



CONSTRUCTION LEADERS

LETTER OF TRANSMITTAL	
DATE: April 6, 2015	PCL JOB NO: 5515002
ATTN: Chris Barker	TRANSMITTAL NO: 052

To: **State of Vermont Agency of Transportation**
One National Life Drive

(802) 828-0053

Re: Hartford Lateral Slide
Project No.: IM 091-2(79)
Contract ID.: 12A132

County: Windsor

PCL FILE NO: 5515002-25.1

WE ARE SENDING Attached Under separate cover via **Email & SP** the following:

Shop drawings Prints Plans Samples Specifications

Copy of Letter Change Order Other

COPIES	SPEC.	REVISION	DESCRIPTION
1	900.608	1	HPC Rapid Set Mix Design

TRANSMITTED for as checked below:

For approval Approved as submitted Resubmit **1** Copies for approval

For your use Approved as noted Submit Copies for distribution

As requested Returned for corrections Return Corrected prints

For review and comment

Remarks:

The included mix design replaces the previously submitted mix design for the HPC Rapid Set. CTS Concrete Rapid Set DOT Repair Mortar is already on the VTrans Approved Products List under section 780.03, Rapid Setting Concrete Repair Material.

CTS conducted testing on this material last week using (5) quarts of water and (1) Flow Control packet per 70lb bag. The strength results were as follows: **3hr – 5,163psi** **4hr – 5,558psi** **5hr – 5,744psi**

Please return an email of this approved submittal to Erich Heymann (ewheymann@pcl.com) and Jeremy Mackling (jmackling@pcl.com).

We request the review and return of this submittal within **2 days**. Please advise if this request cannot be met so we can plan accordingly.

By: **Erich Heymann**, Project Engineer

COPY TO: Project Files



CONSTRUCTION LEADERS

**SUBMITTAL NO. : 25.1
HPC Rapid Set Mix Design**

Item No.	Specification	Description
1	900.608	HPC Rapid Set Mix Design

PROJECT:
HARTFORD LATERAL SLIDE
PROJECT NO.: IM 091-2(79)
CONTRACT ID.: 12A132

OWNER:
STATE OF VERMONT AGENCY OF TRANSPORTATION

ENGINEER OF RECORD:
STATE OF VERMONT AGENCY OF TRANSPORTATION

CONTRACTOR:
PCL CIVIL CONSTRUCTORS, INC.

APRIL 6, 2015

Project Specific Material Proposal

Fill of Joint for Precast Approach Slab using CTS Concrete Rapid Set® DOT Repair Mortar

Project Name: Hartford / VAOT
Project Number: IM 091-2(79)

PART 1 GENERAL

1.1 SUMMARY

PCL Civil Constructors and CTS Concrete proposes the use of “Repair Set DOT Repair Mortar” to be used as a filler of the adjacent joints between precast approach slabs. We believe this is the best product given the time constraints to achieve 5,000 PSI during the bridge closure periods (BCPs).

1.2 RELATED CONTRACT DOCUMENTS

- A. Contract Drawings: Sheets 97 thru 99 of 166
- B. Project Specifications: Section 900 Special Provision Items, items 47 thru 55
- C. Project Specifications: Item 144 (b)

1.3 SUBMITTALS

- A. Attached product manufacturer's Technical Data Sheet.
 - DOT Repair Mortar
 - Flow Control
- B. Attached product manufacturer's Material Safety Data Sheets (MSDS).
 - DOT Repair Mortar
 - Flow Control
- C. Attached product data for manufacturer's recommended Mechanical Mixer.
- D. This document with specific reference to Hartford Project – IM 091-2(79).
- E. A real size mock is intended to be done for this product prior to use.

PART 2 PRODUCTS

2.1 MATERIAL

For material information refer to the attached files mentioned under the 1.2 Submittal Section above. The following materials will be added to Rapid Set DOT Mortar per manufacturer's recommendations to allow more working time and increase fluidity specific to the job:

- A. Flow Control – increases fluidity and strength

B. Course Aggregate: 3/8 to 3/4 inch meeting ASTM C33.

C. Potable Water

2.2 PRODUCT QUALITY ASSURANCE

A. Please refer to attached Technical Data Sheet.

2.3 DELIVERY, STORAGE, AND HANDLING

A. The delivery of materials to jobsite will be in original, unopened, undamaged containers that clearly show the manufacturer's name, product name, and batch number.

B. Materials is to be stored by PCL in a dry area off the ground protected from rain, snow, and other sources of moisture. Any sand or coarse aggregate will be in a well-drained area on a clean, solid surface and covered to prevent contamination with foreign matter.

PART 3 PROCEDURE

3.1 SURFACE PREPARATION

A. Preparation of the surface will be per Project Special Provisions Section 114 (b).

B. Concrete will be free of materials such as paint, oil, curing compound, bondbreaker, etc., that will inhibit bonding.

C. The subgrade will be well compacted per VTrans 2011 SSFC.

D. Reinforcing steel will be clean from foreign material.

E. Thoroughly clean extraneous material such as dirt, loose chips, and dust from concrete surface. If compressed air is used, it will be free of oil.

F. Concrete surface shall be saturated with potable water and standing water shall be removed from surface to achieve a Saturated, Surface Dry (SSD) condition.

3.2 MIXING

A. Personnel and Equipment will be organized prior to starting the operation.

B. Manufacturer recommends "PORTA0MIX PMH 80F-RL" as a mechanical mixer.

C. Use 5 quarts pf water per 70 pound bag of repair material.

D. Use 1 EA Rapid Set Flow Control per 70 pound bag of repair material.

E. Mixed material should have a temperature of about 70°F. Warmer material will set faster than expected and cooler material will have slower strength gain. Control the mixed temperature by protecting the bags of repair material from temperature extremes and adjust the mixed temperature by using hot or cold water.

- F. Place 45 to 50 pounds of coarse aggregate to extend the repair material. Mix concrete packets mentioned above into the water and add that water to the mixer. Add cement then mix for 2 to 3 minutes to achieve a uniform, lump-free consistency.

3.3 PLACEMENT

- A. Place repair material onto the Saturated, Surface Dry (SSD) substrate.
- B. Place repair material only if surface and ambient temperatures are above 45°F and rising.
- C. Place material immediately after mixing.
- D. Work material firmly into sides and bottom of repair area to achieve good bond.
- E. Do not featheredge material.
- F. Do not wait for bleed water, since there will probably be none. Begin final finishing as soon as possible.

3.4 CURING

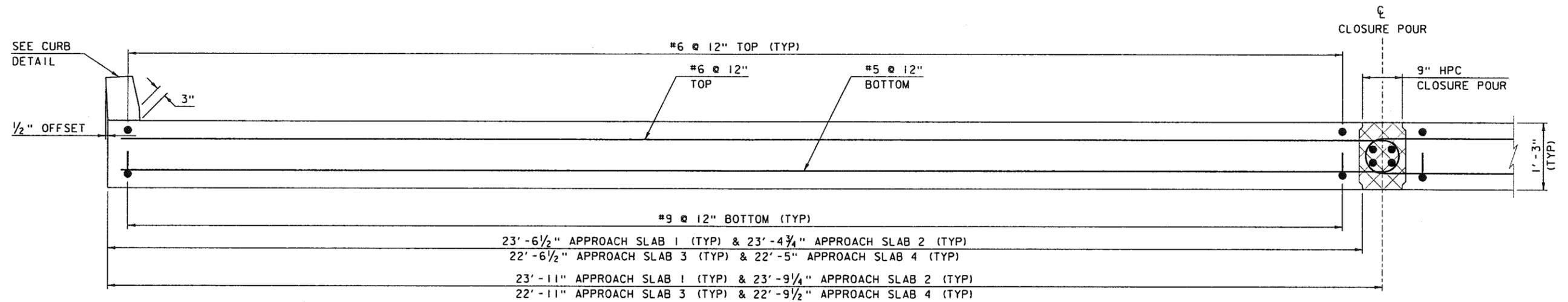
- A. Begin water cure when repair area begins to lose its moist sheen and keep continuously wet until 1 hour after final set.

