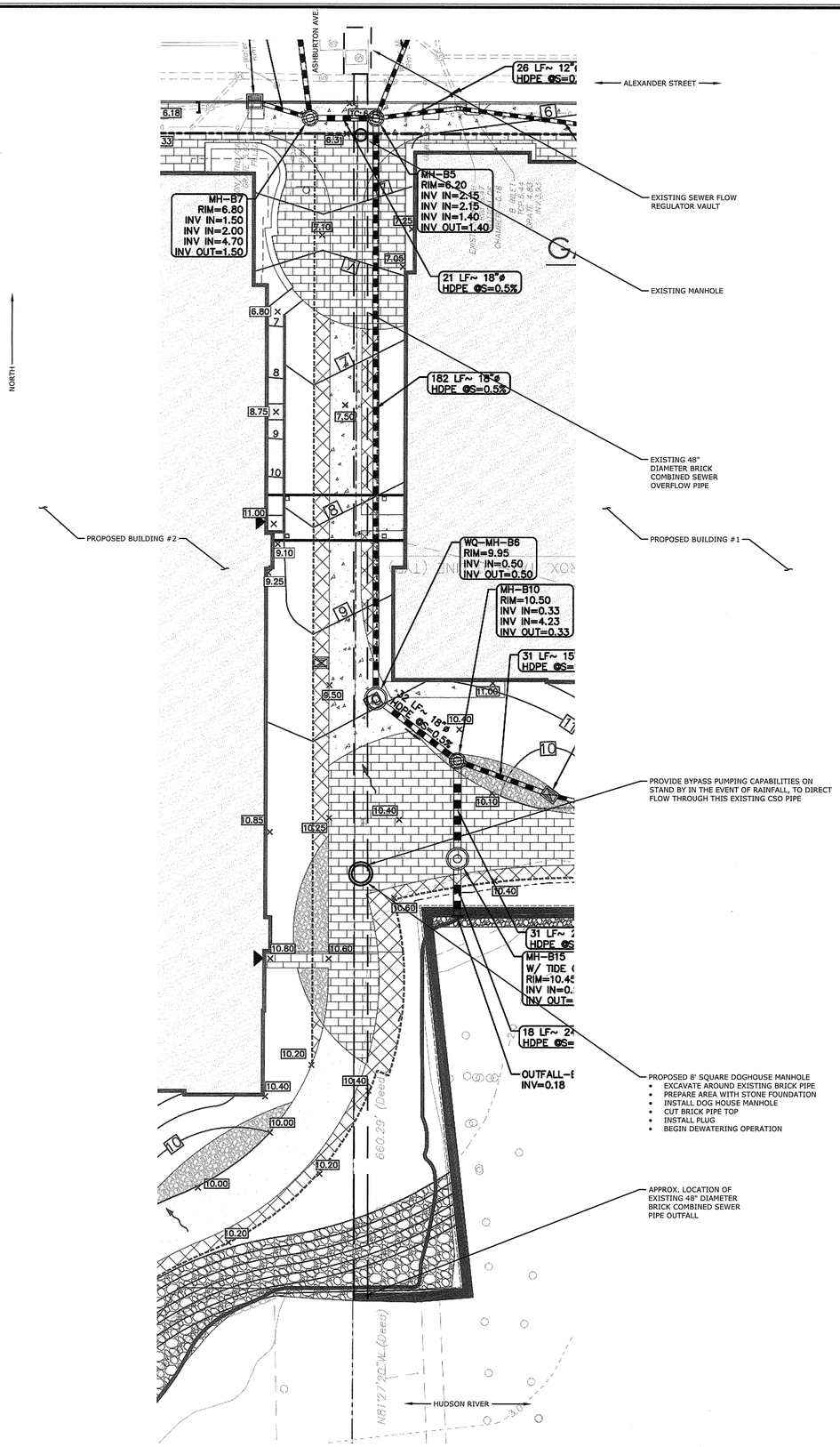
DATE
5/15/2018

PROJECT NO.
180017

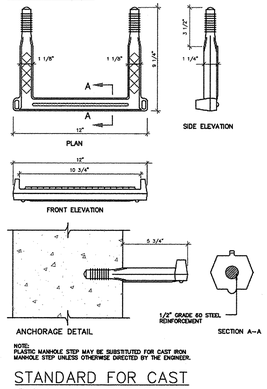
FIGURE
1

Q:\Projects\180017 - AVALONBAY YONKERS - BLD 2 - PCW\Technical\Hazmat\Polychrome West\CAD\180017 Figure Excavation Areas-pjm.dwg last save: pmchugh 5/15/2018 1:03 PM

DET 1 - 3

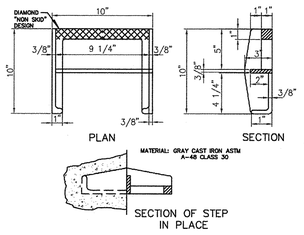


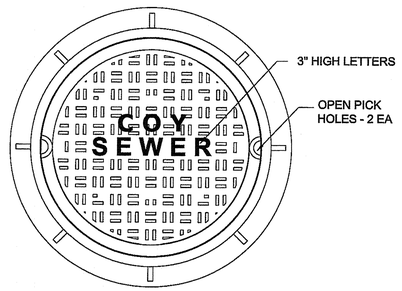
STANDARD FOR PLASTIC MANHOLE STEP (COPOLYMER POLYPROPYLENE PLASTIC) FABRICATED IN SHOP WITH MANHOLE

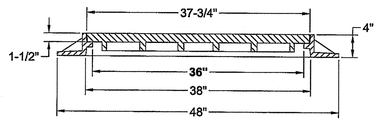


NOTE:
PLASTIC MANHOLE STEP MAY BE SUBSTITUTED FOR CAST IRON MANHOLE STEP UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

STANDARD FOR CAST IRON MANHOLE STEP



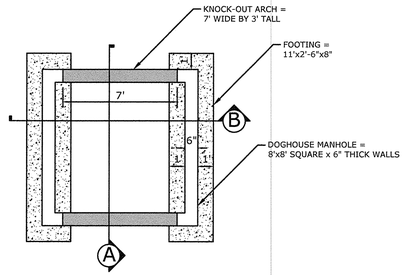




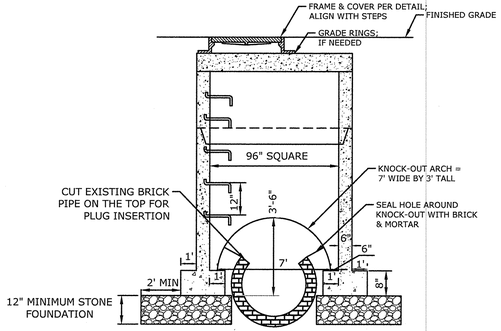
36" x 4" MANHOLE FRAME AND "COY SEWER" COVER

N.T.S.

