City of Mt. Pleasant, Michigan

CONTRACT DOCUMENTS

For Construction
of

2012 MANHOLE REHABILITATION PROJECT

BRUCE KILMER
Mayor

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City Manager

Prepared By:
Division of Public Works

Roger Rousse
DPW Director

March 2012

[Form08]

City of Mt. Pleasant, Michigan

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Location Map – available upon request

THE CITY OF
MT. PLEASANT, MICHIGAN

CITY HALL
320 W. Broadway • 48858-1698
(989) 779-5300
(989) 773-4691 fax

PUBLIC SAFETY
804 E. High • 48858-3595
(989) 779-5100
(989) 773-4020 fax

PUBLIC WORKS
1303 N. Franklin • 48858-4682
(989) 779-5400
(989) 772-6250 fax

NOTICE TO BIDDERS

2012 Manhole Rehabilitation Project

The City of Mt. Pleasant, Michigan, is requesting sealed bids at the Office of the City Clerk, City Hall, 320 W. Broadway Street, Mt. Pleasant, Michigan 48858, until 1:30 p.m. (local time), on April 24, 2012, at which time and place the bids will be publicly opened and read. All bids shall be submitted in a sealed envelope, plainly marked "2012 Manhole Rehabilitation Project – April 24, 2012."

Proposals are solicited on a unit price basis, for the following work:

Storm Manhole Rehabilitation – 2.5' Dia and Less	320 LFT
Storm Manhole Rehabilitation – 2.6' Dia to 4.5' Dia	25 LFT
Sanitary Manhole Rehabilitation – 2.6' Dia to 4.5' Dia	200 LFT
Sanitary Manhole Rehabilitation – 4.6' Dia to 5.5' Dia	100 LFT

All bid proposals must be accompanied by a bid bond, bank cashier's check, bank draft, or certified check for not less than five percent (5%) of the bid price, made payable to the City of Mt. Pleasant.

To view and download complete Plans and Specifications at no charge, visit the City of Mt. Pleasant website at www.mt-pleasant.org

The City of Mt. Pleasant reserves the right to accept or reject any or all bids, to waive any irregularities in the bids, and to select the bid considered most advantageous to the city.

Jennifer A. Flachs
Engineering Aide
(989) 779-5406

Jeremy Howard
City Clerk

[2012 Manhole Rehabilitation Project – NB]

INSTRUCTIONS TO BIDDERS

1. Proposals

Proposals must be made upon the forms provided therefore, with the Bid amount both written and shown in figures, and all other data required submitted.

The Proposal, bound together with all Proposal Documents, must be enclosed in a sealed envelope marked as specified in the Notice to Bidders for such Bid and clearly indicating the name and address of the Bidder and must be received by the City Clerk, City Hall, 320 W. Broadway Street, Mt. Pleasant, Michigan 48858, no later than the time and date specified in the Notice to Bidders. At such specified time, Proposals shall be publicly opened and read aloud.

2. Basis of Proposals

Proposals are solicited on the basis of unit price(s) and/or lump sum(s), as specified on the Proposal form.

The City of Mt. Pleasant (also referred to as "Owner"), reserves the right to accept any Bid, to reject any or all Bids, to waive any irregularities in the Bids, and to select the Bid considered most advantageous to the city.

3. Comparison of Bids

In comparing Bids, consideration shall be given to the time proposed for completion of the Contract, qualifications of Bidder, price differentials, alternate Proposals for the alternate items listed in the Proposal (if applicable), and any other pertinent factors. **The City of Mt. Pleasant grants a preference to businesses located within the Mt. Pleasant City Limits. The preference given is a differential above the low bid if the low bid is not from a City of Mt. Pleasant bidder. The differential allowed is 3% of the total for bids between $5,000 and $9999 and 2% of the total for bids over $10,000. The maximum credit allowed is $1500.00.** The Owner reserves the right to make an award to the Bidder whose Proposal is deemed to be in the best interest of the Owner.

4. Time

Time is of the essence in the performance of the Contract, and each Bidder, by submitting a Proposal, certifies his/her acceptance of the time allowed by the Contract for the completion of the work specified.

5. Indemnification

The Contractor shall save and hold harmless the city and its employees from and against all claims, damages, losses, or expenses, including attorney's fees, arising out of or resulting from the performance of the work; provided that any such claim, damage, loss or expense is caused in whole or in part by any negligent or willful act of omission of the contractor, subcontractor, employee, or anyone under their direction. The Contractor shall at his/her own expense, defend any and all such actions and shall pay all attorney's fees, costs, and expenses pertaining thereto.

