

## ADDENDUM

### CITY OF AMES

**PROJECT:** 2016 Flood Prone Manhole Rehabilitation

**ADDENDUM NUMBER:** 2

**DATE:** May 9, 2016

Carefully read the following changes to the Plans and Specifications for this project. After reading the changes, sign below to acknowledge receipt of this document and return it to the City Clerk's Office (515 Clark Avenue). This receipt form must be submitted prior to the bid opening or with the bid form.

  
\_\_\_\_\_  
Angela C. Kolz, P.E.  
WHKS & Co.

ADDENDUM:

I. THE FOLLOWING ARE REVISIONS TO THE SPECIFICATIONS:

#### WAGE RATE DETERMINATION

The wage rate determination enclosed with the plans and specifications dated 4/19/16 is still current as of 5/9/2016.

#### ESTIMATE REFERENCE INFORMATION

##### **Bid Item No. 1.4 Nighttime Work on South Duff and North Grand Locations (Ea).**

Delete sentence: "~~This item shall include all labor, materials, and equipment to complete the specified repairs on South Duff and North Grand Locations.~~"

Insert sentence: "This item shall include all labor, materials, and equipment necessary to perform nighttime work and reopen the construction zone to traffic during daytime hours as specified herein. Manhole rehabilitation for these manholes shall be paid as separate pay items under Division 6. Surface restoration work for these manholes shall be paid as separate pay items under Divisions 7 and 9."

##### **Bid Item No. 9.2 Sodding (Ea).**

Delete sentence: "~~Restoration in Veenker Golf Course shall be sod, "Low Mow" bluegrass type.~~"

Insert sentences: "Restoration in Veenker Golf Course shall be sod, bluegrass mix, 20% each of: '4 Seasons'/'Everglade'/'Everest'/'NuDestiny'/'Beyond'."

#### MANHOLE REHABILITATION SUPPLEMENTAL SPECIFICATIONS

##### **Item 5 EXTERNAL CHIMNEY SEAL (REHABILITATION TECHNIQUE "E").**

Insert the following item under section 5.b (Materials):

- iii. "Adjusting rings shall be precast only, no plastic permitted, at locations specified for heat shrink wrap applications."

##### **Item 6 INTERNAL FLEXIBLE CHIMNEY SEAL (REHABILITATION TECHNIQUE "F").**

Insert the following paragraph to section 6.i (testing):

- i. "Testing shall also include the following:
  - i. All manholes with internal flexible chimney seals installed will be visually and physically inspected by the Contractor prior to acceptance. No infiltration, inflow, coverage gaps, or surface adhesion failures shall be visible in the internal flexible chimney seal.
  - ii. Inspection report will include a report detailing manhole structure ID, location, inspection personnel, date, time, recent weather, and a high-quality photo of each manhole taken during inspection. Photos will be clearly labeled with time and date and manhole ID number and show the full extent of the chimney seal.

- iii. All manholes with internal flexible chimney seal installed will be visually and physically inspected by Contractor a second time within 10 to 14 months after acceptance of project. Inspection will be completed during wet time of year. Inspection will include a report detailing structure ID, location, inspection personnel, date, time, recent weather, and photo of each manhole taken during this second inspection. Photos will conform to the photo requirements listed above (iii). Inspection report will be labeled "1 Year Inspection". Inspection will be coordinated with Owner and Engineer staff.
- iv. Any coverage gaps, surface adhesion failures, or signs of chimney/casting infiltration shall be rectified prior to acceptance. A report identifying structure ID, location, personnel, date, time and recent weather will be submitted for each manhole rectified following this inspection. Title report "1 Year Inspection – Internal Flexible Chimney Seal Repairs".

**Item 11 POUR-IN-PLACE LINER (REHABILITATION TECHNIQUE "J").**

Delete the following sentence under section 11.b.ii: "~~Plastic adjusting rings are not permitted as a substrate to cementitious lining.~~"

**II. THE FOLLOWING ARE REVISIONS TO THE PLANS:**

**SHEETS 19 and 20**

Replace Sheets 19 and 20 with the Revised Sheets 19 and 20. The following note has been added to the revised sheets: "The natural contours of the floodplain will be maintained for the areas that will require any excavation in the flood plain/floodway."

III. Any revisions to any of the Contract Documents made by this Addendum shall be considered as the same revision to any and all related areas of the Contract Documents not specifically called out in the Addendum.