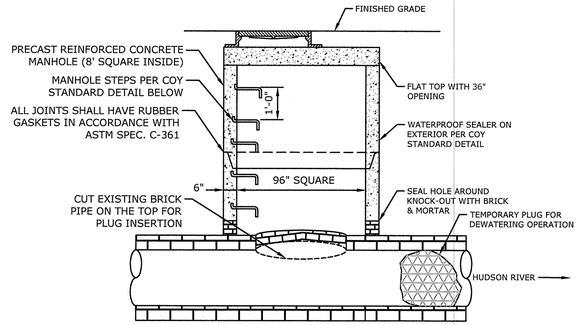
NOTE:
MANHOLE FRAME & COVER SHALL BE APPROVED BY CITY OF YONKERS.



PLAN VIEW



SECTION B VIEW



SECTION A VIEW

NOTES:
1. PROTECTIVE COATING PAINT APPLIED SSPC-PAINT 16, COALTAR-EPOXY-POLYAMIDE 15 MIL MINIMUM THICKNESS APPLIED TO ALL EXTERIOR SURFACES OF SANITARY SEWER MANHOLES.
2. RESILIENT PIPE CONNECTORS ASTM C923 (ASTM C923M) CAST OR FITTED INTO SANITARY SEWER MANHOLE WALLS FOR ALL PIPE CONNECTIONS.

PRECAST CONCRETE STORM DRAINAGE MANHOLE

N.T.S.

MILONE & MACBROOM®
99 Realty Drive
Cheshire, Connecticut 06410
(203) 271-1773 Fax (203) 272-9733
www.miloneandmacbroom.com

DESCRIPTION	DATE	BY

MANHOLE DETAIL

AVALONBAY YONKERS
48" BRICK COMBINED SEWER OVERFLOW IMPROVEMENTS

ALEXANDER STREET
YONKERS, NEW YORK

TAK	JAU	SRD
DESIGNED	DRAWN	CHECKED

NOT TO SCALE
SCALE

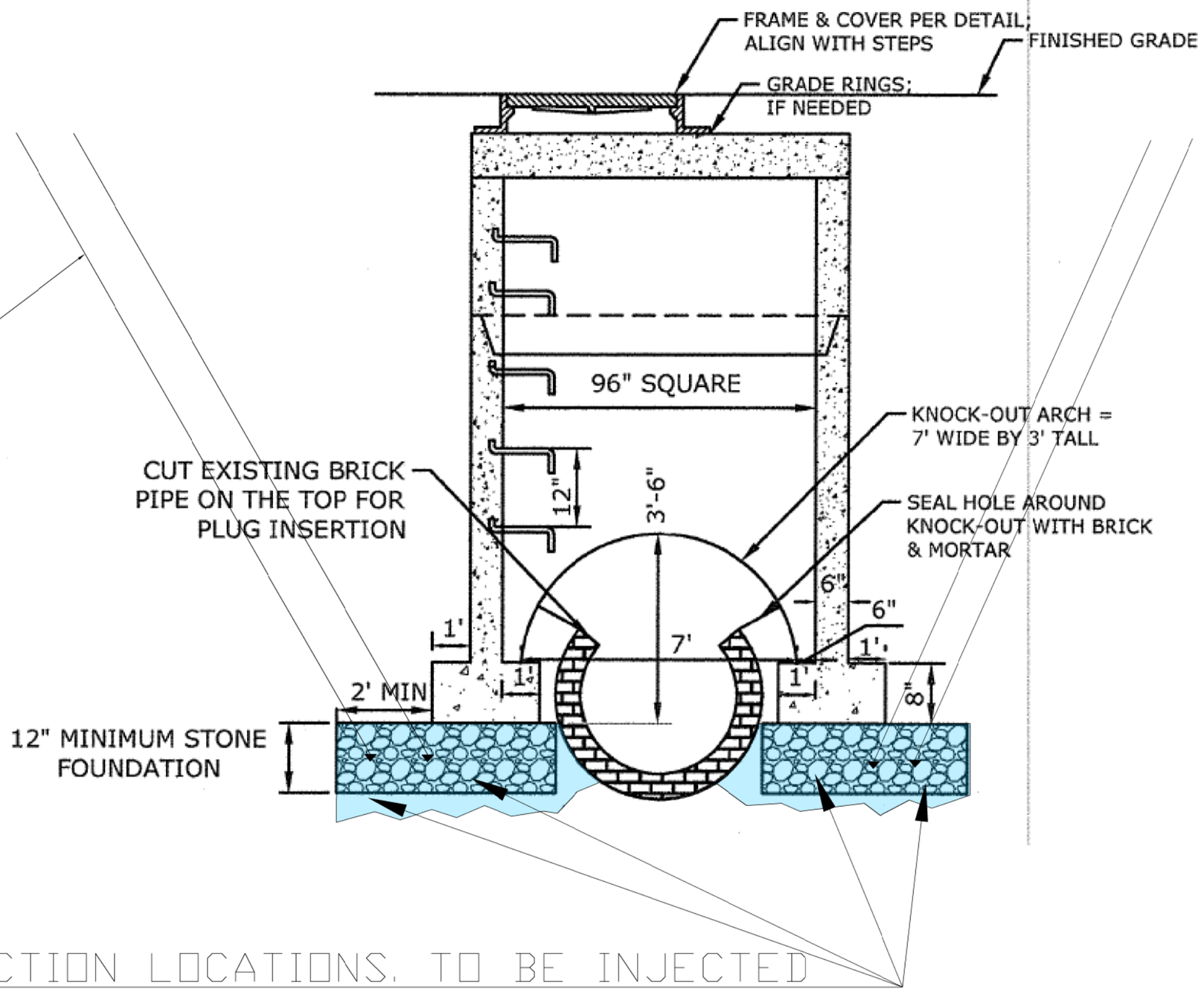
APRIL 27, 2018
DATE

1218-92
PROJECT NO.