6. **Bid Deposits**

Each Proposal shall be accompanied by a certified check, or a Bid Bond by a recognized Surety Company similar to a U. S. Government Standard Form Bid Bond, in the amount of five percent (5%) of the total amount of the Bid, made payable to the City of Mt. Pleasant, subject to forfeiture to the Owner in the event of failure on the part of the successful Bidder to enter into the attached form of agreement to do the work specified by said Proposal at the price and within the time stated therein. The Bid Deposit of all Bidders, except the three (3) lowest acceptable Bidders, shall be returned within two (2) weeks after opening of bids. The bid deposits of the three (3) lowest acceptable bidders shall be returned within 48 hours after the executed Contract(s) have been finally approved by the Owner.

7. **Liquidated Damages**

A liquidated damage clause, as given in the Contract form, provides that the Contractor shall pay the Owner as liquidated damages, and not as a penalty, the amount indicated in the Special Conditions for each and every calendar day that the Contractor may be in default of substantial completion of the work required under said Contract.

8. **Insurance and Bonds**

The successful Bidder will be required to execute (2) Bonds, in the form attached hereto, with Surety acceptable to the Owner and insurance, as follows:

a. Bond in the amount of 100% of the Estimated Contract Price running to the City of Mt. Pleasant, Michigan, to insure the completion of the entire work, according to the statues of the State of Michigan in effect at that time.

b. Bond in the amount of 100% of the Estimated Contract Price running to the People of the State of Michigan for the protection of Subcontractors and Labor and Material Men, according to the statutes of the State of Michigan in effect at that time.

c. Insurance in the amounts required by City Ordinance as specified in the Section 1 - General Construction Specifications, attached hereto.

The successful bidder shall be required to furnish for each set of executed Contract Documents, and conformed copies thereof, an original conformed Performance Bond, Labor and Materials Bond, Maintenance Bond, and Insurance Certificates.

9. **Permits and Local Codes**

The Owner shall procure the required permits for municipal sanitary sewer construction, municipal water system construction, and soil erosion control.

The Contractor shall obtain, at his/her expense, all other required local construction permits and shall comply with local building code and inspection requirements.

10. Qualifications of Bidders

It is the intent of the Owner to award the Contract to a Bidder fully capable, both financially and with regard to experience, to perform and complete all work in a satisfactory and timely manner. Evidence of such competency must be furnished on the forms included in the proposal, listing projects of similar difficulty, scope of work, and size which the Bidder has satisfactorily undertaken and completed.

It is the intention of the City to award the contract to a Contractor whose ability and financial resources are fully equal to the task of performing the work in a satisfactory manner. With this in view, the Proposal calls for at least five (5) references, using specific names of persons to contact concerning the Contractor's ability to do this particular class of work. References from municipalities are preferred. The mere ability to furnish a Performance Bond shall not be accepted as sufficient evidence of responsibility on the part of the Bidder. The Bidder may also be required to furnish evidence of his current financial status.

11. Interpretation of Documents

If any Bidder is in doubt as to the true meaning of any part of the Plans, Specifications or any Contract Document, he/she may submit to the Owner a written request for an interpretation thereof. Any interpretation made in response to such a query shall be made only by Addendum, duly issued, and a copy of such Addendum shall be mailed or duly delivered to each prospective Bidder. The Owner shall not be responsible for any other explanation or interpretation of the Contract Documents. Alternative proposals that are suggested by bidders will be given consideration, if presented before the bid opening. If accepted, an addendum will be issued and sent out to all potential bidders, so that they may bid on the alternatives that have been identified.

12. Execution of Bid Proposal

A Bid Proposal which is not signed by the individual making it should have attached thereto a Power of Attorney evidencing authority to sign the Bid Proposal in the name of the person for whom it is signed.

A Bid Proposal which is signed by a partnership shall be signed by all of the partners or by an Attorney-in-Fact. If signed by an Attorney-in-Fact, there should be attached to the Bid a Power of Attorney evidencing authority to sign the Bid Proposal in the name of the partnership and such Power of Attorney shall be signed by all partners of the partnership.