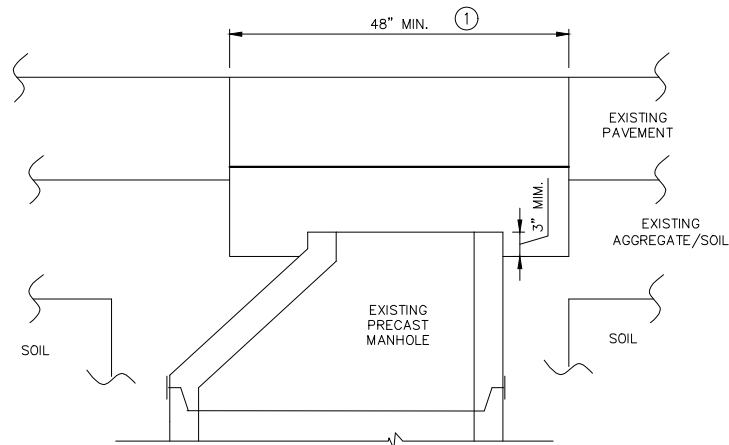
**I hereby acknowledge receipt of this Addendum and recognize that my bid will not be opened unless this signed document is filed in the City Clerk's Office prior to the letting as specified in the notice of public hearing and to bidders, or other contract documents or submitted with my bid.**

SIGNED \_\_\_\_\_

TITLE \_\_\_\_\_

FIRM \_\_\_\_\_

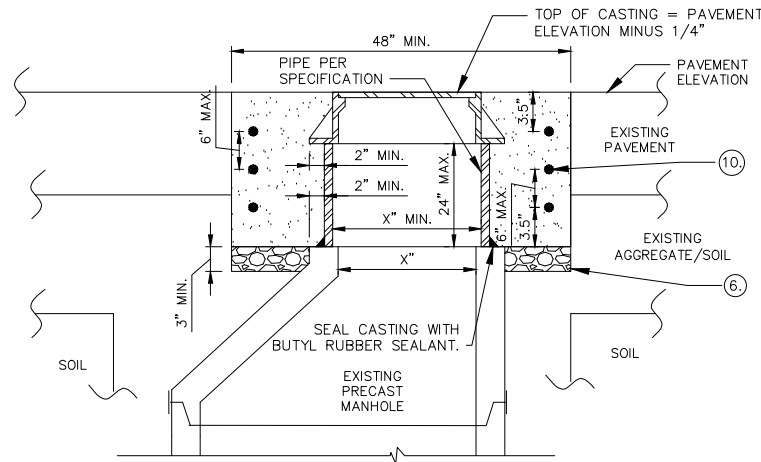
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PRECAST CONE CHIMNEY REMOVE

NOTES:

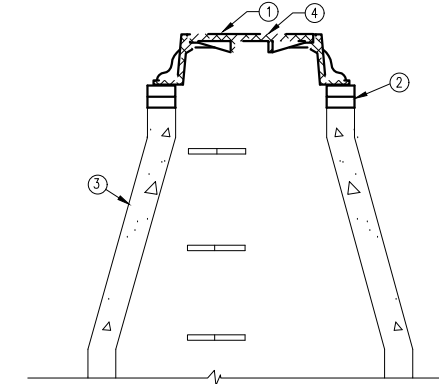
1. CUT AND REMOVE EXISTING PAVEMENT AROUND MANHOLE CASTING. REMOVAL WILL BE CIRCULAR, CENTERED ON THE CASTING, MINIMUM 48" IN DIAMETER, OR SHAPE AND SIZE OF EXISTING DIAMOND. MAXIMUM DEPTH 3.5 FEET.
2. REMOVE CASTING. REMOVE CHIMNEY FULL DEPTH WHERE CHIMNEY IS CONSTRUCTED OF CONCRETE OR PLASTIC ADJUSTING RINGS.
3. REMOVE SOIL/AGGREGATE AROUND MANHOLE STRUCTURE TO EXPOSE A MINIMUM OF THREE VERTICAL INCHES OF STRUCTURE BELOW REMOVED CASTING/CHIMNEY MATERIAL.