DET-1
SHEET NAME

AKRF ENGINEERING, Inc.
34 S BROADWAY,
SUITE 401
WHITE PLAINS, NY 10601
(914) 949-7336 (PHONE)

PLAN VIEW



URETEK INJECTION LOCATIONS. TO BE INJECTED VIA RODS PLACED DURING CONSTRUCTION PLAN VIEW TAKEN FROM MILONE & MACBROOM DET-1

PROJECT	180017 - AVB - BLD2
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SCALE: NA	DATE: 5/15/18
SHEET TITLE	MANHOLE AND CSO COLLAR 1 DETAIL
SHEET NO.	DET-2

SHEET OF

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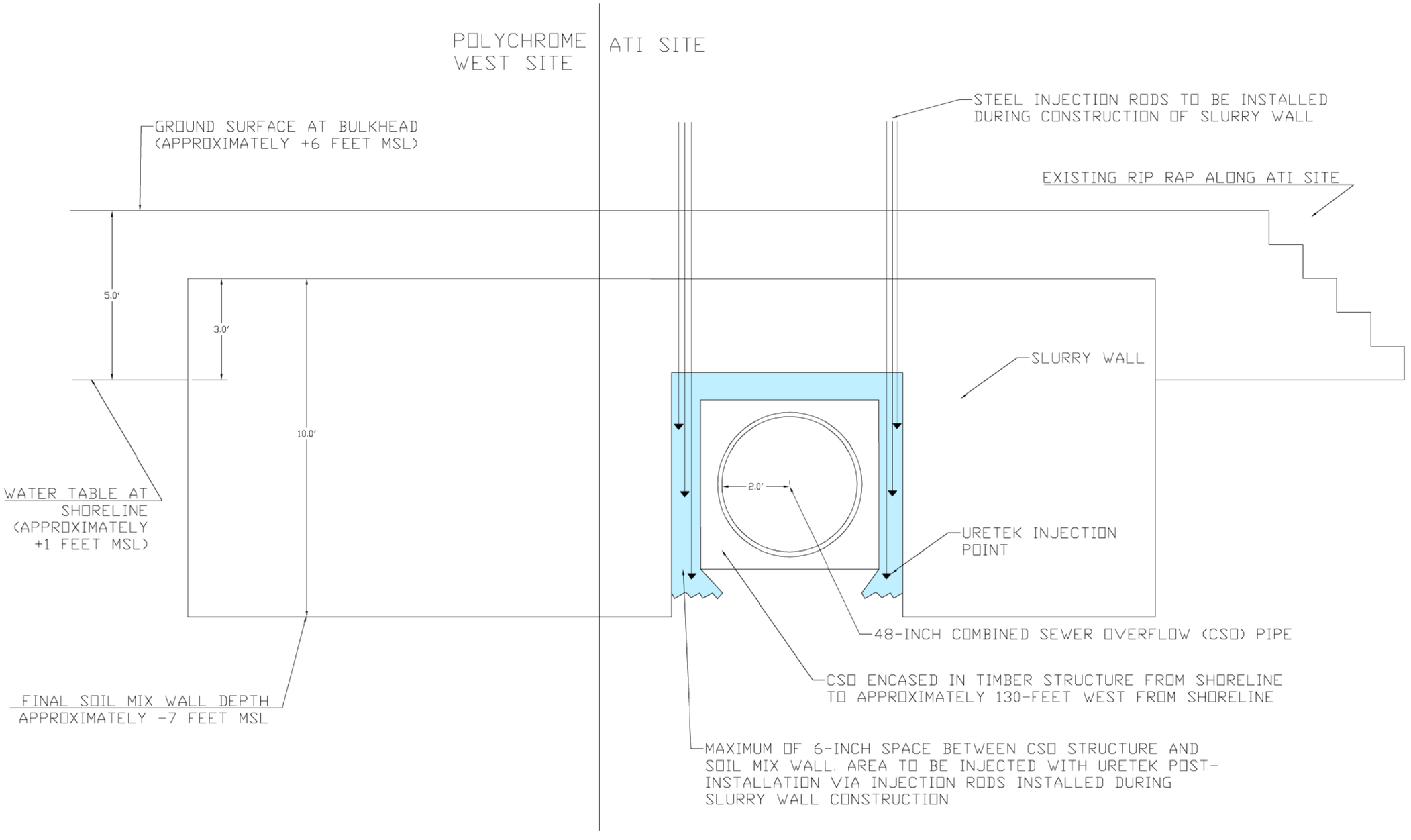


NOTE: HORIZONTAL NOT TO SCALE.

AKRF ENGINEERING, Inc.
34 S BROADWAY,
SUITE 401
WHITE PLAINS, NY 10601
(914) 949-7336 (PHONE)

PROJECT	180017 - AVB - BLD2
DRAWN BY	PM
CHECKED BY	MG
SCALE	NA
DATE	5/15/18
SHEET TITLE	SLURRY WALL AND CSO COLLAR 2 DETAIL
SHEET NO.	DET-3
SHEET	OF

Attachment A – Uretek SDS

URETEK POLYMER

PRODUCT DESIGN

URETEK polymer is inherently hydro-insensitive and is capable of being directly injected into water. Due to the hydro-insensitive nature, this product is excellent for lifting and/or stabilizing in areas with a high level of moisture content. The low viscosity of the system allows for easy penetration into soil and displaces water without losing product integrity as it stabilizes and lifts.