3.5 TESTING

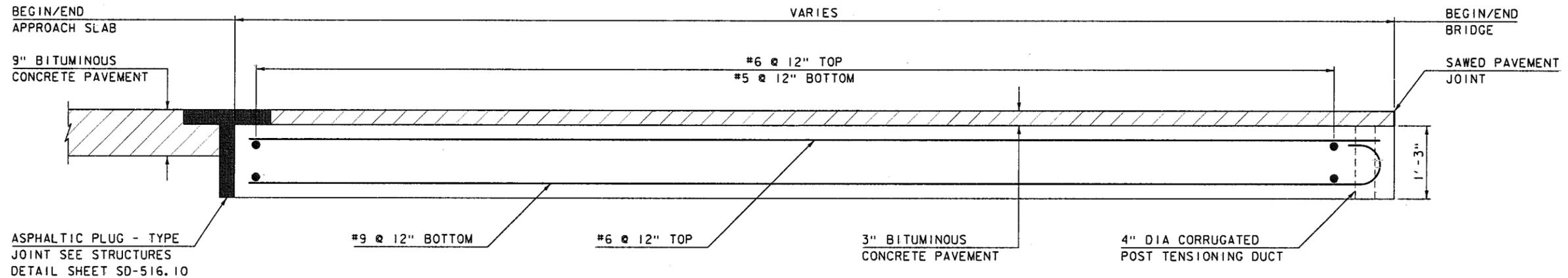
- A. Testing will be complete per Project Specific Special Provisions Section 114 (a).

3.6 CLEAN UP

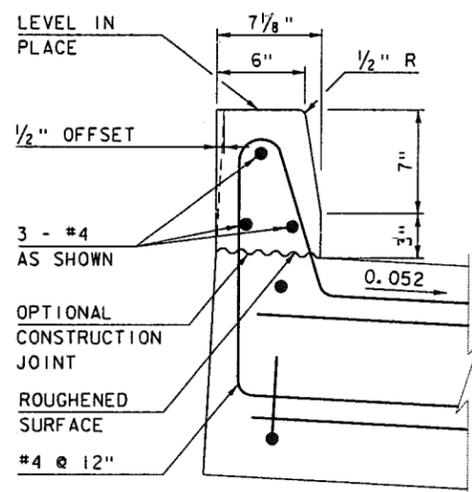
- A. Clean mixer immediately after use or add mix water and begin mixing immediately for the next batch. Do not allow buildup of hardened repair material in the mixer, since this creates inefficient mixing and the heat generated accelerates later batches.
- B. Clean all tools immediately after use.
- C. Clean excess material from surrounding areas immediately.



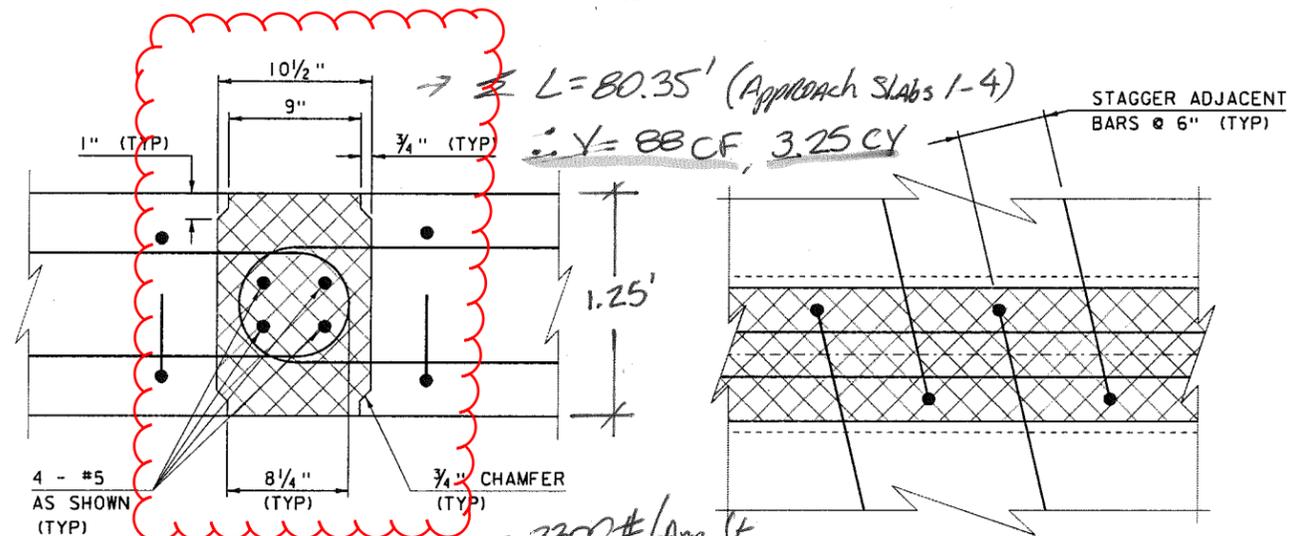
SECTION A-A
 SCALE 1" = 1'-0"



SECTION B-B
 SCALE 1" = 1'-0"



CURB DETAIL
 SCALE 2" = 1'-0"



JOINT DETAIL SECTION
 SCALE 2" = 1'-0"

JOINT DETAIL PLAN
 SCALE 2" = 1'-0"

NOTE:

- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- ▲ = CUT TO FIT IN FIELD
- 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

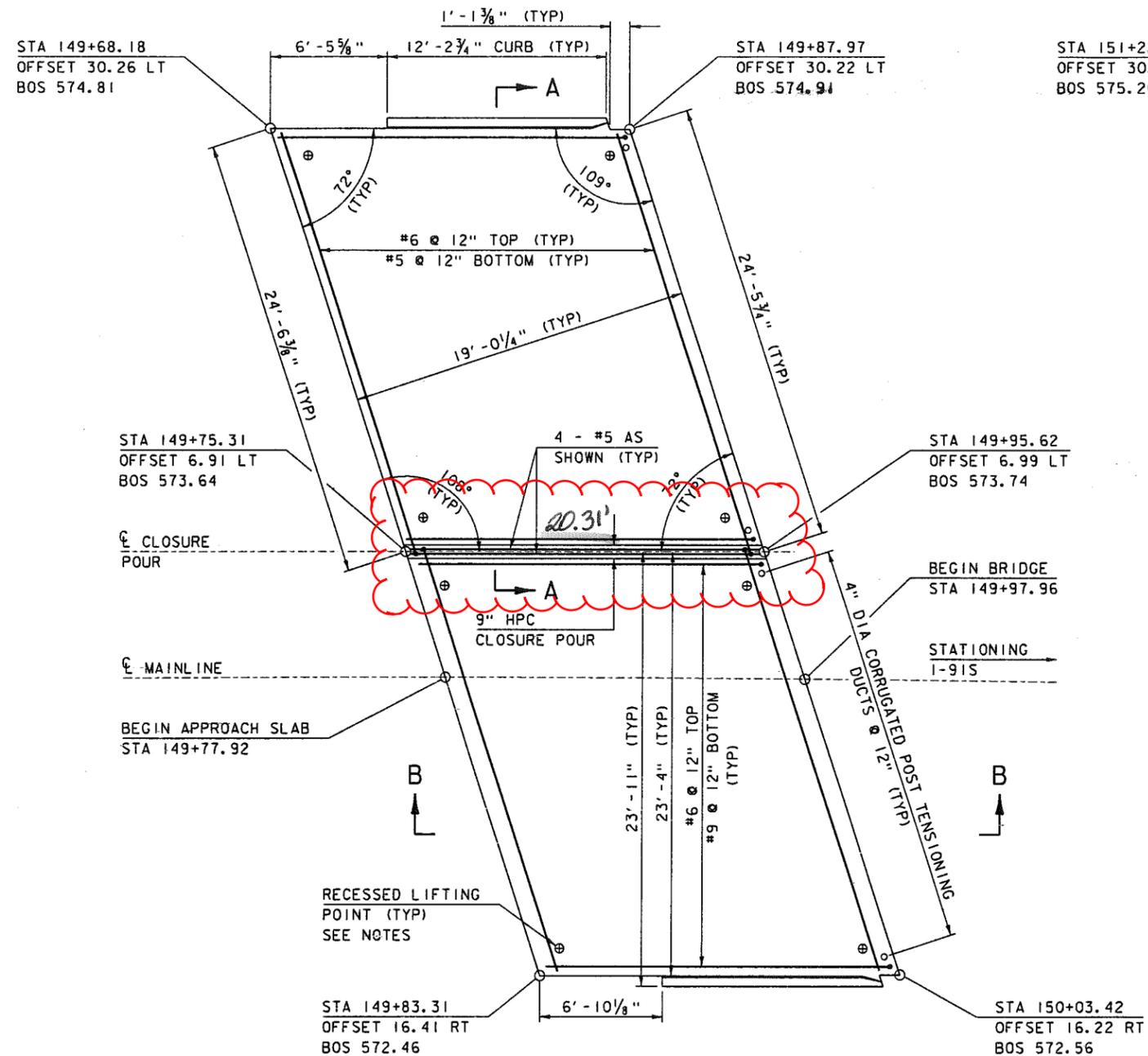
NOTES:

- 1) ALL APPROACH SLAB REINFORCING STEEL SHALL BE LEVEL II OR HIGHER.