PRECAST CONE CASTING/CHIMNEY RECONSTRUCTION IN PAVEMENT

NOTES:

4. CLEAN AND INSPECT TOP SURFACE OF PRECAST CONE. SURFACE SHOULD BE FREE OF LUMPS, PITS, DAMAGE THAT WILL PREVENT A WATER TIGHT SEAL. UTILIZE HIGH STRENGTH HYDRAULIC CEMENT TO SMOOTH CONE STRUCTURE AS NEEDED TO ENABLE A WATER TIGHT SEAL.
5. CLEAN SURFACE AS REQUIRED FOR CONSTRUCTION OF CASTING/CHIMNEY REPLACEMENT IN PAVEMENT.
6. BACKFILL AREA AROUND STRUCTURE FLUSH TO TOP OF PRECAST CONE WITH 3/4 INCH CLASS A AGGREGATE OR POUR BACK IN CONCRETE AS PART OF ONE CONTINUOUS POUR FOR PAVEMENT. MINIMUM DEPTH OF LAYER IS 3-INCHES.
7. CONSTRUCT FORM FOR MONOLITHIC CONCRETE CHIMNEY REPLACEMENT AND CASTING SUPPORT UTILIZING PLASTIC PIPE, VYLON OR APPROVED EQUAL. CUT TO EXACTLY FIT PROFILE OF PAVEMENT IN ALL DIRECTIONS SUCH THAT WHEN CASTING IS IN PLACE THE TOP OF THE CASTING IS EXACTLY 1/4 INCH BELOW FLUSH WITH PAVEMENT IN ALL DIRECTIONS. PLACEMENT THAT CREATES BUMPS OR DIPS IN PAVEMENT WILL BE REMOVED AND REPLACED AT NO COST TO CITY.
8. UTILIZE SEALANT/WATERPROOFING TO ENSURE WATER TIGHT SEAL BETWEEN TOP OF PLASTIC PIPE AND CASTING FRAME AND BETWEEN BOTTOM OF PLASTIC PIPE AND EXISTING STRUCTURE. MH MANHOLE SEALANT, MM 3006, NPC 900 SOLAR SEAL, OR APPROVED EQUAL.
9. FOR ALL MANHOLE CASTINGS LOCATED IN A FLOOD PLAIN OR SWALE, PROVIDE BOLT DOWN COVERS. ALL CASTINGS SHALL COMPLY WITH FIGURES 6010.601, TWO-PIECE CASTING. CONCRETE BOX OUTS FOR MANHOLES IN HMA PAVING SHALL COMPLY WITH FIGURE 7020.201. ALL MANHOLES IN PAVING SHALL BE GASKETED.
10. PLACE REINFORCEMENT AS SPECIFIED IN SUDAS SECTIONS 7010 AND 7020 AND CITY OF AMES SUPPLEMENTAL SPECIFICATIONS.
11. UTILIZE WATERSTOP AT OUTSIDE WALL OF PLASTIC PIPE AT CONNECTION TO EXISTING MANHOLE STRUCTURE TO CREATE A WATER TIGHT SEAL. WATERSTOP WILL BE UTILIZED AROUND ENTIRE PERIMETER OF PLASTIC PIPE/CONE. SWELLSTOP, WATERSTOP-RX, OR DENEUF BENTORUB+ CONTROLLED EXPANSION WATERSTOP OR APPROVED EQUAL.
12. UTILIZE CLASS C CONCRETE PER SUDAS AND CITY OF AMES SUPPLEMENTAL SPECIFICATIONS TO CONSTRUCT MONOLITHIC CONCRETE CHIMNEY/PAVEMENT SECTION. SHALL BE CONSTRUCTED IN ONE POUR.

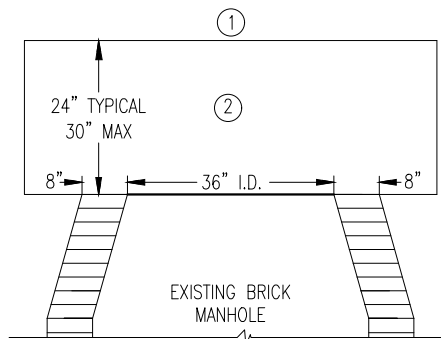


PRECAST MANHOLE CASTING/CHIMNEY RECONSTRUCTION

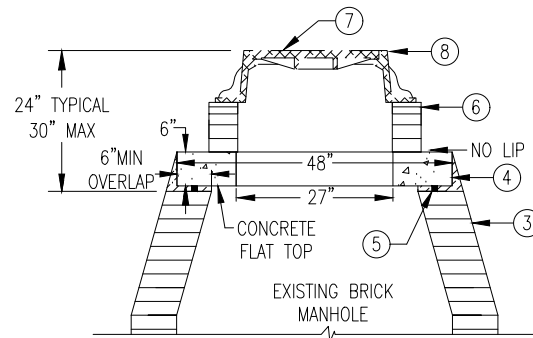
NOTES:

1. REMOVE EXISTING LID & CASTING, F&I NEW BOLT-DOWN LID & CASTING SEAL CASTING WITH BUTYL RUBBER SEALANT. CASTING SHALL COMPLY WITH SUDAS SECTION 6010 AND CITY OF AMES SUPPLEMENTAL SPECIFICATIONS. FOR ALL MANHOLES LOCATED IN FLOOD PLAIN OR DRAINAGE SWALE, PROVIDE BOLT DOWN COVERS.
2. REMOVE EXISTING ADJUSTING RINGS DOWN TO PRECAST CONE SECTION. CLEAN AND INSPECT TOP SURFACE OF CONE. SURFACE SHOULD BE FREE OF LUMPS, PITS, DAMAGE THAT WILL PREVENT A WATER TIGHT SEAL. GRIND PRECAST CONE SECTION AS REQUIRED TO SMOOTH TO ENABLE A WATER TIGHT SEAL. F&I NEW ADJUSTING RINGS, NEW RINGS SHALL BE FULLY MORTARED.
3. EXISTING PRECAST CONCRETE CONE TO REMAIN.
4. FINISHED RIM ELEVATION 1/4" BELOW GRADE.
5. THIS DETAIL ALSO APPLIES TO EXISTING FLAT TOP MANHOLES. AT FLAT TOP MANHOLES REMOVE AND REPLACE CASTING AND CHIMNEY, EXISTING FLAT TOP TO REMAIN.
6. F&I 3'X3'X1' DEEP CONCRETE AROUND CASTING AT CLEANOUT LOCATIONS.
7. BOLT CASTINGS TO CONE OR FLAT TOP IF EXPOSED ABOVE GRADE

CASTING / CHIMNEY REPLACEMENT IN PAVED AREAS FOR PCC MANHOLES



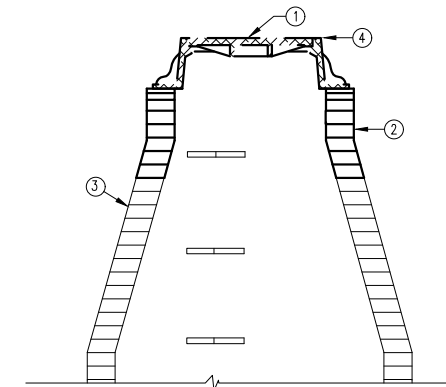
BRICK MANHOLE CHIMNEY REMOVAL



BRICK MANHOLE CHIMNEY REPLACEMENT WITH FLAT TOP

NOTES:

1. CUT AND REMOVE EXISTING PAVEMENT AROUND MH CASTING. ALL REMOVALS LARGER THAN 48" DIAMETER SHALL BE DIAMOND PER PAVEMENT DETAIL.
2. REMOVE EXISTING LID AND CASTING, EXISTING ADJ. RINGS, AND/OR CHIMNEY BRICK DOWN TO TYPICALLY 24" (30" MAX) TO A MH OPENING OF 36" INTERIOR DIAMETER.
3. REPLACE ANY BROKEN OR MISSING BRICK IN TOP OF CONE TO FORM A SOUND BEARING SURFACE FOR PRECAST CONCRETE FLAT TOP.
4. PROVIDE 6" OVERLAP OF BRICK PAST FLAT TOP AS SHOWN. CONCRETE FLAT TOP CAN OVERHANG EXISTING MH, IF 30" MAX DEPTH IS MET. IF FLAT TOP OVERHANGS EXISTING MH MORTAR UNDERSIDE OF FLAT TOP TO PROVIDE A SMOOTH TRANSITION.
5. BUTYL RUBBER SEALANT W/ MORTAR(TYP.) TO PROVIDE A WATER TIGHT SEAL.
6. STACK 2-5 ADJ. RINGS OVER FLAT TOP. FULLY MORTAR.
7. F&I NEW LID & CASTING. FOR MANHOLES IN FLOOD PLAIN OR SWALE, PROVIDE BOLT DOWN COVERS.
8. FINISHED RIM ELEVATION 1/4" BELOW GRADE.