PRODUCT TYPE

URETEK polymer is a two component polyurethane rigid foam. Designed specifically for URETEK, this product is excellent for lifting settled pavement, stabilizing weak soil, and the filling or encapsulating of various voids. URETEK polymer utilizes a fully EPA approved, non-CFC, non-HFC, zero ozone depleting blowing agent.

STORAGE AND HANDLING

URETEK polymer has a shelf life of 1 yr when stored in the original, sealed container at a temperature of 60F-90F with humidity levels not greater than 85% and also not in direct sunlight. The "A" component is very sensitive to moisture and caution must be taken to insure moisture is not introduced.

Prolonged storage at temps below 60F can affect both the "A" and "B" components. The "B" component may separate slightly but can be heated and mixed to regain product integrity. The "A" component may crystallize. Once crystallization occurs the product cannot be reheated or mixed thus rendering it un-useable. Please consult your URETEK representative if such conditions arise for proper guidance.

SAFETY PRECAUTIONS

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling URETEK polymer components. Before working with these products, you must read and become familiar with the available information on their hazards, proper use, and handling. Information is available in several forms, e.g., material safety data sheets and product labels.

CREDENTIALS

URETEK polymer utilizes a fully EPA approved, non-CFC, non-HFC, zero ozone depleting blowing agent. URETEK polymer is NSF 61 certified.

DISCLAIMER: Physical properties generated under controlled laboratory conditions per URETEK polymer sampling guidelines. For sampling guidelines contact URETEK, 281-351-7800. Actual properties may vary under real world conditions. No warranty expressed or implied is given as individual results will vary.

TECHNICAL DATA SHEET

LIQUID PROPERTIES

COMPONENTS SUPPLIED	A (ISO)	B (RESIN)
LIQUID COMPONENTS AS SUPPLIED:	A (ISO)	B (RESIN)
Specific Gravity@74°F (23°C)	1.22	1.04
Viscosity (Brookfield)@74°F (23°C), cps	220-250	400-500
Mixing Ratio by volume	1	1

TECHNICAL DATA

	ASTM TEST	3LB	4LB
Compressive Strength	D-1621	33 psi	63 psi
Compressive Modulus	D-1621	1785 psi	2100 psi
Dimensional Stability	D-2126	<2%	<2%
Tensile Strength	D-1623	63 psi	95 psi
Tensile Modulus	D-1623	1775 psi	2100 psi
Shear Strength	C-273	37 psi	47 psi
Shear Modulus	C-273	525 psi	945 psi
Flexural Strength	D-790	53 psi	95 psi
Flexural Modulus	D-790	998 psi	2100 psi
Water Absorption	D-2842	<2%	<2%
Closed Cell Content	D-6226	>85%	>85%

COMMON CHEMICAL RESISTANCE

CHEMICAL	RESISTANCE
Water	Excellent
Toluene	Good
Gasoline	Excellent
Sulfuric Acid 10%	Excellent
Hydrochloric Acid 10%	Excellent
Isopropanol	Excellent
Benzene	Excellent
Motor Oil	Excellent
Acetone	Poor
Ethyl Alcohol	Poor
Methyl Alcohol	Poor

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/14/2015 Reviewed on 01/28/2015

1 Identification

· **Product identifier**

· **Trade name: A-Component**

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Uretek™
P.O. Box 1394
Tomball, TX 77377
USA
{ICR}: (888) 810-3107
{USA}: (888) 287-3835
uretekicr.com
uretekusa.com

· **Information department:** EH&S Department
· **Emergency telephone number:**
During normal operating hours: (770) 528-9556
ChemTrec: (800) 424-9300

2 Hazard(s) identification

· **Classification of the substance or mixture**

Health hazard

Resp. Sens. 1	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Carc. 2	H351	Suspected of causing cancer.
STOT RE 2	H373	May cause damage to organs through prolonged or repeated exposure.

Acute Tox. 4	H332	Harmful if inhaled.
Skin Irrit. 2	H315	Causes skin irritation.
Eye Irrit. 2A	H319	Causes serious eye irritation.
Skin Sens. 1	H317	May cause an allergic skin reaction.
STOT SE 3	H335	May cause respiratory irritation.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS07

GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
diphenylmethanediisocyanate,isomeres and homologues
4,4'-methylenediphenyl diisocyanate

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/14/2015 Reviewed on 01/28/2015

Trade name: A-Component

(Contd. of page 1)

o-(p-isocyanatobenzyl)phenyl isocyanate

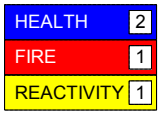
· **Hazard statements**
Harmful if inhaled.
Causes skin irritation.
Causes serious eye irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
Suspected of causing cancer.
May cause respiratory irritation.
May cause damage to organs through prolonged or repeated exposure.

· **Precautionary statements**
In case of inadequate ventilation wear respiratory protection.
Avoid breathing dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER/doctor if you feel unwell.
Wash contaminated clothing before reuse.
IF exposed or concerned: Get medical advice/attention.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Get medical advice/attention if you feel unwell.
In case of fire: Use for extinction: CO2, sand, extinguishing powder.
In case of fire: Use for extinction: Water spray.
IF ON SKIN: Wash with plenty of water.
Take off contaminated clothing and wash it before reuse.
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**
· **NFPA ratings (scale 0 - 4)**

Health = 1
Fire = 1
Reactivity = 1

· **HMIS-ratings (scale 0 - 4)**



Health = 2
Fire = 1
Reactivity = 1

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/14/2015 Reviewed on 01/28/2015

Trade name: A-Component

(Contd. of page 2)

· ***vPvB:*** *Not applicable.*

3 Composition/information on ingredients

· ***Chemical characterization: Mixtures***
· ***Description:*** *Mixture of the substances listed below with nonhazardous additions.*