PROJECT NAME: HARTFORD
 PROJECT NUMBER: IM 091-2(79)

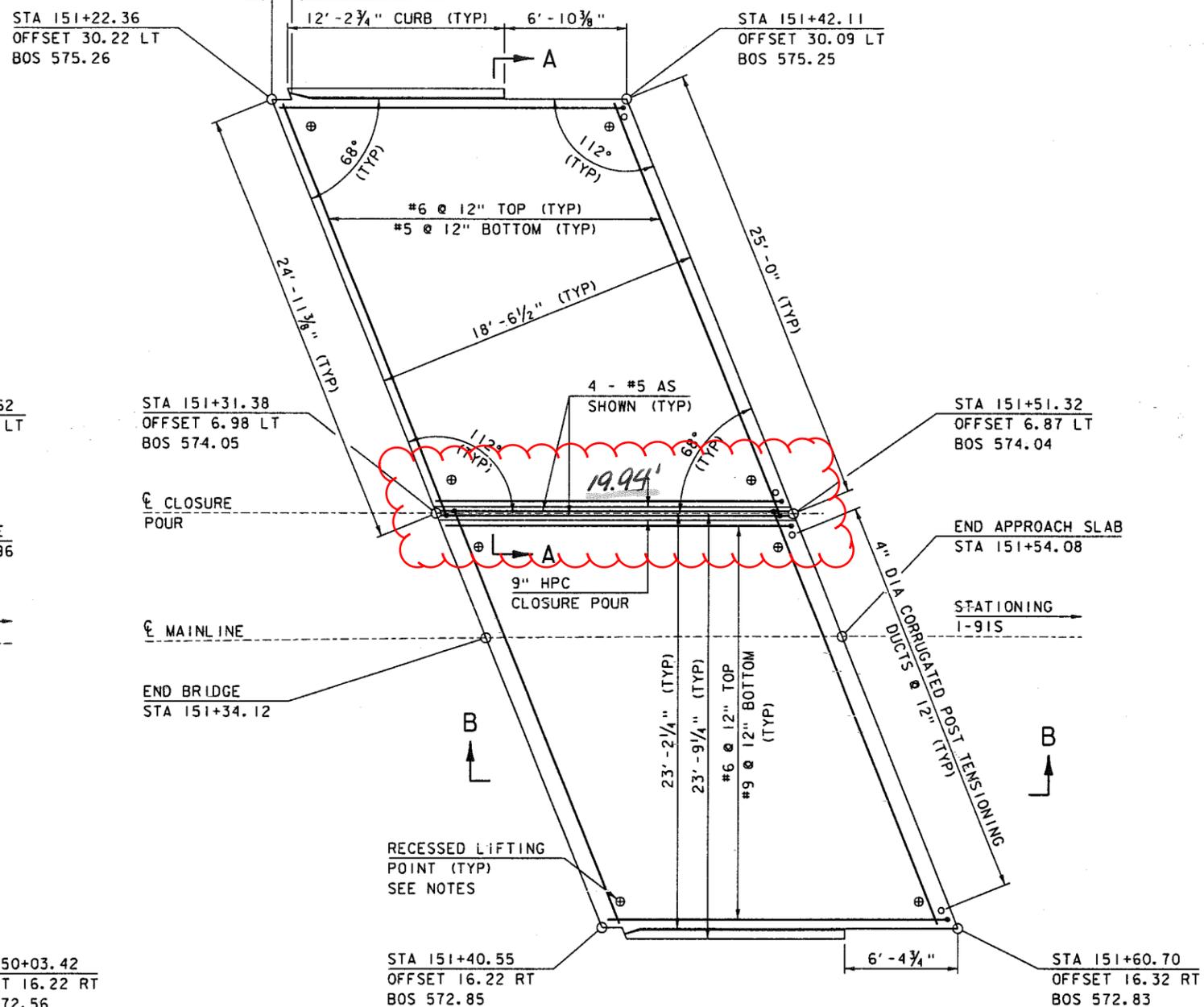
FILE NAME: sl2a132apslabs_43S.dgn
 PROJECT LEADER: K. HIGGINS
 DESIGNED BY: G. LAROCHE
 APPROACH SLAB DETAILS

PLOT DATE: 15-DEC-2014
 DRAWN BY: K. FRIEDLAND
 CHECKED BY: W. LAMMER
 SHEET 99 OF 166



APPROACH SLAB 1 PLAN

SCALE 1/4" = 1'-0"



APPROACH SLAB 2 PLAN

SCALE 1/4" = 1'-0"

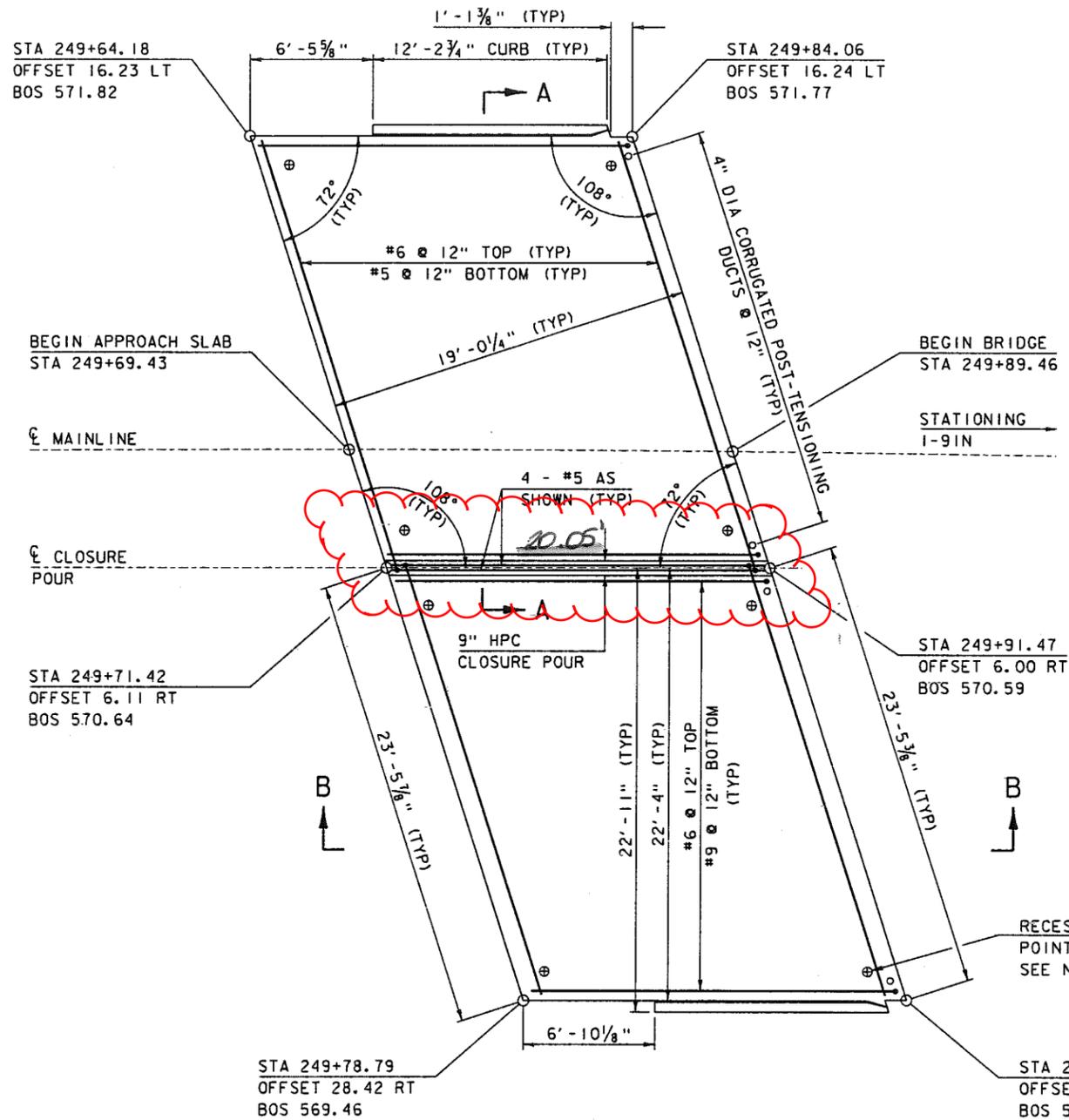
NOTES:

- 1) ALL APPROACH SLAB REINFORCING STEEL SHALL BE LEVEL II OR HIGHER.
- 2) BOS = BOTTOM OF SLAB
- 3) LIFTING POINTS SHALL BE DESIGNED BY OTHERS AND CALCULATIONS INCLUDED WITH SUBMITTAL.