A Bid Proposal which is signed for a corporation should have the correct corporate name thereof and the signature of the President, or other authorized officer(s) of the corporation, manually written below the corporate name and on the line indicating "By:_____." If such a Bid Proposal is manually signed by an officer other than the President of the corporation, a certified copy of a Resolution of the Board of Directors evidencing the authority of such officer(s) to sign the Bid Proposal should be attached thereto. Such a Bid Proposal should also bear the attested signature of the Secretary of the corporation and an impression of the corporate seal.

13. **Execution of Contract**

The successful Bidder to whom an award is made shall be required to enter into a written agreement, in the form attached hereto, within ten (10) days after receipt of a Notice of Award and copies of the documents to be executed. In the event the successful Bidder fails to comply with this provision, he/she may be considered by the Owner to have abandoned all his/her rights and interests in the award and his/her certified check or amount of the Bid Bond may be declared to be forfeited to the Owner, and the Contract may be awarded to another.

14. **Bidder Responsibility For Conditions of Work and Site**

The Bidder, or his/her representative, shall make personal investigation of the site of work and of existing structures and shall determine to his/her own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved in making connections to existing structures and pipes, and any and all other factors affecting the work proposed under the Contract.

The Bidder to whom the Contract is awarded shall not be entitled to any additional compensation by reason of conditions being different from those anticipated or by reason of his/her failure to fully acquaint himself/herself with the conditions at the site affecting the work of the Contract.

15. **Changes in Work**

If any change is required to be made in the work of the Contract, a payment adjustment therefore shall be determined as specified in the "TECHNICAL SPECIFICATIONS, Section 1 - General Construction Specifications" of the Contract.

Revised: July 2011

[Form24a]

City of Mt. Pleasant, Michigan

BID PROPOSAL

2012 Manhole Rehabilitation Project

TO: City Clerk
City Hall
320 W. Broadway Street
Mt. Pleasant, MI 48858

BID DATE: April 24, 2012
TIME: 1:30 p.m.

The undersigned, as Bidder, hereby declares that this bid is made in good faith without fraud or collusion with any person or persons bidding of the same Contract; that he has carefully read and examined the Contract Documents, including the Notice to Bidders, Instructions, Bond Forms, Technical and Detailed Specifications, and Contract Drawings, for the designated work and understands all of the same; that he, or his representative, has made such a personal investigation at the site as is necessary to determine the character and difficulties attending the execution of the proposed work; and he proposes and agrees that if this Proposal is accepted, he will contract with the Owner in the form of the Contract hereto annexed, to provide necessary machinery, tools, apparatus and other means of construction, including utility and transportation services, necessary to do all the work and furnish all the materials and equipment specified or referred to in the Contract Documents, including Addenda No. __, __, and __, in the manner and time therein prescribed, and according to the requirements of the Owner as therein set forth to furnish Contractor Bonds and Insurance required of the Contractor by the Contract Documents, and that he will take in full payment therefore the unit prices set forth in the following Proposal.

The Bidder understands that the Owner reserves the right to reject any or all bids and to waive any irregularities in the bidding.

The Bidder agrees that his bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receiving the bids.

Upon receipt of a written Notice of Award of the Bid, the Bidder shall execute the formal Contract Agreement attached hereto within ten (10) days and shall deliver to the Owner a Surety Bond or Bonds required. In the event the Contract and Bond are not executed within the time above set forth, the Bid Deposit attached in the sum of five percent (5%) of the Bid Proposal shall become the property of the Owner as liquidated damages for the delay and additional expense to the Owner caused thereby.

The Bidder hereby agrees to commence work under this Contract on or before the date to be specified in the written Notice to Proceed executed by the Owner and to fully complete the project as stipulated in the Special Conditions of these Specifications. The Bidder further agrees to pay as liquidated damages the sum indicated in the Special Conditions for each consecutive calendar day thereafter, until substantial completion, that is when all work items in the proposal are complete and notification of substantial completion of work items and final quantities is given to the Director of Public Works by the contractor.