MASONRY MANHOLE CASTING/CHIMNEY RECONSTRUCTION

NOTES:

1. REMOVE EXISTING LID & CASTING, F&I NEW BOLT DOWN LID & CASTING, SEAL CASTING WITH BUTYL RUBBER SEALANT. CASTING SHALL COMPLY WITH SUDAS SECTION 6010 AND CITY OF AMES SUPPLEMENTAL SPECIFICATIONS. FOR ALL MANHOLES LOCATED IN A FLOOD PLAIN OR DRAINAGE SWALE, PROVIDE BOLT DOWN COVERS.
2. REMOVE EXISTING ADJ. RINGS AND/OR CHIMNEY BRICK DOWN TO 1.5'-1.8' BELOW T.O.C.. F&I NEW ADJ. RINGS STACK 2 - 5 ADJ. RINGS NEW RINGS SHALL BE FULLY MORTARED. DEPTH TO REPLACE WILL VARY. MAXIMUM REPLACEMENT DEPTH OF 3.5'
3. REPLACE ANY BROKEN OR MISSING BRICKS TO FORM A SOUND BEARING SURFACE. UP TO 2 COURSES OF BRICK ARE INCLUDED IN THIS ITEM. CLEAN AND INSPECT TOP SURFACE OF CONE. SURFACE SHOULD BE FREE OF LUMPS, PITS, DAMAGE THAT WILL PREVENT A WATER TIGHT SEAL. UTILIZE HIGH STRENGTH HYDRAULIC CEMENT TO SMOOTH BRICK STRUCTURE AS NEEDED TO ENABLE A WATER TIGHT SEAL.
4. FINISHED RIM ELEVATION 1/4" BELOW GRADE.

CASTING CHIMNEY REPLACEMENT WITH FLAT TOP FOR BRICK MANHOLES

GENERAL NOTES:

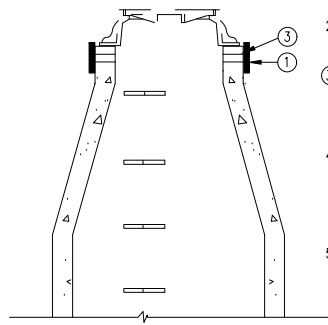
1. MAXIMUM CIRCULAR BOXOUT DIAMETER OF 5 FEET. IF EXISTING BOXOUT IS RECTANGULAR AND WIDTH IS LARGER THAN 5 FEET, USE EXISTING BOX OUT DIMENSIONS.
2. CAPTURE DEBRIS FROM CONSTRUCTION ACTIVITY. DO NOT ALLOW DEBRIS TO MOVE DOWNSTREAM OR LEAVE IN MANHOLES.
3. USE 2 PIECE CASTING PER SPECIFICATIONS.
4. AT LOCATIONS SPECIFIED FOR FLEXIBLE INTERNAL CHIMNEY SEALANT, OR CEMENTITIOUS LINER, OR HEAT SHRINK WRAP APPLICATIONS, NEW ADJUSTING RINGS SHALL BE PRECAST CONCRETE ONLY - NO PLASTIC RINGS ALLOWED.
5. THE NATURAL CONTOURS OF THE FLOODPLAIN WILL BE MAINTAINED FOR THE AREAS THAT WILL REQUIRE ANY EXCAVATION IN THE FLOOD PLAIN/FLOODWAY.

ADDED PER ADDENDUM



**NOTES:**

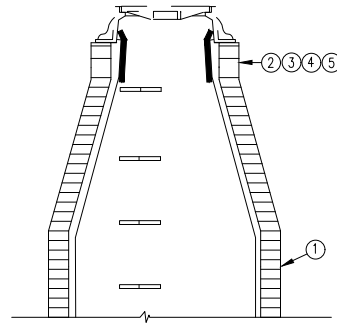
1. REMOVE EXISTING CHIMNEY SEAL(S) IF APPLICABLE. F&I EXTERNAL CHIMNEY SEAL (CRETEX WITH STAINLESS STEEL BANDS, WRAPID-SEAL, SSI INFINI-SHIELD) OR EQUAL.
2. NEW CASTING / CHIMNEY WORK TO BE COMPLETED PRIOR TO EXTERNAL CHIMNEY SEAL.
3. PREPARE THE SURFACE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS, INCLUDING, BUT NOT LIMITED TO, SANDBLASTING, PRESSURE WASHING, SEALING LEAKS AND GAPS, AND DRYING.
4. INSTALL NEW EXTERNAL CHIMNEY SEAL PER MANUFACTURER'S RECOMMENDATIONS INCLUDING BUT NOT LIMITED TO INSTALLATION OF PRIMER, PREPARATION OF MATERIALS, INSTALLATION, PATCHES, HEAT TREATMENT, TESTING.
5. INSTALL TO COVER ENTIRE CHIMNEY TO A MAXIMUM VERTICAL CHIMNEY DEPTH OF 4.0 FEET, OVERLAY AT CONE SECTION BY MINIMUM OF 5-INCHES. ATTACH TO CASTING USING BAND. ALTERNATELY IF NON-BANDED SEAL IS USED WITH ENGINEER'S APPROVAL THEN OVERLAY MINIMUM 5-INCHES OVER CASTING. EXTERNAL CHIMNEY SEAL EXTENSIONS MUST BE OVERLAPPED A MINIMUM OF 3-INCHES.
6. INSTALL SO THAT SEAL FORMS WATER TIGHT BARRIER TO PREVENT GROUNDWATER INFILTRATION.