· ***Dangerous components:***		
9016-87-9	*diphenylmethanediisocyanate,isomeres and homologues* *Resp. Sens. 1, H334; Carc. 2, H351; STOT RE 2, H373; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317; STOT SE 3, H335*	*30-60%*
101-68-8	*4,4'-methylenediphenyl diisocyanate* *Resp. Sens. 1, H334; Carc. 2, H351; STOT RE 2, H373; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317; STOT SE 3, H335*	*15-40%*
5873-54-1	*o-(p-isocyanatobenzyl)phenyl isocyanate* *Resp. Sens. 1, H334; Carc. 2, H351; STOT RE 2, H373; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317; STOT SE 3, H335*	*1-5%*

4 First-aid measures

· ***Description of first aid measures***
· ***General information:***
Symptoms of exposure may occur after several hours; therefore medical observation for at least 48 hours after exposure.
First Aid responders should pay attention to self-protection and use the recommended protective clothing. If potential for exposure exists refer to Section 8 for specific personal protective quipment.
· ***After inhalation:***
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.
If breathing is difficult, oxygen should be administered by qualified personnel.
· ***After skin contact:***
Immediately wash with water and soap and rinse thoroughly.
Get medical attention if symptoms occur.
Wash clothing before reuse.
Clean shoes thoroughly before reuse.
Suitable emergency safety shower should be immediately available.
· ***After eye contact:***
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· ***After swallowing:***
Do not induce vomiting; immediately call for medical help.
Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.
· ***Information for doctor:***
Symptomatic treatment and supportive therapy as indicated. Following severe exposure the patient should be kept under medical review for at least 48 hours.
· ***Most important symptoms and effects, both acute and delayed***
Eye Contact: Adverse symptoms may include the following: pain or irritation, watering, redness
Inhalation: Adverse symptoms may include: Respiratory tract irritation, coughing, wheezing and breathing difficulties, asthma.
Skin Contact: Adverse symptoms may include the following: irritation, redness.

(Contd. on page 4)

Safety Data Sheet
acc. to OSHA HCS

(Contd. of page 3)

Ingestion: No specific data
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:**
Use fire fighting measures that suit the environment.
ABC powder
Carbon dioxide
· **For safety reasons unsuitable extinguishing agents:**
Unsuitable extinguishing media: Water may be used if no other availalbe and then in copious quantities. Reaction between water and hot isocyanate may be vigorous. Prevent washings from entering water courses, keep fire exposed containers cool by spraying with water.
· **Special hazards arising from the substance or mixture**
In a fire or if heated, a pressure increase will occur and the container may bust.
Combusion products may include: Carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN.
· **Advice for firefighters**
Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Stay up wind and keep out of low areas where gases (fumes) can accumulate.
· **Protective equipment:**
Mouth respiratory protective device.
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. PVC boots, gloves, safety helmet and protective clothing should be worn.
Wear full protective suit.
· **Additional information**
Due to reaction of water producing CO2-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Containers may burst if overheated.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
· **Environmental precautions:**
Prevent from entering into soil or ditches. Inform the relevant authorities if the product has caused environmental pollution.
Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Absorb with materials such as: Dirt, Vermiculite, Sand, Clay.
Ensure adequate ventilation.
Contain spilled material if possible. Do NOT use absorbent materials such as: Cement powder (Note: may generate heat). Collect in suitable and properly label open containers. Do not place in sealed containers. Suitable containers include: Metal drums, Plastic drums, Polylined fiber pacs. Wash spill site with large quantities of water. Attempt to neutralize by addiing suitable decontaminant solution: Formulation 1: sodium carbonate 5 - 10%; liquid detergent 0.2 - 2%; water to make up to 100%, OR Formulation 2: concentrated

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ammonia solution 3- 8%; liquid detergent 0.2 -2%; water to make up to 100%. If ammonia is used, use good ventilation to prevent vapor exposure. See Section 13, for additional information.

· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Avoid contact with eyes and prolonged or repeated contact with skin.
Wash thoroughly after handling.
· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:**
Store in dry place. Protect from atmospheric moisture. Do not store product contaminated with water to prevent potential hazardous reaction
· **Further information about storage conditions:**
Keep receptacle tightly sealed.
Storage Period: 12 months
Storage Temp: 15 -35℃
· **Specific end use(s)** See the technical data sheet on this product for further information.

8 Exposure controls/personal protection

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**	
101-68-8 4,4'-methylenediphenyl diisocyanate	
PEL	Ceiling limit value: 0.2 mg/m³, 0.02 ppm
REL	Long-term value: 0.05 mg/m³, 0.005 ppm Ceiling limit value: 0.2* mg/m³, 0.02* ppm *10-min
TLV	Long-term value: 0.051 mg/m³, 0.005 ppm

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Wash contaminated clothing before reuse.
Ensure that eyewash stations and safety showers are close to the workstation area.

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· **Breathing equipment:**
In case of brief exposure at low atmospheric levels use an approved air-purifying respiratory equiped with an organic vapor sorbent and a particle filter. In case of intensive or longer exposure use a positive pressure air-supplying respirator (air line or self-contained breathing apparatus).
· **Protection of hands:**

Protective gloves

The workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
· **Material of gloves**
Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber, Polyethylene, EVAL, Neoprene, Nitrile, Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher is recommended.
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:**

Tightly sealed chemical goggles consistent with EN 166 or equivalent. Wear a face-shield which allows use of chemical goggles, or wear full-face respirator to protect face and eyes when there is any likelyhood of splashes.

· **Body protection:**
Personal protective clothing for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Fluid
Color:	According to product specification
· **Odor:**	Characteristic
· **Odour threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
· **Flash point:**	218 °C (424 °F)
· **Flammability (solid, gaseous):**	Not applicable.
· **Ignition temperature:**	
Decomposition temperature:	Not determined.

