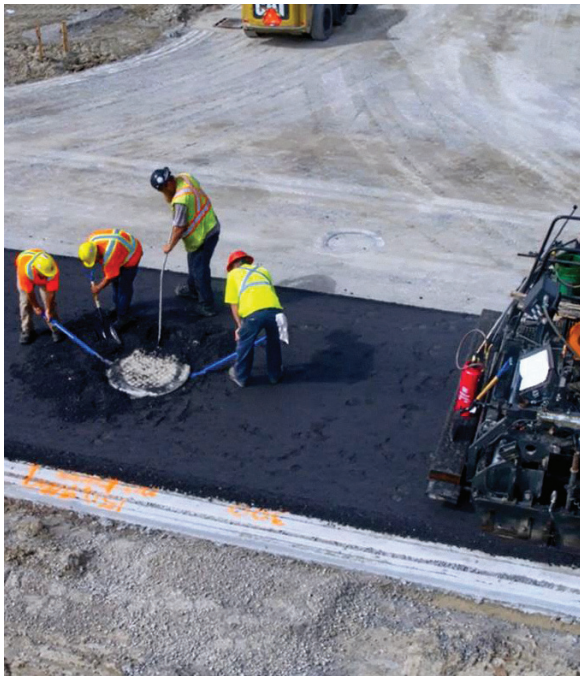


IFC·25

INTEGRATED FRAME & COVER SYSTEM

NEW INSTALLATIONS

www.ifcmhsystem.com

IFC-25 MH SYSTEM OVERVIEW

The IFC-25 MH System is a patented (CA 2643874, filed 2008-11-14) an enhanced maintenance hole design called the Integrated Frame and Cover Maintenance Hole System, also known as the IFC-25 MH System. The IFC-25 MH System eliminates inflow and infiltration, increases sewer capacity and groundwater recharge, minimizes road deterioration, reduces MH rehabilitation cost and frequency, and provides substantial life-cycle costs savings compared to conventional maintenance hole installations.

The IFC-25 MH System can be installed on new and existing tapered tops, flat caps and chambers. Numerous municipalities and organizations are now specifying and accepting the IFC-25 MH System. Over 4,000 systems have been installed across Ontario.

To demonstrate how confident we are in the IFC-25 MH System, there is a 25-year material guarantee for all systems that are installed following the correct procedures detailed in this report. Additionally, in the event of any third-party damage to the IFC-25 frame and/or concrete components, most repairs are simple and quick using a recommended product.

WE ***GUARANTEE*** OUR PRODUCT!

The IFC-25 MH System eliminates the currently used grade adjustment rings for conventional maintenance holes. Conventional, standard “grade rings” split and crumble allowing unwanted inflow and infiltration which accelerates deterioration and failure of the asphalt road surface and granular foundation. Constant and frequent rehabilitations of conventional MHs are required due to traffic loading and the forces of the freeze-thaw cycle.