**E. EXTERNAL CHIMNEY SEAL FOR PCC MANHOLES**

**NOTES:**

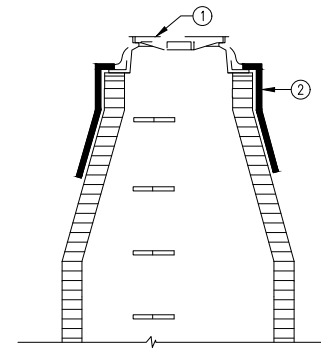
1. BRICK MANHOLE SHOWN IN THIS DETAIL, HOWEVER THIS DETAIL APPLIES TO BRICK, PRECAST, AND FLAT TOP NEW CONSTRUCTION AND CEMENTITIOUS REHABILITATION LOCATIONS.
2. COMPLETE ALL RECONSTRUCTION AND/OR CEMENTITIOUS SPRAY/TROWEL LINING PRIOR TO APPLYING FLEXIBLE SEALANT. SUBSTRATE MUST BE CLEAN AND SOUND PRIOR TO APPLYING FLEXIBLE SEALANT. ALL NEW CEMENTITIOUS MATERIAL MUST BE ALLOWED TO FULLY CURE FOR 7 DAYS OR AS RECOMMENDED BY MANUFACTURER PRIOR TO APPLYING FLEXIBLE SEALANT.
3. PREPARE INTERIOR CASTING AND CHIMNEY SURFACES PER MANUFACTURER'S RECOMMENDATIONS.
4. APPLY FLEXIBLE SEALANT PER MANUFACTURER'S RECOMMENDATIONS. MINIMUM FINISHED HEIGHT IS 1.0 FOOT. SEALANT MUST COVER MINIMUM 3 INCHES OF CASTING, ENTIRE CHIMNEY, AND MINIMUM 3 INCHES OF CONE OR FLAT TOP SEAL.
5. FINISHED CHIMNEY LINER SHALL PROVIDE A SMOOTH SURFACE THAT CONFORMS TO THE EXISTING STRUCTURE. THE FINISHED LINER SHALL BE FREE OF THIN SPOTS AND DELAMINATIONS, AND SHALL BE A MINIMUM UNIFORM THICKNESS OF 180 MIL. THE FINISHED LINER MUST PROVIDE AN AIR- AND WATERTIGHT CORROSION-RESISTANT LINER PROTECTING THE COVERED AREAS.



**F. FLEXIBLE INTERNAL CHIMNEY SEALANT**

**NOTES:**

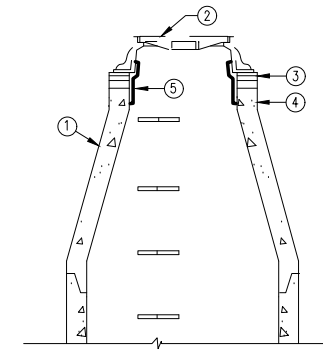
1. REMOVE EXISTING CHIMNEY SEAL(S) IF APPLICABLE. COMPLETE CASTING & LID REPLACEMENT AND CONE REPAIR PRIOR TO INSTALLATION OF WRAP IF APPLICABLE.
2. PREPARE THE SURFACE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS, INCLUDING, BUT NOT LIMITED TO, SANDBLASTING, PRESSURE WASHING, SEALING LEAKS AND GAPS, AND DRYING.
3. INSTALL NEW EXTERNAL WRAP PER MANUFACTURER'S RECOMMENDATIONS INCLUDING BUT NOT LIMITED TO INSTALLATION OF PRIMER, PREPARATION OF MATERIALS, INSTALLATION, PATCHES, HEAT TREATMENT, TESTING. EXTERNAL WRAP SHALL BE THERMOPLASTIC WRAP THAT IS BONDED TO THE MANHOLE COMPONENTS, SUITABLE FOR BRICK MANHOLES IN VARIOUS DIAMETERS AND SHAPES (WRAPIDSEAL OR EQUAL).
4. WRAP CASTING, CHIMNEY, AND PART OF THE CONE. MINIMUM OVERLAP 5-INCHES AT CASTING AND 12-INCHES OVER CONE SECTION, OR TOTAL MINIMUM VERTICAL DEPTH 2-FT, WHICHEVER IS GREATER. MAXIMUM VERTICAL DEPTH LIMITED TO 48-INCHES. EXTERNAL WRAP EXTENSIONS MUST BE OVERLAPPED A MINIMUM OF 3-INCHES.
5. INSTALL SO THAT SEAL FORMS WATER TIGHT BARRIER TO PREVENT GROUNDWATER AND SURFACE WATER INFILTRATION.