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Trade name: A-Component

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· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not determined.
· **Density:**	Not determined.
· **Relative density**	Not determined.
· **Vapour density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with**	
Water:	Not miscible or difficult to mix.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity**
Diisocyanates react with many materials and the rate of reaction increases with temperature as well as increased contact; these reactions can be violent. Contact is increased by stirring or if the other material mixes with the diisocyanate. Diisocyanates are not soluable in water and sink to the bottom, but react slowly at the interface. The reaction forms carbon dioxide gas and a layer of solid polyurea. Reaction with water will generate carbon dioxide and heat.
· **Chemical stability** This product is stable at recommended storage conditions (See Section 7).
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions**
Can occur. Exposure to elevated temperatures can cause product to decompose and generate gas. This can cause pressure build-up and/or rupturing of closed containers. Polymerization can be catalyzed by: Strong bases. Water.
· **Conditions to avoid**
Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid. Avoid moisture. Mateial reacts slowly with water, releasing carbon dioxide which can cause pressure buildup and rupture of closed containers. Elevated temperatures accelerate this reaction.
· **Incompatible materials:** Water, alcohols, amines, bases and acids
· **Hazardous decomposition products:**
Combustion products may include: carbon oxides (CO, CO2) nitrogen oxides (NO, NO2, etc.) hydrocarbons and HCN.

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11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**		
9016-87-9 diphenylmethanediisocyanate,isomeres and homologues		
Oral	LD50	>10000 mg/kg (rat)
Dermal	LD50	>9400 mg/kg (rabbit)
Inhalative	LC50/4 h	0.49 mg/l (rat)
101-68-8 4,4'-methylenediphenyl diisocyanate		
Oral	LD50	>10000 mg/kg (rat)
Dermal	LD50	>9400 mg/kg (rabbit)
Inhalative	LC50/4 h	0.49 mg/l (rat)

· **Primary irritant effect:**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:**
Sensitization possible through inhalation.
Sensitization possible through skin contact.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Irritant
May cause damage to organs through prolonged or repeated exposure if inhaled. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**	
9016-87-9	diphenylmethanediisocyanate,isomeres and homologues
101-68-8	4,4'-methylenediphenyl diisocyanate

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**	
9016-87-9 diphenylmethanediisocyanate,isomeres and homologues	
EC50 (static)	>1000 mg/kg (daphnia)
101-68-8 4,4'-methylenediphenyl diisocyanate	
EC50 (static)	>1000 mg/kg (daphnia)

· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.

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· **Additional ecological information:**
· **General notes:**
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**	
· **DOT**	UN3082
· **ADN, IMDG, IATA**	not regulated
· **UN proper shipping name**	
· **DOT**	Environmentally hazardous substances, liquid, n.o.s. (Methylene Diphenyl Diisocyanate)
· **ADN, IMDG, IATA**	not regulated
· **Transport hazard class(es)**	
· **DOT**	DOT Non-Bulk: Not Regulated
· **Class**	9 Miscellaneous dangerous substances and articles
· **Label**	9
· **ADN/R Class:**	not regulated
· **Packing group**	
· **DOT**	III
· **IMDG, IATA**	not regulated
· **Environmental hazards:**	
· **Marine pollutant:**	No
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.

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Trade name: A-Component

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· **UN "Model Regulation":** not regulated

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **Clean Air Act**

101-68-8	4,4'-methylenediphenyl diisocyanate	15-40%

· **Clean Water Act**

None of the ingredients is listed.

· **Sara**

· **SARA 302/304 Extremely Hazardous Substance**

None of the ingredients is listed.

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

9016-87-9	diphenylmethanediisocyanate,isomeres and homologues
101-68-8	4,4'-methylenediphenyl diisocyanate

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Massachusetts Right To Know**

All ingredients are listed.

· **New Jersey Right To Know**

All ingredients are listed.

· **Pennsylvania Right To Know**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

9016-87-9	diphenylmethanediisocyanate,isomeres and homologues	CBD
101-68-8	4,4'-methylenediphenyl diisocyanate	D, CBD

· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

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Trade name: A-Component

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· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

-

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS07 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
diphenylmethanediisocyanate,isomeres and homologues
4,4'-methylenediphenyl diisocyanate
o-(p-isocyanatobenzyl)phenyl isocyanate
· **Hazard statements**
Harmful if inhaled.
Causes skin irritation.
Causes serious eye irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
Suspected of causing cancer.
May cause respiratory irritation.
May cause damage to organs through prolonged or repeated exposure.
· **Precautionary statements**
In case of inadequate ventilation wear respiratory protection.
Avoid breathing dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER/doctor if you feel unwell.
Wash contaminated clothing before reuse.
IF exposed or concerned: Get medical advice/attention.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Get medical advice/attention if you feel unwell.
In case of fire: Use for extinction: CO2, sand, extinguishing powder.
In case of fire: Use for extinction: Water spray.
IF ON SKIN: Wash with plenty of water.
Take off contaminated clothing and wash it before reuse.
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local/regional/national/international regulations.

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Trade name: A-Component

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· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

Uretek™ urges each customer of recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effectivie date shown on this (M)SDS. However, no warranty, express or implied is given. Regulatory reuirements are subject to change and may differ between various locations It is the buyer's/user's responsibility to ensure that his/her activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the produt are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDS, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most curent version.

· **Department issuing SDS:** Environmental Health & Safety Department.
· **Contact:** M. Phillips
· **Date of preparation / last revision** 10/14/2015 / -
· **Abbreviations and acronyms:**
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Acute Tox. 4: Acute toxicity, Hazard Category 4
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A
Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Carc. 2: Carcinogenicity, Hazard Category 2
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2

Safety Data Sheet
acc. to OSHA HCS

Printing date 10/09/2015 *Reviewed on 03/02/2015*

1 Identification

· **Product identifier**

· **Trade name: Uretek™ 4R Resin**

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Uretek™
P.O. Box 1394
Tomball, TX 77377
USA
{ICR}: (888) 810-3107
{USA}: (888) 287-3835
uretekicr.com
uretekusa.com

· **Information department:** *EH&S Department*
· **Emergency telephone number:**
During normal operating hours: (770) 528-9556
ChemTrec: (800) 424-9300

2 Hazard(s) identification

· **Classification of the substance or mixture**

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2B H320 Causes eye irritation.