The below unit prices shall include all labor, materials, overhead, profit, insurance, etc., to cover the finished work of the several kinds specified, and the Bidder agrees to perform all of the work described in the Specifications and/or shown on the Plans for the following unit prices:

ITEM NO.	DESCRIPTION		QTY	UNIT	UNIT COST	TOTAL
#1	Storm Manhole Rehabilitation	- 2.5' Dia and Less	320	LFT	$_____	$_____
#2	Storm Manhole Rehabilitation	- 2.6' Dia to 4.5' Dia	25	LFT	$_____	$_____
#3	Sanitary Manhole Rehabilitation	- 2.6' Dia to 4.5' Dia	200	LFT	$_____	$_____
#4	Sanitary Manhole Rehabilitation	- 4.6' Dia to 5.5' Dia	100	LFT	$_____	$_____

TOTAL BID $ ==========
(figures)

_____ and ___/100 Dollars (written).

RESPECTFULLY SUBMITTED,

COMPANY NAME _____

ADDRESS _____

CITY _____ STATE_____ ZIP CODE _____

AREA CODE/TELEPHONE NUMBER _____ DATE_____

Authorized Signature _____

Print or Type Name and Title _____

Fax Number _____

EXPERIENCE QUESTIONNAIRE
TO BE FURNISHED BY BIDDER
CITY OF MOUNT PLEASANT, MICHIGAN

The signatory of this proposal guarantees the truth and accuracy of all statements and of all answers hereinafter made.

1. How many years have you been in business as a contractor under your present name?

_____

2. How many years have you been a principal officer of a firm under a different name?

_____

Name of Firm _____

3. What projects of a similar nature has your organization contracted for within the past five years? (NOTE: Fill out each blank completely.)

	Name of Owner & Location	Name/Address/Phone # of Person in Charge as Reference	Type of Work	Value of Work	Date Completed
1.					
2.					
3.					
4.					
5.					
6.					

2012 MANHOLE REHABILITATION PROJECT
SPECIAL CONDITIONS

SCOPE:

This project involves the rehabilitation of storm and sanitary sewer manholes in accordance with the specifications. All work required to complete the rehabilitation, and return the manhole to full service shall be included in the unit prices in the proposal.

TIME CONSTRAINT:

The Contractor shall commence this work on or before June 4, 2012 and complete all work on or before June 29, 2012. Liquidated damages at the rate of $300.00 per day will be assessed for each day the work is not completed after June 29, 2012.

SCHEDULE:

The Contractor shall notify the City inspector regarding their schedule for performing the work at least a week prior to the work beginning. The City of Mt. Pleasant Street Department will perform basic cleaning of the structures prior to the contractor beginning work on the project.

STANDARD CONSTRUCTION SPECIFICATIONS:

The City of Mt. Pleasant Standard Construction Specifications dated February 2007 must be followed for construction on this project. They are available on the City webpage at

www.mt-pleasant.org/docs/dept/engineering/genspec07.pdf

MANHOLE LOCATIONS:

Manholes for this project are located on various local streets throughout the City.

BY-PASS PUMPING:

The Contractor shall be responsible for any by-pass pumping that may be required.

City of Mt. Pleasant
TECHNICIAL SPECIFICATIONS
Section 20

MANHOLE REHABILITATION

20.01 SCOPE

A. The Contractor shall furnish all labor, equipment, and materials necessary for manhole rehabilitation to stop inflow, infiltration, and exfiltration; repair voids; restore structural integrity; and provide protection against corrosion. A monolithic, fiber-reinforced, structurally enhanced, cementitious-based liner material is spray applied to the wall and bench surfaces of the manhole.

20.02 PRODUCT, MANUFACTURER/INSTALLER QUALIFICATION REQUIREMENTS

A. Product Data: Submit manufacturer's product data, including physical properties, surface preparation, repair, application, curing, and field quality control.

B. Manufacturer Qualifications:

1. Material Qualifications: Minimum of five year history of being used for rehabilitation of sanitary sewer manholes.

2. Manufacturer Qualifications: Submit list of a minimum of ten manhole rehabilitation projects completed during past three years.

C. Applicator Qualifications: Submit qualifications or applicator.

1. Certification stating applicator is factory trained and approved by manufacturer in application of the specified products.

2. List of recently completed manhole rehabilitation projects, including project name and location, names of owner and engineer, and description of products used, substrates, and application procedures.

20.03 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage:

1. Store materials in accordance with manufacturer's instructions.

2. Keep containers sealed until ready for use.

3. Store materials in a cool dry environment.

C. Handling: Protect materials during handling and application to prevent damage.

20.04 ENVIRONMENTAL CONDITIONS

A. Do not apply materials if ambient temperature is below 40 degrees F.

B. Do not apply materials to frozen surfaces or if freezing is expected within substrate within 24 hours after application.