**G. F&I EXTERNAL CHIMNEY/CONE WRAP FOR MASONRY MANHOLES**

**NOTES:**

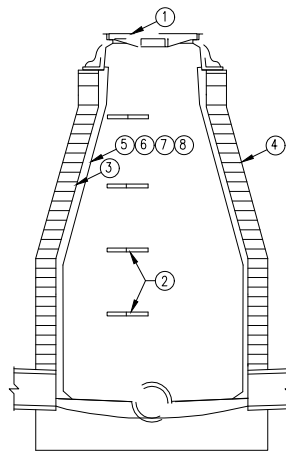
1. EXISTING CONE TO REMAIN
2. EXISTING CASTING AND LID TO REMAIN
3. EXISTING ADJ. RINGS TO REMAIN
4. REMOVE EXISTING CHIMNEY SEAL IF APPLICABLE. INSTALLATION OF CHIMNEY SEAL REQUIRES VERTICAL AND ROUND BEARING SURFACE OF SIMILAR DIAMETER TO CASTING TO BE PRESENT ON TOP OF CONE. APPLY MORTAR TO MODIFY TOP OF CONE IF NEEDED IN BRICK MANHOLES PER CHIMNEY SEAL MANUFACTURER'S RECOMMENDATIONS.
5. MINIMUM OVERLAP 2-INCHES AT CASTING AND 2-INCHES AT CONE. F&I INTERNAL MANHOLE CHIMNEY SEAL (CRETEX, FLEX-RIB, OR UNI-BAND) FROM CASTING TO CONE. F&I CHIMNEY SEAL EXTENSION IF NEEDED TO REACH CONE.



**H. F&I INTERNAL CHIMNEY SEAL**

**NOTES:**

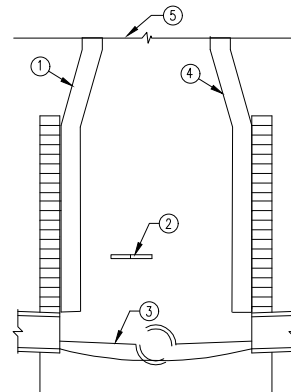
1. COMPLETE CASTING & LID REPLACEMENT PRIOR TO LINING, IF APPLICABLE.
2. REMOVE EXISTING STEPS, GRIND FLUSH TO WALL.
3. PRESSURE WASH AND/OR PREPARE SURFACE BY OTHER METHOD PER MANUFACTURER'S RECOMMENDATION.
4. PATCH WALL, BENCH AND CHANNEL. REPAIR STRUCTURAL VOIDS AND ACTIVE LEAKS PRIOR TO APPLYING LINING.
5. REHABILITATE WALL AND CONE WITH CEMENTITIOUS LINING SYSTEM (STRONGSEAL, QUADDEX, PERMACAST, OR EQUAL).
6. APPLICATION THICKNESS SHALL BE PER MANUFACTURER'S RECOMMENDATION.
7. APPLY TO FULL DEPTH OF MANHOLE.
8. APPLY EPOXY TOP COAT, IF SPECIFIED, PER MANUFACTURER'S RECOMMENDATION.