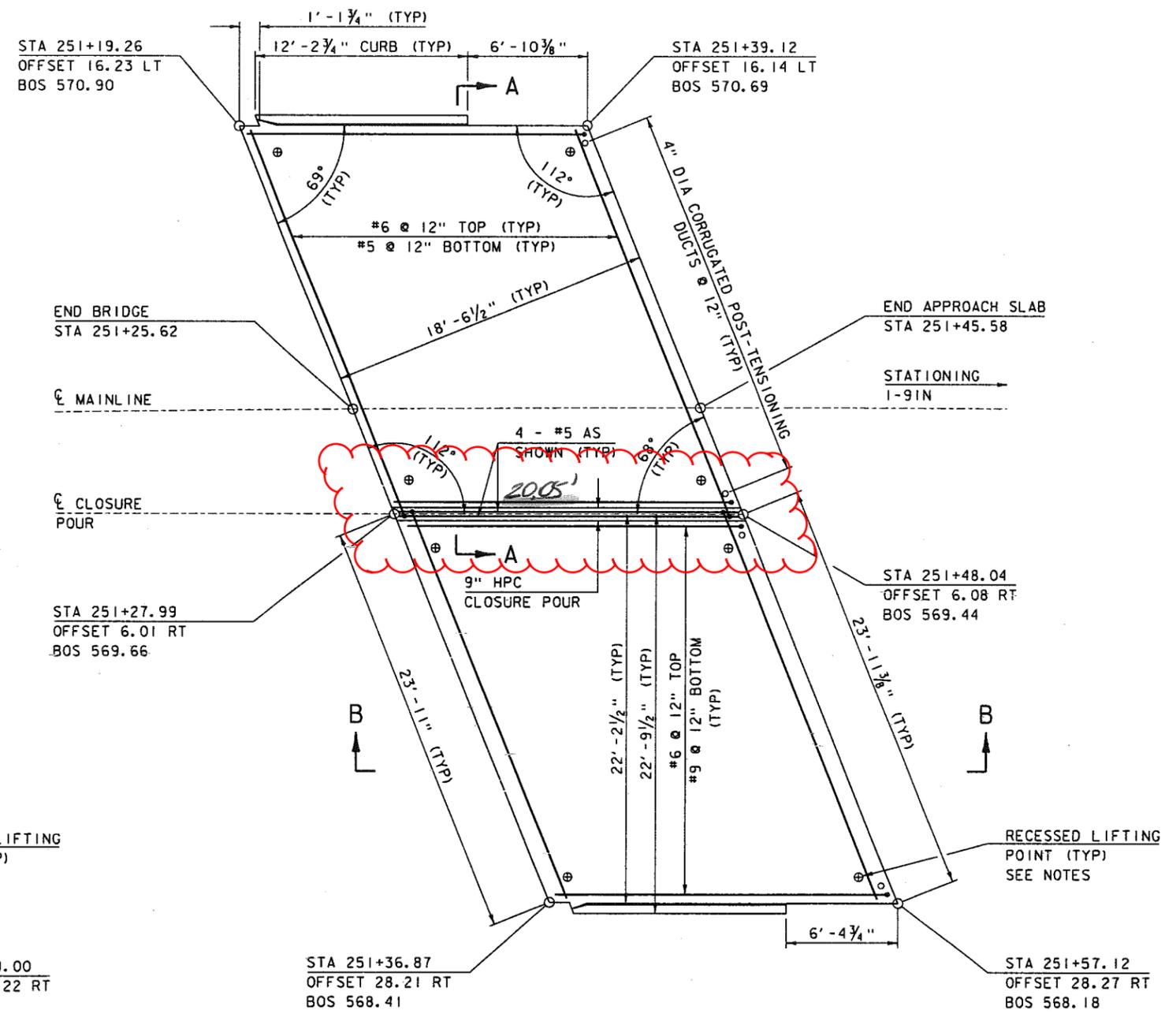
NOTE:

NF = NEAR FACE
 FF = FAR FACE
 EF = EACH FACE
 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: HARTFORD	PLOT DATE: 15-DEC-2014
PROJECT NUMBER: IM 091-2(79)	DRAWN BY: K. FRIEDLAND
FILE NAME: sl2a132apslabs_435.dgn	CHECKED BY: W. LAMMER
PROJECT LEADER: K. HIGGINS	SHEET 97 OF 166
DESIGNED BY: G. LAROCHE	
APPROACH SLAB DETAILS 435	



APPROACH SLAB 3 PLAN
SCALE 1/4" = 1'-0"



APPROACH SLAB 4 PLAN
SCALE 1/4" = 1'-0"

NOTES:

- 1) ALL APPROACH SLAB REINFORCING STEEL SHALL BE LEVEL II OR HIGHER.
- 2) BOS = BOTTOM OF SLAB
- 3) LIFTING POINTS SHALL BE DESIGNED BY OTHERS AND CALCULATIONS INCLUDED WITH SUBMITTAL.

NOTE:

- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: HARTFORD	PLOT DATE: 15-DEC-2014
PROJECT NUMBER: IM 091-2(79)	DRAWN BY: K. FRIEDLAND
FILE NAME: sl2a132apslabs_43N.dgn	CHECKED BY: W. LAMMER
PROJECT LEADER: K. HIGGINS	SHEET 98 OF 166
DESIGNED BY: G. LAROCHE	
APPROACH SLAB DETAILS 43N	



DOT REPAIR MORTAR

Industrial Grade Concrete Repair Mortar



Product Name:
Rapid Set®
DOT Repair Mortar
Industrial Grade Concrete Repair Mortar

MANUFACTURER:
CTS Cement Manufacturing Corp.
11065 Knott Ave. Suite A
Cypress, CA 90630
Phone: 800-929-3030
Web: www.rapidset.com
E-mail: info@rapidset.com

DESCRIPTION:
Rapid Set® DOT Repair Mortar is an air-entrained specialty mortar that, when combined with water, produces a high performance concrete repair material that allows for early opening of pavement repairs to traffic. Rapid Set® DOT Repair Mortar is ideal for use where rapid strength, low shrinkage and high durability are desired. The development of high early strength provides conformance with CRD-C621 in only 3 hours. No Chlorides are added.

USES:
Full and partial depth repair of concrete pavements; parking structure and bridge deck repair; industrial floors; freezer floors; new slab construction; formed concrete work; and grouting.

PHYSICAL PROPERTIES:

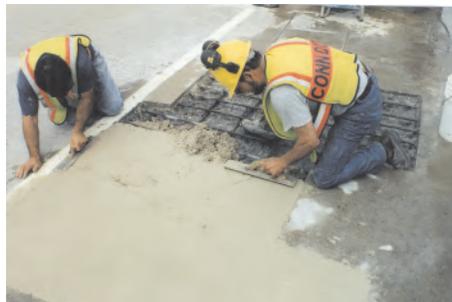
Set Time:
Initial: 17-min, Final: 20-min

Compressive Strength (psi)

1-hr	3-hr	4-hr	8-hr
3,140	3,725	4,650	5,500

Flexural: ASTM C78 (psi)

4-hr	1-day	28-day
500	650	1,200



Bond Strength: ASTM C 882
24 Hours 20 Days
2,000-psi 2,200-psi

Freeze/Thaw: ASTM C 666
1,000 cycles (weight loss 1.07%)
Dynamic modulus: 91%

Conforms to ASTM C 928

YIELD:
Rapid Set® DOT Repair Mortar is packaged in 70-lb. bags yielding approximately 0.7 cu. ft. When extended with 45 to 50 lbs. Aggregate yields approximately 0.9 cu. ft.