IFC MH SYSTEM

VS

CONVENTIONAL MH

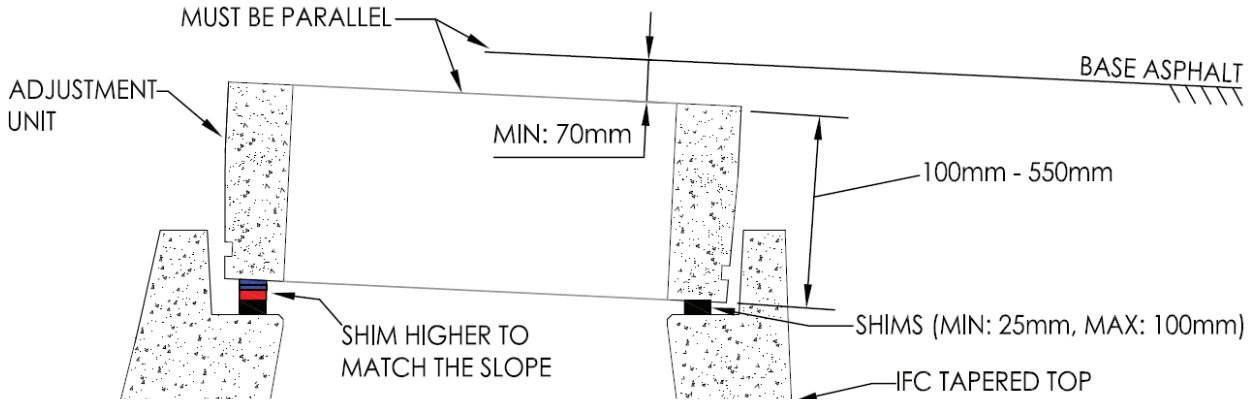
INSTALLATION PROCESS

For new IFC-25 MH System installations, the IFC-25 tapered top (with the grouting bell as described above) is used. The lower sections up to the tapered top are the same as the conventional design. To rehabilitate existing conventional maintenance holes, or installations on flat tops and chambers, the IFC-25 system can still be used but the installation procedure has some simple modifications.

NEW INSTALLATIONS

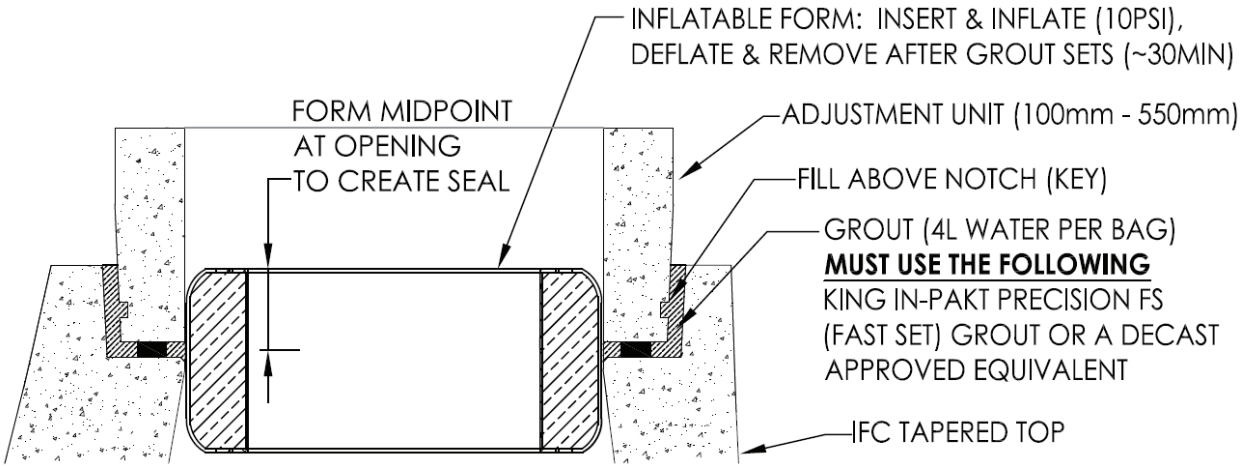
STEP 1: SETTING THE CONCRETE ADJUSTMENT UNIT

- Once the road is constructed, the maintenance hole is to be adjusted to grade
- Measurements are taken and an adjustment unit size is selected, available in 50mm increments, 100mm - 550mm
- The adjustment unit is placed on HDPE shims to match the subbase height and required cross slope
- The top of the adjustment unit is to be 70mm minimum lower than the specified base course asphalt layer (50mm for asphalt and 20mm for the frame thickness)



STEP 2: GROUT JOINT TO CREATE A MONOLITHIC STRUCTURE

- An interior inflatable form creates a watertight seal to allow grout to be poured on the exterior to permanently bond the adjustment unit to the tapered top
- The prepackaged, high-strength grout is mixed on-site to a fluid consistency to uniformly fill the joint. The shims are encapsulated within the grout
- Removing the form reveals a clean finished surface that requires no further work