**I. SPRAY/TROWEL-CEMENTITIOUS LINER**

**NOTES:**

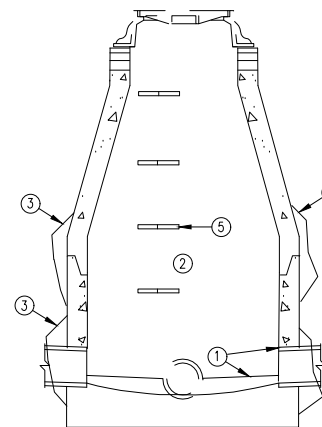
1. DEMOLISH EXISTING CONE.
2. REMOVE EXISTING STEPS, GRIND FLUSH TO WALL.
3. REPAIR BENCH AND CHANNEL IF REQUIRED.
4. USE FORMWORK TO POUR NEW MONOLITHIC CONCRETE WALLS AND CONCENTRIC CONE IN PLACE. (MONOFORM OR PERMAFORM) PER MANUFACTURER'S RECOMMENDATIONS.
5. RECONSTRUCT CHIMNEY AND LID/CASTING.



**J. POURED IN PLACE LINER**

**NOTES:**

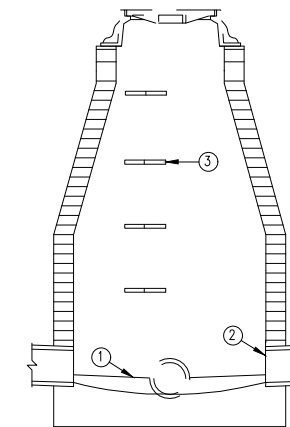
1. DRILL HOLES THROUGH BENCH/CHANNEL/PIPE CONNECTIONS AT LOCATION OF LEAKS.
2. DRILL HOLES THROUGH WALL/CONE SECTION AT LOCATION OF LEAKING JOINTS. MINIMUM DISTANCE SHALL BE ONE THIRD OF LEAKING JOINT CIRCUMFERENCE.
3. APPLY CHEMICAL PRESSURE GROUT TO HOLES (AVANTI OR DENEFF) PER MANUFACTURER'S RECOMMENDATIONS.
4. APPLY APPROPRIATE GROUT FOR SOIL CONDITIONS, INCLUDING FROST-LINE.
5. REMOVE EXISTING STEPS, GRIND FLUSH TO WALL.
6. FOR BRICK MANHOLES IF CHEMICAL PRESSURE GROUTING IS NOT FEASIBLE, SURFACE PATCHING ACTIVE LEAKS PRIOR TO APPLYING A SPRAY/TROWEL LINER IS ACCEPTABLE.



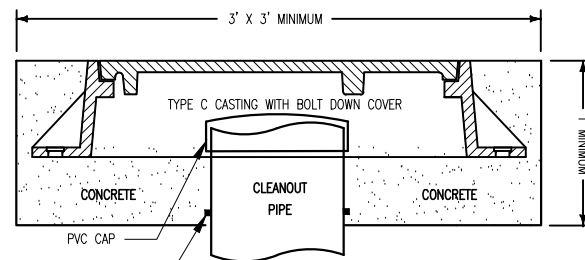
**K. CHEMICAL PRESSURE GROUTING FOR WALLS, BENCH, CHANNEL AND PIPE CONNECTIONS**

**NOTES:**

1. REMOVE DEFECTIVE PORTIONS OF BENCH AND CHANNEL TO FORM A SOUND SUBSTRATE. REFORM BENCH AND CHANNEL WITH MORTAR. (HYPERFORM, OCTOCRETE, STRONGSEAL)
2. PLUG AND BYPASS FLOWS AS NEEDED.
3. REMOVE EXISTING STEPS, GRIND FLUSH TO WALL.



**L. BENCH & CHANNEL REPAIR**



**NOTES:**

1. FOR CLEANOUTS IN PAVED AREAS MATCH EXISTING PAVEMENT TYPE. FOR CLEANOUTS IN UNPAVED AREAS, POUR A CONCRETE FRAME AS SHOWN AND MEET PCC SIDEWALK REQUIREMENTS FOR MATERIAL AND INSTALLATION QUALITY.

BUTYL RUBBER SEALANT W/ MORTAR (TYP.) TO PROVIDE A WATER TIGHT SEAL.

**F&I CONCRETE AROUND CASTING  
CONCRETE FRAME FOR CLEANOUTS DETAIL**

**GENERAL NOTES:**

1. CAPTURE DEBRIS FROM CONSTRUCTION ACTIVITY. DO NOT ALLOW DEBRIS TO MOVE DOWNSTREAM, OR LEAVE IN MANHOLE.
2. THE NATURAL CONTOURS OF THE FLOODPLAIN WILL BE MAINTAINED FOR THE AREAS THAT WILL REQUIRE ANY EXCAVATION IN THE FLOOD PLAIN/FLOODWAY.

ADDED PER ADDENDUM