SURFACE PREPARATION:
Concrete repair surfaces should be clean, sound, and free from any materials that may inhibit bond such as oil, asphalt, curing compounds, acids, dirt and loose debris. Roughen surface and remove all unsound concrete. Immediately prior to placement the repair surface shall be thoroughly saturated with no standing water.

MIX & APPLY:
The use of a power driven mechanical mixer is recommended. Organize work so that all personnel and equipment are in place before mixing. Use clean Potable water and mix whole bags only. Use less water to achieve higher

strengths. For cold weather applications, use warm water. For concrete repairs over ¾" thick, up to 50lbs. of 3/8" stone may be added per bag. CAUTION: Do not add portland cement, lime, fly ash or any other admixtures unless approved by Rapid Set®.

Rapid Set® DOT Repair Mortar may be troweled, floated or broom finished. Install full depth sections. Do not install on frozen surfaces. In all applications use a method of consolidation that eliminates air voids. To extend working time use Rapid Set® SET CONTROL® retarding admixture.

Cure all Rapid Set® DOT Repair Mortar installations with water or an approved curing compound.

Limited Warranty: CTS Cement Manufacturing Corporation warrants its materials to be of good quality, and, at its sole option, within one year of sale, will replace defective materials or refund the purchase price thereof and such replacement or refund shall be the limit of CTS's responsibility. Except for the foregoing, all warranties, express or implied including merchantability and fitness for a particular purpose are excluded. CTS shall not be liable for any consequential, incidental, or special damages arising directly or indirectly from the use of the material.



Product Specification for:
Rapid Set® DOT Repair Mortar

SECTION 03 01 30 MAINTENANCE OF CAST-IN-PLACE CONCRETE
SECTION 03 01 40 MAINTENANCE OF PRECAST CONCRETE
SECTION 03 01 50 MAINTENANCE OF CAST DECKS AND UNDERLAYMENT
SECTION 03 01 70 MAINTENANCE OF MASS CONCRETE

(The above were formerly Section 03930)

SECTION 03 62 13 NON-METALLIC NON-SHRINK GROUTING

(The above was formerly Section 03600)

[Note to specifier: Delete unnecessary Sections.]

PART I GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions, apply to this section.

1.2 SUMMARY

- A. This section specifies material for very rapid concrete repairs from 1/2 inch to 24 inches inches thick and material for very rapid non-shrink grouting.

1.3 SUBMITTALS

- A. Substitutions:
[Note to specifier: While this does not belong here, it is shown for your review and inclusion in section 01 25 13.] Requests for substitution must be received by Architect at least 14 days prior to bid opening and shall be accepted only from prime bidders. Request shall include: documentation from an approved independent testing laboratory showing compliance with this specification, record of past performance, list of similar installations, detailed comparison of the qualities of the proposed substitute with the specified product, statement of product costs showing all savings passed to owner if approved, and certification by the contractor that the proposed substitute is in every significant way equal to or better than the specified product.
- B. Submit 2 copies of product manufacturer's literature and Material Safety Data Sheets (MSDS). [Note to specifier: Add any other required submissions.]

1.4 QUALITY ASSURANCE

A. References: Comply with the following unless modified by this specification.

1. ASTM C33-03 Standard Specification for Concrete Aggregates
2. ASTM C78-02 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
3. ASTM C109/C109M-02 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimens)
4. ASTM C191-04 Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle
5. ASTM C666/C666M-03 Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
6. ASTM C882-99 Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear
7. ASTM C928-00 Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs
8. CRD 621-82A Corps of Engineers Non-Shrink Grout

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to jobsite in original, unopened, undamaged containers that clearly show the manufacturer's name, product name, and batch number.
- B. Storage: Store material in a dry area off the ground protected from rain, snow, and other sources of moisture. Protect material from temperature extremes. Store bulk sand and coarse aggregate in a well drained area on a clean, solid surface and cover to prevent contamination with foreign matter.

PART 2 PRODUCTS

2.1 REPAIR MATERIAL

- A. Shall be manufactured by CTS Cement Manufacturing Corp., 11065 Knott Avenue, Suite A, Cypress, CA, 90630. Phone: 800-929-3030 Website: www.ctscement.com
- B. Rapid Set® DOT Repair Mortar: Cement based, rapid-setting, low shrinkage, extendable, concrete repair material that can be used from 1/2 inch to 6 inches thick when used neat and from 2 inches to 24 inches thick when

extended.

1. Set time per ASTM C191 (Mod.) at 70°F:
Initial set 17 minutes. Final set 20 minutes.
2. Compressive strength per ASTM C109 (Mod.):
1 hour* 3140 psi
3 hour 3725 psi
4 hour 4650 psi
8 hour 5500 psi
* after final set
3. Flexural strength per ASTM C78 (Mod.):
4 hour 500 psi
1 day 650 psi
28 day 1200 psi
4. Bond strength per ASTM C882 (Mod.):
1 day 2000 psi
20 day 2200 psi
5. Freeze/thaw per ASTM C666:
1000 cycles 1.07% loss
Dynamic modulus 91%
In 10% sodium-chloride solution
10 cycles 0.0% loss
15 cycles 0.0% loss
25 cycles 0.3% loss
6. Shall meet ASTM C928 for packaged concrete repair materials.
7. Shall meet CRD C621 for non-shrink grouting.
8. Shall be non-metallic with no added chlorides and shall be pre-blended with the sand.

C. Rapid Set® Concrete Pharmacy®: Add these small, pre-measured packets to the repair material per manufacturer's recommendations to change the properties as shown. [Note to specifier: List only the products that you want to be used on your job.]

1. Set Control – slows down the set time
2. Flow Control – increases fluidity and strength
3. Fast – speeds up the set time
4. Bond – increases bond strength
5. Fiber – reduces plastic and crazing cracks
6. Light – lightens the color of the repair material
7. Dark – darkens the color of the repair material

2.2 Course Aggregate: 3/8 to 3/4 inch meeting ASTM C33.

2.3 Water: Potable.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

- A. The perimeter of the area to be repaired shall be sawcut slightly undercutting the sound concrete (without cutting reinforcing steel) or chipped perpendicular to the surface to a minimum depth of 2 inches.
- B. Mechanically remove unsound, contaminated concrete to a minimum depth of 2 inches.
- C. The aggregate fractured surface shall have a minimum profile of 1/8 inch.
- D. Concrete must be free of materials such as paint, oil, curing compound, bond breaker, etc. that will inhibit bonding.
- E. If placed directly on the subgrade, the subgrade must be well compacted. [Note to specifier: State the compaction you require.]
- F. Clean reinforcing steel by sandblasting or other mechanical means to achieve a white metal finish. [Note to specifier: Add special requirements concerning replacement of reinforcing that has lost too much cross-sectional area.]
- G. Thoroughly clean extraneous material such as dirt, loose chips, and dust from concrete surface. If compressed air is used, it shall be free of oil.
- H. Concrete surface shall be saturated with potable water and standing water shall be removed from surface to achieve a Saturated, Surface Dry (SSD) condition.
- I. For grouting applications, build watertight non-absorbant forms leaving sufficient room to pour the grout.

3.2 MIXING

- A. Organize personnel and equipment before mixing.
- B. Use 5 to 6.5 quarts of water per 70 pound bag of repair material. [Note to specifier: Less water means more strength and more water means a more flowable consistency.]
- C. Mixed material should have a temperature of about 70°F. Warmer material

will set faster than expected and cooler material will have slower strength gain. Control the mixed temperature by protecting the bags of repair material from temperature extremes and adjust the mixed temperature by using hot or cold water.

- D. Place 45 to 50 pounds of coarse aggregate (if the repair material is to be extended) in the mixer. Mix Concrete Pharmacy packets if necessary into the water and add that water to the mixer. Add cement then mix for 2 to 3 minutes to achieve a uniform, lump-free consistency.
- E. Do not add any other admixtures. Do not add sand, aggregate, or cement.
- F. Do not re-temper.

3.3 PLACEMENT

- A. Place repair material onto the Saturated, Surface Dry (SSD) substrate.
- B. Place repair material only if surface and ambient temperatures are above 45°F and rising.
- C. Protect adjacent surfaces with drop cloths, waterproof paper, or other means to maintain them free of material splashes, water, and debris.
- D. Place repair material immediately after mixing.
- E. Work repair material firmly into sides and bottom of repair area to achieve good bond.
- F. Do not featheredge repair material.
- G. For grouting applications, pour the grout from one direction only allowing it to fill the space completely.
- H. Do not wait for bleed water, since there will probably be none. Begin final finishing as soon as possible.