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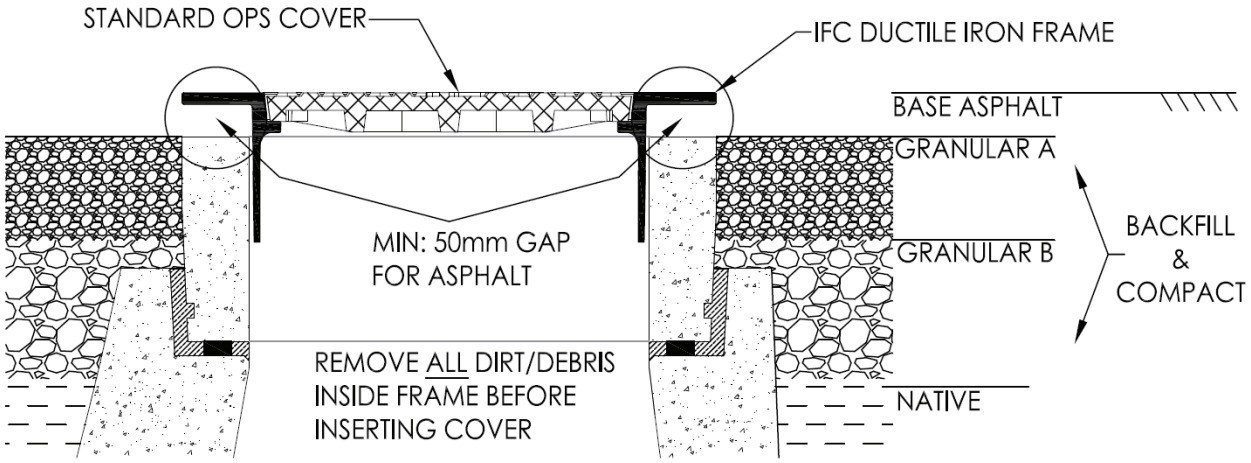
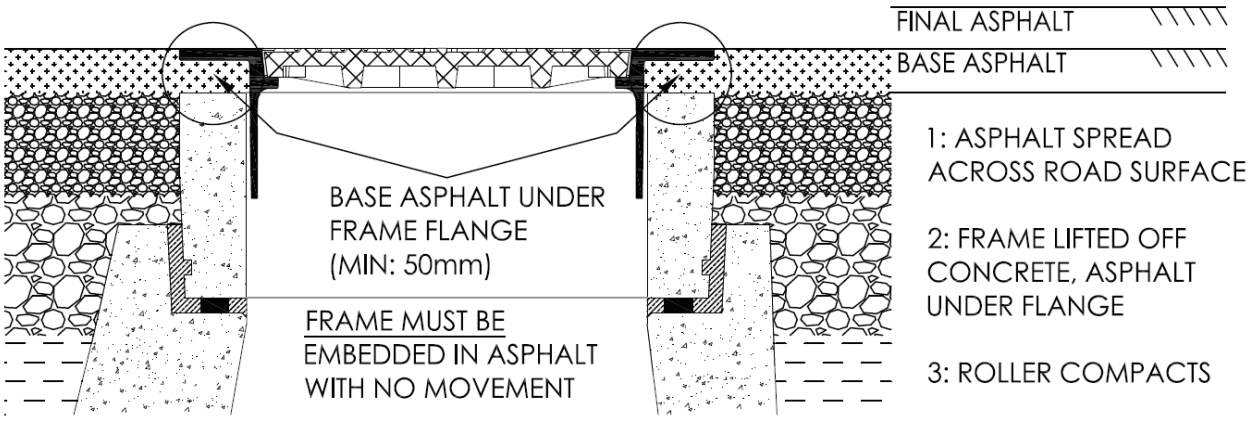
STEP 3: INSTALL IFC-25 FRAME, STANDARD COVER, BACKFILL AND COMPACT

- The telescopic ductile iron frame and standard OPS cover are set into the concrete monolithic structure
- The surrounding road subbase granular material is reinstated up to the top surface of the adjustment unit and compacted



STEP 4: BASE COURSE ASPHALT

- An asphalt paver spreads asphalt across the entire road surface and drives directly over the IFC-25 MH System. The crew following the paver adjusts the frame and cover during the process
- A minimum of 50mm of asphalt between the frame flange and concrete adjustment unit at base course asphalt is required
- Asphalt rollers drive directly over the frame and cover, compacting the asphalt under the frame flange and surrounding area, this ensures proper cushioning and embeds the system into the road surface