C. Keep mix temperature at time of application below 90 degrees F.

D. Do not exceed water temperature of 80 degrees F.

20.05 MATERIALS

A. General:

1. Materials from single manufacturer.

2. Materials compatible with substrate and with each other.

3. Materials approved by manufacturer.

B. Patching Material: Rapid-setting, fiber-reinforced, high-early-strength, corrosion-resistant, hand-mixed and hand-applied, calcium aluminate based cementitious material, or approved equal.

1. Cement: Calcium aluminate cement.

2. Minimum Compressive Strength, ASTM C 109: 1,400 psi at 6 hours.

3. Minimum Bond, ASTM C 321: 145 psi at 28 days.

4. Applied Density: 105 plus or minus 5 pounds per cubit foot.

5. Shrinkage, ASTM C 596: 0 percent at 90 percent relative humidity.

C. Infiltration Control Material: Rapid-setting, high-early-strength, hand-applied, cementitious material.

1. Compressive Strength, ASTM C 109: 400 to 600 psi at 1 hour; 1,800 to 2,400 psi at 24 hours.

2. Expansion, ASTM C 827: 0.10 percent.

3. Sulfate Resistance, ASTM C 267: No weight loss after 15 cycles; 2,000 ppm; test continuing.

4. Freeze/Thaw Resistance, ASTM C 666, Method A: 100 cycles.

5. Pull-Out Strength, ASTM C 234: 14,000 pounds.

D. Cementitious Grout: Cementitious grout, volume stable.

1. Minimum Compressive Strength, ASTM C 109: 250 psi at 28 days.

E. Storm Sewer Manhole Liner Material: Fiber reinforced, spray-applied, cementitious mortar.

1. Minimum Compressive Strength, ASTM C 109: 9,000 psi at 28 days.

2. Minimum Tensile Strength, ASTM C 496: 900 psi at 28 days.

3. Minimum Flexural Strength, ASTM C 78: 1400 psi at 28 days.

4. Shrinkage, ASTM C 596: 0 percent at 28 days, 90 percent relative humidity.

5. Minimum Bond, ASTM C 952: 2,000 psi at 28 days.

6. Applied Density: 133 plus or minus 5 pounds per cubic foot.

7. Freeze/Thaw Resistance, ASTM C 666, Method A: 100 cycles, no visible damage.

8. Factory Blended: Requires only addition of water at site.

9. Minimum Cement Content: 50 percent of total weight bag.

10. Dry Bulk Density: 74 to 76 pounds per cubic foot.

11. Fiber Requirement: 1/2 to 5/8 inch alkaline-resistant fiberglass rods.

F. Sanitary Sewer Manhole Liner Material: Fiber-reinforced, spray-applied, cementitious mortar.

1. Cement: 100 percent pure fused calcium aluminate clinker and calcium aluminate cement.

2. Minimum Compressive Strength, ASTM C 109: 8,000 psi at 28 days.

3. Minimum Tensile Strength, ASTM C 496: 800 psi at 28 days.

4. Minimum Flexural Strength, ASTM C 78: 1,200 psi at 28 days.

5. Shrinkage, ASTM C 596: 0 percent at 28 days, 90 percent relative humidity.

6. Minimum Bond, ASTM C 952: 2,000 psi at 28 days.

7. Applied Density: 150 plus or minus 5 pounds per cubic foot.

8. Freeze/Thaw Resistance, ASTM C 666, Method A: 100 cycles, no visible damage.

9. Factory Blended: Requires only addition of water on site.

10. Dry Bulk Density: 88 to 92 pounds per cubic foot.

11. Fiber Reinforcement: 1/2 to 5/8 inch alkaline-resistant fiberglass rods.

G. Water: Clean and potable. Test non-potable water in accordance with ASTM C 94.

20.06 SURFACE PREPARATION

A. Examine surfaces to receive manhole rehabilitation. Notify the City Inspector in writing if surfaces are not acceptable. Do not begin surface preparation, repair, or application until unacceptable conditions have been corrected.

B. Prepare surfaces in accordance with manufacturer's instructions.

C. Protection: Place covers over invert to prevent extraneous material from entering sewer lines.

D. Cleaning: Clean manhole walls and bench by using a minimum of 1,500 psi water spray to remove contaminants, dirt, debris, and other foreign materials.