3.4 CURING

- A. Begin water cure when repair area begins to lose its moist sheen and keep continuously wet until 1 hour after final set.

3.5 CLEAN UP

- A. Clean mixer immediately after use or add mix water and begin mixing

immediately for the next batch. Do not allow buildup of hardened repair material in the mixer, since this creates inefficient mixing and the heat generated accelerates later batches.

- B. Clean all tools immediately after use.
- C. Clean excess material from surrounding areas immediately.

END OF SECTION



FLOW Control®

Additive to Increase Strength and Fluidity



Highlights:

- For use with Rapid Set® cement products
- Water reducing additive
- Increase fluidity
- Increases compressive strength

MANUFACTURER:

CTS Cement Manufacturing Corp.
11065 Knott Ave., Suite A
Cypress, CA 90630
Tel: 800-929-3030
Fax: 714-379-8270
Web: www.ctscement.com
E-mail: info@ctscement.com

PRODUCT NAME:

Rapid Set® FLOW CONTROL®

DESCRIPTION: Rapid Set FLOW CONTROL is a flow enhancing additive that allows higher fluidity or lower water requirement. Reducing water content by adding FLOW CONTROL will increase the final strength and durability.

APPLICATIONS: Use FLOW CONTROL with Rapid Set cement products. Add 1 to 4 packets of FLOW CONTROL to increase fluidity, and/or increase strength to satisfy jobsite requirements. A trial batch is recommended to fine-tune the dosage. FLOW CONTROL may be used in combination with all other products of the Rapid Set® Concrete Pharmacy®.

DIRECTIONS: Place desired amount of potable water into mixing container. **Add half cement product into mixing container and mix with mechanical drill/mixer. Continue mixing while adding FLOW CONTROL powder to mixing container. Add remaining cement product into mixing container. Follow product mixing instructions and maximum water requirements described on the package of the cement product. Mix to a workable, lump free consistency. Do NOT exceed 4 packets per 50 to 70 lb bag of Rapid Set cement.** Too much water in the mixture may cause aggregate segregation, which can reduce strengths.

SHELF LIFE: One year when stored in cool, dry conditions, out of direct sunlight.

USER RESPONSIBILITY: Before using Rapid Set products, read current technical data sheet, bulletins, product label and material safety data sheet at www.ctscement.com. It is the user's responsibility to review instructions and warnings for any Rapid Set product in current technical data sheet, bulletins, product label and material safety data sheet prior to use.

WARNING: DO NOT BREATHE DUST. AVOID CONTACT WITH SKIN AND EYES. Use material in well-ventilated areas only. Exposure to cement dust may irritate eyes, nose, throat, and the upper respiratory system/lungs. Silica exposure by inhalation may result in the development of lung injuries and pulmonary diseases, including silicosis and lung cancer. Seek medical treatment if you experience difficulty breathing while using this product. The use of a NIOSH/MSHA-approved respirator (P-, N- or R-95) is recommended to minimize inhalation of cement dust. Eat and drink only in dust-free areas to avoid ingesting cement dust. Skin contact with dry material or wet mixtures may result in moderate irritation to thickening/cracking of skin to severe skin damage from chemical burns. If irritation or burning occurs, seek medical treatment. Protect eyes with goggles or safety glasses with side shields. Cover skin with protective clothing. Use chemical resistant gloves and waterproof boots. In case of skin contact with cement dust, immediately wash off dust with soap and water to avoid skin damage. Wash skin areas exposed to wet concrete with cold, running water as soon as possible. In case of eye contact with cement dust, flush immediately and repeatedly with clean water and consult a physician. If wet concrete splashes into eyes, rinse eyes with clean water for at least 15 minutes and go to the hospital for further treatment.

PROPOSITION 65 WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Please refer to the MSDS and www.ctscement.com for additional safety information regarding this material.

LIMITED WARRANTY: CTS CEMENT MANUFACTURING CORP. (CTS) warrants its materials to be of good quality and at its option, within one year from date of sale, will replace material proven defective or refund purchase price thereof, and such replacement or refund shall be the limit of CTS's responsibility. Except for the foregoing, all warranties expressed or implied, including merchantability and fitness for a particular purpose, are excluded. CTS shall not be liable for any consequential, incidental, or special damages arising directly or indirectly from the use of the materials.



Mix, Transport and Pour Directly Onto the Floor

Mixing multiple batches is faster and easier with the new MEGA HIPPO liner canister system.



Mixing and placing of products is easier and faster. Cement screeds, grout, mortar, textured coatings, sealants, adhesives and other self-leveling compounds can be mixed quickly. The MEGA HIPPO boosts productivity, lowers labor costs and reduces physical effort.

The "Easy-roll Trolley" and the balanced "Easy-tilt Cradle" let you pour and spread material at the same time. Multi-stage pours to achieve a thicker screed are often not necessary. Wheel covers ensure that the casters remain free of screed splatter.



Mix, transport and pour directly onto the floor – up to 6 bags – with one operator



USE:

- Mix compounds, including cement screeds, overlay, underlay, textured coatings, sealants, adhesives, epoxies, resins, pre-tinted material and other self-leveling compounds
- Ideal for mixing in bulk and dispensing into small containers
- Consecutive batch mixing without downtime

FEATURES:

- High-torque, 15 Amp 2-gear motor
- Full-brim capacity of 23 gallons, 350 lbs. or 6-bag batches
- "Easy-roll Trolley" and balanced "Easy-tilt Cradle" allow for pouring and spreading of material at same time
- Specially shaped mixing bowl eliminates pockets of unmixed product and allows for easy cleaning
- 8-1/2" diameter paddles with helix ribbon and side bars lift and shear product quickly to produce excellent consistency and thorough mixing of colors and additives
- Resilient, pliable liner is easily cleaned; alternating liners prevents cross contamination
- Dust extraction port for vacuum connection

Mixing Motor Specifications

PMH 80F-RL Level Floors w/ Rimless Bucket and Removable Liner	Electric 110 V* 15 Amp / 1800 Watt 2-speed Motor
PMH 80X-RL Rough Terrain w/ Rimless Bucket and Removable Liner	1st Gear: 140 RPM (Load Speed) 2nd Gear: 470 RPM (Load Speed)
*220 Volt available	

Standard Equipment includes: mixing motor, bucket, removable liner and 2 paddles – TW225 for half batches (2-3 bags) and TW225D for full batches (5-6 bags)

Key Features of the PORTAMIX MEGA HIPPO®

- Easy operation – one person can mix, transport and pour
- Accurately place material directly onto the floor
- Produces excellent mix consistency
- Ideal for mixing in bulk and dispensing into small containers
- Pre-tinted material is easily blended

Bowl Capacity: 6 x 50 lbs. mix + water (23 gal./350 lbs.)
6 x 22 kg mix + water (86 liters/160 kg)

Motor Mounting: Reversible for "alongside" mixing

Tilting Cradle: Balanced for easy operation

Weight: 109 lbs.

Reverse motor mounting allows "alongside" mixing in smaller containers



View product demonstrations at www.csunitec.com.

For Rugged Building Site Mixing and Pouring

Save time and extend bucket life with a removable liner!



Multiple Batch Mixing with Removable Liner

Mixing multiple batches is easier and faster with the new removable liner and rimless bucket system.

- Mix consecutive batches without downtime
- Resilient, pliable liner is easily cleaned
- Alternating liners prevents cross contamination
- Extends life of bucket

After mixing the first batch, the liner can be removed and cleaned. To speed up production, a second liner can be used while the first liner is being cleaned. The use of a liner also helps to prevent cross contamination and minimizes wear to the HIPPO bucket, extending its life.



Two Models Available:



PORTAMIX PMH 80F-RL
With Rimless Bucket and Removable Liner
4 Casters for Level Floor Use

Allows accurate placement – pour and spread at the same time.



PORTAMIX PMH 80X-RL
With Rimless Bucket and Removable Liner
2 Tires for Rough Terrain Use

Increased height – pour directly into buckets or carts.

The MEGA HIPPO portable mixing station is available with a pneumatic motor.

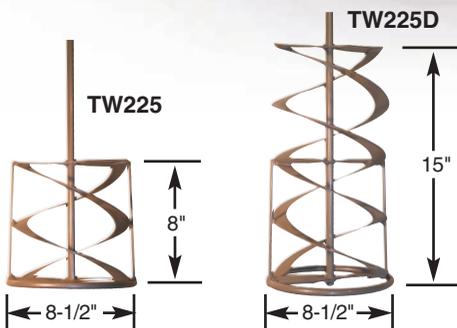
Two air-powered models are inherently safer for mixing paint, glue, epoxy, mortar, concrete, refractory cement and other materials in shipyards and the oil and gas industries.