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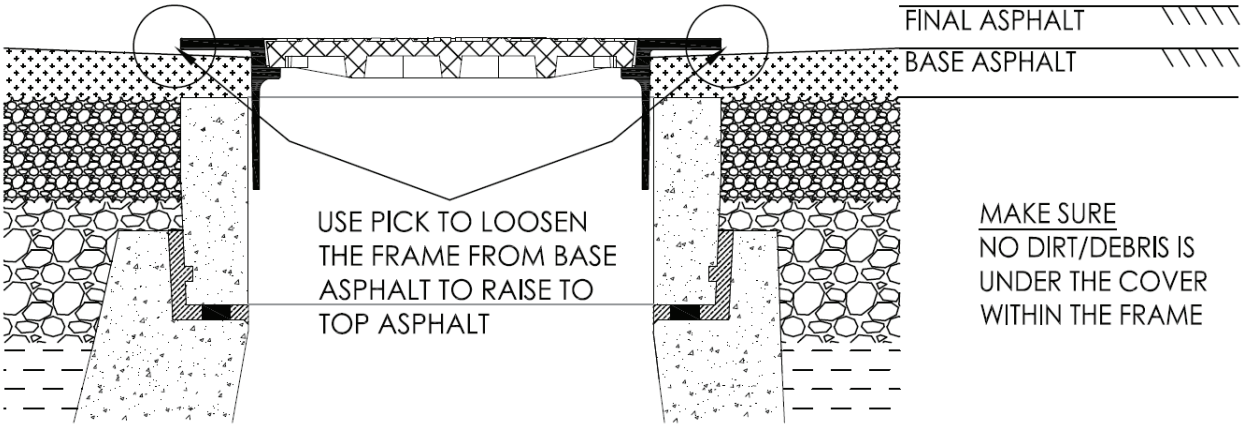
STEP 5: FINAL (SURFACE) COURSE ASPHALT PREPARATION

- For final (surface) asphalting, the conventional MH installation requires cutting the base asphalt, excavating the granular material, and mortaring additional grade rings.

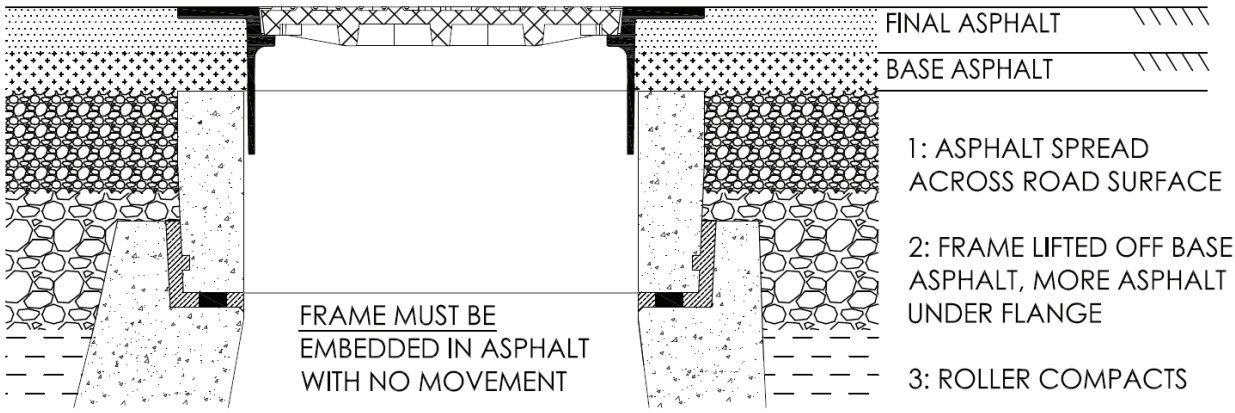
  The IFC-25 MH System eliminates these time-consuming, expensive steps!

- The base course asphalt and subbase are not disturbed during the placement of the final lift of asphalt. The frame is simply loosened using a pick or jackhammer chisel to raise the frame to the final height during the asphalting process



STEP 6: FINAL (SURFACE) COURSE ASPHALT

- Similar to Step 4: Base Course Asphalt, an asphalt paver spreads asphalt across the entire road surface and drives directly over the IFC-25 MH System. The crew following the paver adjusts the frame and cover using pry bars
- An additional 50mm of asphalt is compacted between the frame flange and concrete adjustment unit
- Asphalt rollers drive directly over the frame and cover, compacting the asphalt under the frame flange and surrounding area
- The IFC-25 MH System is embedded in the road surface, as the road moves with the forces of the freeze-thaw cycle the frame remains flush and level, while the underground structure remains impenetrable, which protects the surrounding granular foundation