E. Remove loose, unsound, and protruding brick, mortar, and concrete.

F. Inspection by Engineering Aide: Before application of each material, surfaces to be sprayed or coated will be inspected by the Engineer. Correct defects or deficiencies identified by the Engineering Aide before application of subsequent material.

G. Voids: Repair and fill voids greater than 2 inches in depth with patching material. Apply patching material in accordance with manufacturer's instructions.

H. Active Leaks:

1. Stop active leaks with patching material or infiltration control material. Apply material in accordance with manufacturer's instructions.

2. Install weep holes as required to localize infiltration during application of patching material or infiltration control material.

3. Plug weep holes after application with infiltration control material before application of liner material.

4. Severe Infiltration: Drill as required to pressure grout using a cementitious or chemical grout. Apply grout in accordance with manufacturer's instructions.

I. Advance Notice: Give the City Inspector a minimum of 3 days advance notice of start of application.

20.07 INVERT REPAIR

A. Remove loose and unsound materials and wash walls, after surface preparation is complete.

B. Repair bench, invert, or service line using patching material. Apply in accordance with manufacturer's instructions.

C. Repair inverts with visible damage, where infiltration is present, or when vacuum testing is specified.

D. Apply patching material to invert, after blocking flow through manhole and thoroughly cleaning invert.

E. Uniformly trowel patching material onto damaged invert at a minimum thickness of 1/2 inch at invert. Extend out onto bench of manhole sufficiently to tie into liner material.

F. Ensure finished invert surfaces are smooth and free of ridges.

G. Reestablish flow in manhole after a minimum of 30 minutes after application of patching material.

20.08 APPLICATION OF LINER MATERIAL

A. Apply liner material in accordance with manufacturer's instructions.

B. Equipment: Spray apply liner material using approved equipment designed and manufactured by material manufacturer for the specific application.

C. Mixing:

1. Mix liner material with water in accordance with manufacturer's instructions.

2. Discharge prepared mix into hopper.

3. Continue mixing as liner material is continuously sprayed.

D. Cleaning: Ensure surface is clean and free of foreign material.

E. Saturated Surface: Ensure surface is damp and totally saturated with water without noticeable free water droplets or running water, just before application of liner material.

F. Spraying: Spray apply liner in 1 or more passes from bottom of wall to bottom of frame to form a structurally enhanced monolithic liner.

1. Minimum Total Thickness: 1/2 inch.

G. Finishing:

1. Trowel surface of sprayed liner material to relatively smooth finish. Do not over trowel.

2. Apply brush finish to trowel finished surface.

H. Follow manufacturer's instructions whenever more than 24 hours have elapsed between applications.

I. Application to Bench:

1. Remove wood covers.

2. Spray bench with liner material mixed in accordance with manufacturer's instructions.

3. Spray apply liner material to produce a gradual slope from walls to invert to form a structurally enhanced monolithic liner. Minimum thickness at invert of 1/2 inch.

4. Round full circumference of intersection of wall and bench to a uniform radius.

20.09 CURING

A. Cure materials in accordance with manufacturer's instructions.

B. Exposure:

1. Minimize exposure of applied materials to sunlight and air movement.

2. Cover structure if time between applications of additional coats is to be longer than 15 minutes.

3. Do not expose finished materials to sunlight or air movement for longer than 15 minutes before covering or closing access.

4. Shade manhole while rehabilitation is in process in hot and arid climates.

C. Concrete Curing Compound:

1. Apply concrete curing compound if relative humidity is less than 70 percent within manhole.

2. Apply curing compound in accordance with manufacturer's instructions.

D. Cure Time: Allow a minimum of eight hours cure time before subjecting manholes to flows.

20.10 FIELD QUALITY CONTROL

A. Inspection by the Engineering Aide or the waiver of inspection of any portion of the work shall not relieve the Contractor of responsibility to perform the work as specified.

B. Field Quality Control Testing: Performed by the Engineering Aide at Contractor's expense.

C. Compressive Strength Test:

1. Cast four 2 inch cubes each day or from each pallet of material.

2. Label, package, and mail cubes to manufacturer.

3. Manufacturer shall test cubes for compressive strength in accordance with ASTM C 109 and submit test results to the Contractor and Engineer.

D. Leaks: Visually verify absence of leaks.

20.11 PROTECTION

A. Do not allow traffic for a minimum of 24 hours after final application of liner material.

[FORM192]