· **Label elements**
· **GHS label elements** *The product is classified and labeled according to the Globally Harmonized System (GHS).*
· **Hazard pictograms**

GHS07

· **Signal word** *Warning*
· **Hazard statements**
Causes skin and eye irritation.
· **Precautionary statements**
In case of inadequate ventilation wear respiratory protection.
Avoid breathing dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED: Call a doctor if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Wash contaminated clothing before reuse.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use for extinction: CO2, powder or water spray.

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Trade name: Uretek™ 4R Resin

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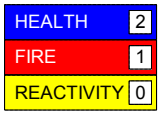
IF ON SKIN: Wash with plenty of soap and water.
Store in a well-ventilated place. Keep cool.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**
· **NFPA ratings (scale 0 - 4)**

Health = 2
Fire = 1
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = 2
Fire = 1
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**			
25791-96-2	Polyol(s)		7-13%
25265-71-8	oxydipropanol	Acute Tox. 3, H331	≤ 1.0%

· **Non-Hazardous Components**		
	Polyol(s)	15-40%
6846-50-0	2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	15-40%

4 First-aid measures

· **Description of first aid measures**
· **General information:**
No special measures required.
First Aid responders should pay attention to self-protection and use the recommended protective clothing. If potential for exposure exists refer to Section 8 for specific personal protective quipment.
· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
· **After skin contact:** Suitable emergency safety shower should be immediately available.
· **After eye contact:** Rinse opened eye for several minutes under running water.
· **After swallowing:**
Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.
· **Information for doctor:**
Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.

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(Contd. of page 2)

· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:**
CO2, extinguishing powder or water spray. Fight larger fires with water spray.
Use fire fighting measures that suit the environment.
· **For safety reasons unsuitable extinguishing agents:** Do not use direct water stream. May spread fire.
· **Special hazards arising from the substance or mixture** There are no known unusual fire or expolsion hazards.
· **Advice for firefighters**
· **Protective equipment:**
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. PVC boots, gloves, safety helmet and protective clothing should be worn.
· **Additional information**
Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers. Fight fire from protected location or safe distance. Move container(s) from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off if not contained, may cause environmental damage.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Isolate area. Keep unnecessary and unprotected personnel from entering the area. Spilled material may cause slipping hazard. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
· **Environmental precautions:**
Prevent from entering into soil or ditches. Inform the relevant authorities if the product has caused environmental pollution.
Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Contain spilled material if possible. Absorb with materials such as: Dirt, Sand, Sawdust. Collect in suitable and properly labeled containers. Wash the spill site with water. See Section 13, Disposal Considerations, for additional information.
· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
No special measures required.
Do not swallow. Wash thoroughly after handling. Keep container closed. See Section 8, Exposure Controls and Personal Protection.

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acc. to OSHA HCS

Printing date 10/09/2015 Reviewed on 03/02/2015

Trade name: Uretek™ 4R Resin

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· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:**
Storage Period: 6 months
Storage Temp: 15 -35℃
· **Specific end use(s)** See the technical data sheet on this product for further information.

8 Exposure controls/personal protection

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
· **Breathing equipment:**
In case of brief exposure at low atmospheric levels use an approved air-purifying respiratory equiped with an organic vapor sorbent and a particle filter. In case of intensive or longer exposure use a positive pressure air-supplying respirator (air line or self-contained breathing apparatus).
· **Protection of hands:**
The workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
· **Material of gloves**
Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber, Polyethylene, EVAL, Neoprene, Nitrile, Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher is recommended.
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:**

Tightly sealed chemical goggles consistent with EN 166 or equivalent. Wear a face-shield which allows use of chemical goggles, or wear full-face respirator to protect face and eyes when there is any likelyhood of splashes.

· **Body protection:**
Personal protective clothing for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

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9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Liquid
Color:	Yellow
· **Odor:**	Amine-like
· **Odour threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
· **Flash point:**	100 °C (212 °F)
· **Flammability (solid, gaseous):**	Not applicable.
· **Ignition temperature:**	
Decomposition temperature:	Not determined.
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not determined.
· **Density:**	Not determined.
· **Relative density**	Not determined.
· **Vapour density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with**	
Water:	Not miscible or difficult to mix.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability** This product is stable at recommended storage conditions (See Section 7).
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** Avoid moisture to protect product quality.

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Trade name: Uretek™ 4R Resin

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· **Incompatible materials:**
Avoid contact with oxidizing materials. Avoid contact with: Strong acids. Strong bases. Avoid unintended contact with isocyanates. The reaction of polyols and isocyanates generate heat.
· **Hazardous decomposition products:** CO and CO2

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

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13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Smaller quantities can be disposed of with household waste.
Waste Disposal: Incinerate in a licensed facility. Do not discharge into waterways or sewer systems.

Container Disposal: Steel drums must be emptied (as defined by RCRA, Section 261.7 or state regulations that may be more stringent) and can be sent to a licensed drum reconditioner for reuse, a scrap metal dealer, or an approved landfill. Drums destined for a scrap dealer or landfill must be punctured or crushed to prevent reuse.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**	
· **DOT, ADN, IMDG, IATA**	not regulated
· **UN proper shipping name**	
· **DOT, ADN, IMDG, IATA**	not regulated
· **Transport hazard class(es)**	
· **DOT**	DOT Non-Bulk: Not Regulated
· **Class**	not regulated
· **ADN/R Class:**	not regulated
· **Packing group**	
· **DOT, IMDG, IATA**	not regulated
· **Environmental hazards:**	
· **Marine pollutant:**	No
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **UN "Model Regulation":**	not regulated

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **Clean Air Act**
None of the ingredients is listed.

· **Clean Water Act**
None of the ingredients is listed.

· **Sara**

· **SARA 302/304 Extremely Hazardous Substance**
None of the ingredients is listed.