They can be used around water with no fear of shock or blown circuitry.



PMH 80F-AIR
PMH 80X-AIR

The PORTAMIX MEGA HIPPO® is supplied with two mixing paddles:



TW225 – for half batches (2-3 bags); 8-1/2" diameter x 27" long; ideal for plasters, concrete, mortars, resins and tile adhesives. 8" long helix and side bars.

TW225D – for full batches (5-6 bags); 8-1/2" diameter x 27" long; ideal for self-leveling compounds, screeds, paints, plasters and epoxy. 15" long helix and side bars.

The 8-1/2" wide helix and side bars lift and shear the product quickly and efficiently to produce an excellent mix consistency and thorough mixing of colors and additives. The paddle's large 8-1/2" diameter provides increased peripheral speed which eliminates the need for high-RPM mixing and helps to prevent flash curing.



MATERIAL SAFETY DATA SHEET - MSDS

RAPID SET® DOT Repair Mortar

Date Issued: 11-Jan-2010

SECTION 1 – PRODUCT AND COMPANY INFORMATION

<p>Supplier CTS Cement Manufacturing Corp. 11065 Knott Ave., Suite A Cypress, CA 90630, United States Telephone Number: 714-379-8260 FAX Number: 714-379-8270 Email: info@ctscement.com Website: www.ctscement.com</p>	<p>Manufacturer CTS Cement Manufacturing Corp. 11065 Knott Ave., Suite A Cypress, CA 90630, United States Telephone Number: 714-379-8260 FAX Number: 714-379-8270 Email: info@ctscement.com Website: www.ctscement.com</p>	<table border="1"> <tr> <td>Health</td> <td>1</td> </tr> <tr> <td>Fire</td> <td>0</td> </tr> <tr> <td>Reactivity</td> <td>0</td> </tr> <tr> <td>Personal Protection</td> <td>E</td> </tr> </table>	Health	1	Fire	0	Reactivity	0	Personal Protection	E
Health	1									
Fire	0									
Reactivity	0									
Personal Protection	E									
<p>Supplier Emergency Contact 1-714-379-8260</p>	<p>Manufacturer Emergency Contact 1-714-379-8260</p>									
<p>Product Name: Rapid Set DOT Repair Mortar CAS Number: N/A Chemical Family: Cementitious Mortar</p>	<p>MSDS Number: Product Code:</p>									

SECTION 2 – COMPONENT INFORMATION

Ingredient (Specific Chemical Identity, Common Name)	CAS Number	% of Total Weight
Calcium Sulfoaluminate Cement	960375-09-1	20-40
Silica, Quartz	14808-60-7	60-80
Sodium Sulfate	7757-82-6	0-3
Methanal	50-00-0	0-0.1

SECTION 3 – HAZARDOUS INFORMATION

Primary Route(s) of Entry:	Inhalation, Skin, Eye, Ingestion
Inhalation Hazards:	May cause respiratory tract, nose, throat, and lung irritation and inflammation
Skin Hazards:	May irritate skin causing drying, redness, rash, and blistering. When mixed with water, a high alkali material is produced which can cause severe skin burns. Individuals may develop allergic dermatitis.
Eye Hazards:	May severely irritate eyes. May develop inflammation of the cornea.
Ingestion Hazards:	May be caustic to mucus tissue.
Chronic Exposure:	Individuals may develop allergic dermatitis, inflammation of the cornea, and inflammation of the nose, throat, and lungs. May cause carcinogenic effects.
Carcinogenic Effects:	May contain crystalline silica, a known Human Carcinogen (Group 1), that can cause silicosis and cancer. Exposure to crystalline silica may also increase the risk of Scleroderma, tuberculosis, and kidney disorders. May contain traces of chemicals on the California Proposition 65 list.

SECTION 4 – FIRST AID INFORMATION

Inhalation:	Remove the individual to fresh air. If irritation persists, get medical attention.
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Skin: Flush with water immediately. If irritation persists, get medical attention immediately.

Eye: Flush eyes with plenty of water. If irritation persists, get medical attention immediately.

Ingestion: If conscious, drink plenty of water, Do not induce vomiting. Get immediate medical attention.

SECTION 5 — PHYSICAL & CHEMICAL PROPERTIES

Boiling Point: >2700°F **Specific Gravity:** 2.7 to 3.1 **Melting Point:** >2700°F

Vapor Pressure (mm Hg): None **Vapor Density (AIR = 1):** None **Evaporation Rate:** None

Solubility in Water: Slight

Appearance and Odor : Beige color powder. May contain sand and rock particles. Odor N/A

SECTION 6 — FIRE & EXPLOSION PROPERTIES

Flash Point : Non-Combustible **Flammable Limits:** N/A **LEL:** N/A **UEL:** N/A

Extinguishing Media: Water spray carbon dioxide foam dry powder **Special Fire Fighting Procedures:** None

SECTION 7 — REACTIVITY INFORMATION

Stability: Stable **Conditions to Avoid:** Unintended contact with water

Hazardous Polymerization: Will not occur

Hazardous Decomposition or Byproducts: Silica mixed with hydrofluoric acid may produce a corrosive gas.

Incompatible Materials: When mixed with water, may be highly alkali. Incompatible with acids, ammonium and salts. Avoid contact of silica with powerful oxidizing agents and acids.

SECTION 8 — ACCIDENTAL RELEASE MEASURES

Use a dust free method to clean up spills. Use the appropriate personal protective equipment.

SECTION 9 — HANDLING AND STORAGE

Waste Disposal Method: Use appropriate disposal facility complying with local regulations. Not classified as hazardous waste under RCRA or CERCLA. Do not create dust.

Handling and Storage Precautions: Use proper personal protective equipment. Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid unintentional contact with water.

SECTION 10 — EXPOSURE CONTROL MEASURES

Engineering Controls: Use with adequate ventilation to control airborne dust levels

Eye Protection: Safety glasses with side shields or goggles are recommended

Skin Protection: Impervious gloves, boots and clothing are recommended to protect the skin from contact

Respiratory Protection: In dusty environments, an OSHA, MSHA or NIOSH approved respirator is recommended.

Hygienic Practices: After handling, thoroughly wash hands and exposed skin with soap and water.

Exposure Limits: PEL: (OSHA Z1) Respirable, 5mg/m³; Total Dust, 15 mg/m³



SECTION 11 — TOXICOLOGY INFORMATION

Toxicity to Animals: LC50 *Leuciscus idus*: >56 g/l, EC 10 *Pseudomonas putida*: 180 g/l . A high pH material is produced when mixed with water.

Chronic Effects on Humans: May contain Silica sand, a known carcinogen. May aggravate eye, skin, and respiratory conditions. May contain chemicals on the Proposition 65 list.

SECTION 12 — ECOLOGICAL INFORMATION

No Data Available

SECTION 13 — DISPOSAL CONSIDERATIONS

Not classified as hazardous waste under the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation, and Recovery Act

SECTION 14 — TRANSPORTATION INFORMATION

Not determined to be hazardous under the U.S. Department of Transportation. Not Regulated by DOT.

SECTION 15 — OTHER REGULATORY INFORMATION

US OSHA 29CFR 1910.1200: May be considered hazardous and should be included in the employers' hazardous communication program.

SARA Section 313 Notification: Not subject to reporting requirements.

Proposition 65: This product may contain materials on the Proposition 65 list.

SECTION 16 — OTHER INFORMATION

Key/Abbreviations

ACGIH – American Conference of Government Industrial Hygienists

CAS – Chemical Abstract Service.

CERCLA – Comprehensive Environmental Response, Compensation & Liability Act.

DOT – Department of Transportation.

LEL – Lower Exposure Limit.

MSHA – Mine Safety and Health Administration.

N/A – Not Applicable.

NIOSH – National Institute for Occupational Safety and Health.

OSHA – Occupational Safety and Health Administration.

RCRA – Resource Conservation and Recovery Act.

SARA – Superfund Amendments and Reauthorization Act.

UEL – Upper Exposure Limit.

NOTE: CTS Cement Manufacturing Corporation makes no representations as to the completeness or accuracy of the information in this document; and, no guarantee or warranty of any kind, express or implied, is made herein. We are not liable for any consequential, incidental, or special damages arising directly or indirectly from the use of this information.



MATERIAL SAFETY DATA SHEET - MSDS

RAPID SET® Flow Control

Date Issued: 11-March-2013

SECTION 1 – PRODUCT AND COMPANY INFORMATION

<p>Supplier CTS Cement Manufacturing Corp. 11065 Knott Ave., Suite A Cypress, CA 90630, United States Telephone Number: 714-379-8260 FAX Number: 714-379-8270 Email: info@ctscement.com Website: www.ctscement.com</p>	<p>Manufacturer CTS Cement Manufacturing Corp. 11065 Knott Ave., Suite A Cypress, CA 90630, United States Telephone Number: 714-379-8260 FAX Number: 714-379-8270 Email: info@ctscement.com Website: www.ctscement.com</p>	<table border="1"> <tr><td>Health</td><td>2</td></tr> <tr><td>Fire</td><td>1</td></tr> <tr><td>Reactivity</td><td>0</td></tr> <tr><td>Personal Protection</td><td>E</td></tr> </table>	Health	2	Fire	1	Reactivity	0	Personal Protection	E
Health	2									
Fire	1									
Reactivity	0									
Personal Protection	E									
<p>Supplier Emergency Contact 1-714-379-8260</p>	<p>Manufacturer Emergency Contact 1-714-379-8260</p>									
<p>Product Name: Rapid Set Flow Control CAS Number: N/A Chemical Family: Crystalline Powder</p>	<p>MSDS Number: ***** Product Code: ***</p>									

SECTION 2 – COMPONENT INFORMATION

Ingredient (Specific Chemical Identity, Common Name)	CAS Number	% of Total Weight
Sodium Sulfate	7757-82-6	60-100
Methanal	50-00-0	>=0.1 - <= 1.0

SECTION 3 – HAZARDOUS INFORMATION

Primary Route(s) of Entry:	Inhalation, Skin, Eye, Ingestion
Inhalation Hazards:	Lung Irritant
Skin Hazards:	May irritate or corrosive skin. May cause sensitization by skin contact.
Eye Hazards:	May severely irritate or have a corrosive effect on eyes.
Ingestion Hazards:	May be caustic to mucus tissue.
Chronic Exposure:	May cause burns. Depending on the concentration and duration of exposure, product can cause irritating or corrosive effect on skin, eyes, and respiratory system.



Carcinogenic Effects: Formaldehyde: After lifelong inhalation exposure high concentration is damaging to nasal epithelium, nasal tumors in rats. The International Agency for Research on Cancer (IARC) classified this element as Group 1 human carcinogen linking to nasopharyngeal cancer.

SECTION 4 — FIRST AID INFORMATION

Inhalation:	Remove the individual to fresh air. If irritation persists, get medical attention.
Skin:	Flush with water immediately. If irritation persists, get medical attention immediately. Do not use organic solvent to wash off skin.
Eye:	Flush eyes with plenty of water. Get medical attention immediately.
Ingestion:	Rinse mouth out quickly with water then drink plenty of water. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms appear.

SECTION 5 — PHYSICAL & CHEMICAL PROPERTIES

Boiling Point: 850°C	Specific Gravity: 1.84	Melting Point: N/A
Vapor Pressure (mm Hg): None	Vapor Density (AIR = 1): None	Evaporation Rate: None
Solubility in Water: 650 g/l		

Appearance and Odor : Solid. (Crystalline powder) Odor: characteristic

SECTION 6 — FIRE & EXPLOSION PROPERTIES

Flash Point : Not Available	Flammable Limits: Not self-igniting	LEL: N/A	UEL: N/A
Extinguishing Media: Water spray, foam, dry media, carbon dioxide	Special Fire Fighting Procedures: Do not use water jet. Wear self contained breathing apparatus.		

SECTION 7 — REACTIVITY INFORMATION

Stability: Stable	Conditions to Avoid: Avoid creating dust.
Hazardous Polymerization: Will not occur	

Hazardous Decomposition or Byproducts: Possible separation of formaldehyde in small quantities. Substances formed by hydrolysis.

Incompatible Materials: Strong acids, bases, oxidizing agents.

SECTION 8 — ACCIDENTAL RELEASE MEASURES

Avoid in the creation of dust.

Small Spill: Use tools to put the solids to a waste disposal container. Finish by cleaning up with water on surface and dispose in accordance with local and state authority recommendations.

Large Spill: Use water spray to reduce vapors. Do not let material get into sewers and basements. Eliminate all ignition sources. Call for assistance in disposal. Finish by cleaning with water on surface.



SECTION 9 — HANDLING AND STORAGE

Waste Disposal Method: Use appropriate disposal facility complying with local regulations. Not classified as hazardous waste under RCRA or CERCLA. Do not create dust.

Handling and Storage Precautions: Keep away from sources of heat and ignition. Keep in dry area. Do not ingest or inhale product. Avoid contact with eyes. Wear suitable clothing. If inhaled or ingested seek medical help. Keep away from oxidizing agents, reducing agents, acids, bases.

SECTION 10 — EXPOSURE CONTROL MEASURES

Engineering Controls: Use with adequate ventilation to control airborne dust levels to recommended exposure limits.

Eye Protection: Safety glasses with side shields or goggles are recommended.

Skin Protection: Impervious gloves, boots and clothing are recommended to protect the skin from contact

Respiratory Protection: Use a MSHA, OSHA or NIOSH approved respirator.

Hygienic Practices: After handling, thoroughly wash hands and exposed skin with soap and water.

Exposure Limits:

Formaldehyde:

OSHA TWA 0.75 ppm; STEL 2 ppm; Action level 0.5 ppm

ACGIH CLV 0.3 ppm

SECTION 11 — TOXICOLOGY INFORMATION

Toxicity to Animals:

Irritation / corrosion

Skin:

Species: rabbit

Result: non-irritant

Method: OECD Guideline 404

Eye:

Species: rabbit

Result: non-irritant

Method: OECD Guideline 405

Chronic Effects on Humans: Formaldehyde: After lifelong inhalation exposure high concentration is damaging to nasal epithelium, nasal tumors in rats. The International Agency for Research on Cancer (IARC) classified this element as Group 1 human carcinogen linking to nasopharyngeal cancer and leukemia.

SECTION 12 — ECOLOGICAL INFORMATION



Fish

Acute: DIN 38412 Part 15 static

Leuciscus idus/LC50 (48 h): > 560 mg/l

Aquatic invertebrates

OECD Guideline 202, part 1 static

Daphnia magna/EC50 (48 h): > 100 mg/l

Analogous: Assessment derived from products with similar chemical character.

Nominal concentration. The product has low solubility in the test medium. An eluate has been tested. Limit concentration test only (LIMIT test). No toxic effects occur within the range of solubility.

Microorganisms

Toxicity to microorganisms:

bacterium/EC10: 1,800 mg/l

Degradability / Persistence

Biological / Abiological Degradation

Evaluation: Not readily biodegradable (by OECD criteria).

Bioaccumulation

No data available concerning bioaccumulation.

SECTION 13 — DISPOSAL CONSIDERATIONS

Waste must be disposed of in accordance with federal, state, and local environmental control regulations.

SECTION 14 — TRANSPORTATION INFORMATION

Not determined to be hazardous under the U.S. Department of Transportation. Not Regulated by USDOT, TDG, IMDG, and IATA/ICAO.

SECTION 15 — OTHER REGULATORY INFORMATION

Federal and State Regulations: TSCA US

Registration status:

Chemical DSL, CA released / listed

WHMIS classification: D2A: Materials Causing Other Toxic Effects - Very toxic material

OSHA Hazard Category: IARC 1, 2A or 2B carcinogen, NTP listed carcinogen, OSHA regulated carcinogen, Chronic target organ effects reported

SARA Hazard Categories (EPCRA 311/312): Chronic

SARA 313:

CAS Number: 50-00-0 Formaldehyde



State Regulations

State RTK (MA, NJ, PA)

AS Number: 50-00-0 Formaldehyde

Proposition 65 Warning: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

SECTION 16 — OTHER INFORMATION

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: e

Protective Equipment: Gloves (impervious). Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

NOTE: CTS Cement Manufacturing Corporation makes no representations as to the completeness or accuracy of the information in this document; and, no guarantee or warranty of any kind, express or implied, is made herein. We are not liable for any consequential, incidental, or special damages arising directly or indirectly from the use of this information.