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· **Section 355 (extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**
None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Massachusetts Right To Know**

57-55-6	propane-1,2-diol

· **New Jersey Right To Know**

25265-71-8	oxydipropanol

· **Pennsylvania Right To Know**

25265-71-8	oxydipropanol
57-55-6	propane-1,2-diol

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
-

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS07

· **Signal word** Warning
· **Hazard statements**
Causes skin and eye irritation.
· **Precautionary statements**
In case of inadequate ventilation wear respiratory protection.
Avoid breathing dust/fume/gas/mist/vapors/spray

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Trade name: Uretek™ 4R Resin

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Wear protective gloves/protective clothing/eye protection/face protection.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED: Call a doctor if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Wash contaminated clothing before reuse.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use for extinction: CO2, powder or water spray.
IF ON SKIN: Wash with plenty of soap and water.
Store in a well-ventilated place. Keep cool.
Dispose of contents/container in accordance with local/regional/national/international regulations.
· **Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.*

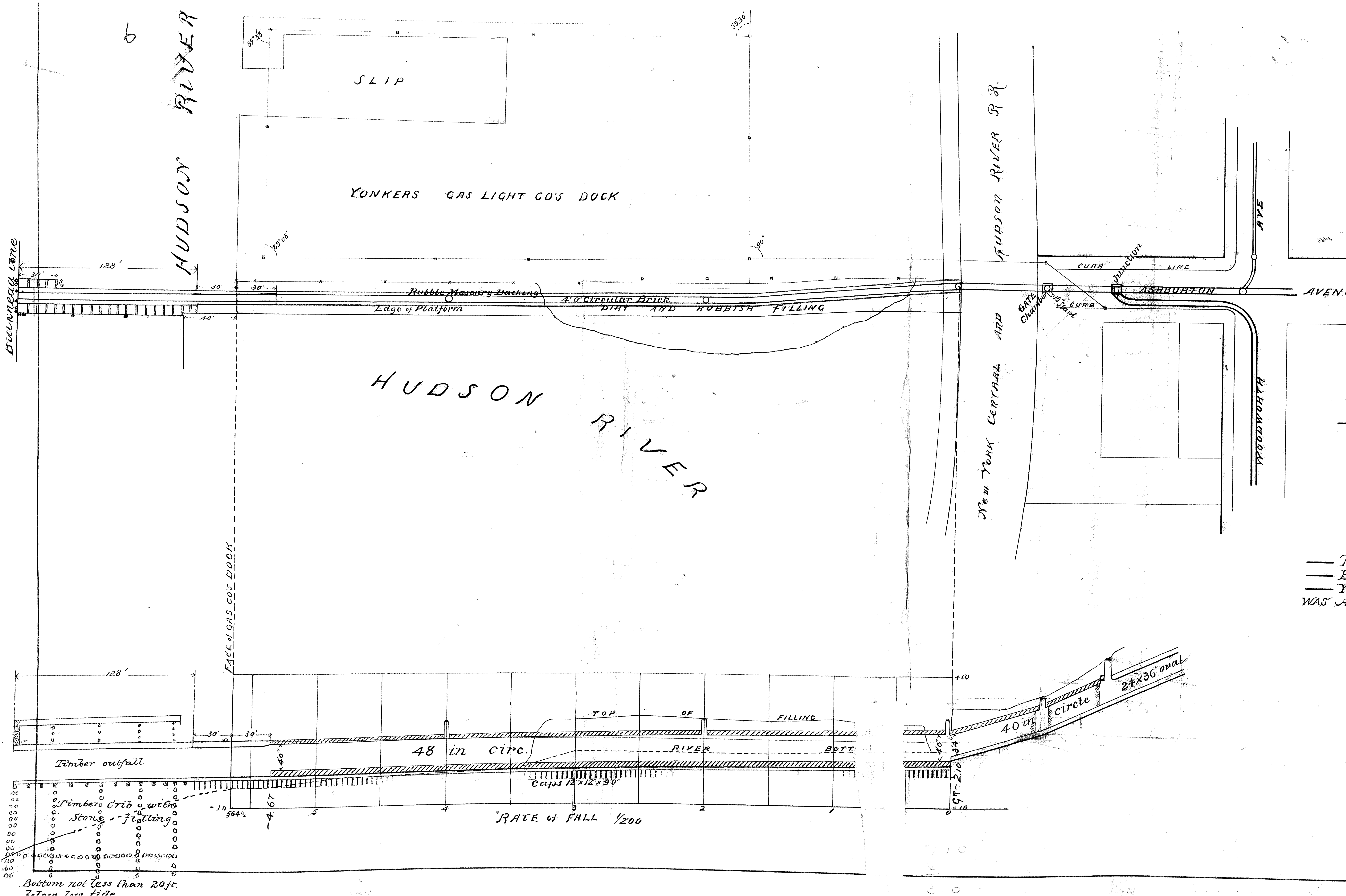
16 Other information

Uretek™ urges each customer of recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effectivie date shown on this (M)SDS. However, no warranty, express or implied is given. Regulatory reuirements are subject to change and may differ between various locations It is the buyer's/user's responsibility to ensure that his/her activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the produt are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDS, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most curent version.

· **Recommended restriction of use** *FOR PROFESSIONAL USE ONLY*

· **Department issuing SDS:** *Environmental Health & Safety Department.*
· **Contact:** *M. Phillips*
· **Date of preparation / last revision** *10/09/2015 / -*
· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
Acute Tox. 3: Acute toxicity, Hazard Category 3
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Eye Irrit. 2B: Serious eye damage/eye irritation, Hazard Category 2B

Attachment B – 1888 City of Yonkers Plan and Profile for CSO



CITY OF YONKERS

PLAN AND PROFILE

in the matter of extending

THE ASHBURTON AVENUE SEWER

TO OR NEAR THE BULKHEAD LINE

SCALE Horizontal 50 feet = 1 inch, Vertical 10 " = 1 inch — NOVEMBER 1887. W. A. BALDWIN, C.E.

C. V. [illegible]

THE UNDERSIGNED THE PRESIDENT AND CLERK OF THE BOARD OF WATER COMMISSIONERS OF THE CITY OF YONKERS DO HEREBY CERTIFY THAT THIS PLAN AND PROFILE WAS ADOPTED BY THE SAID BOARD ~~NOVEMBER 14TH 1887~~ JUNE 7th 1888.

R. Eickemeyer PRESIDENT

Jno. A. Lockwood CLERK