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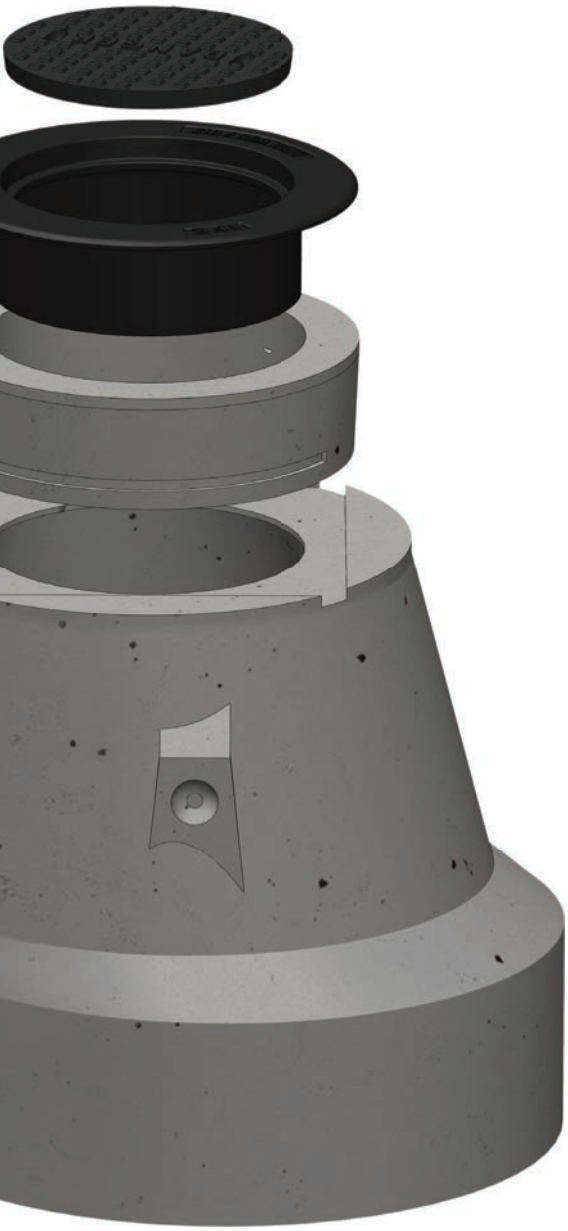
INTEGRATED FRAME & COVER SYSTEM



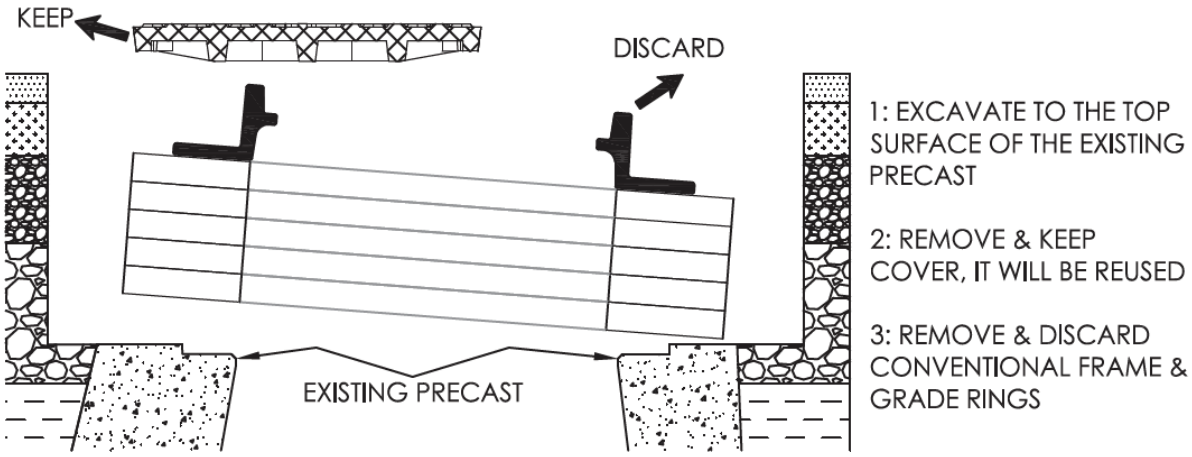
REHABILITATION, FLAT TOP & CHAMBER INSTALLATIONS

INSTALLATION PROCESS

REHABILITATION, FLAT TOP AND CHAMBER INSTALLATIONS

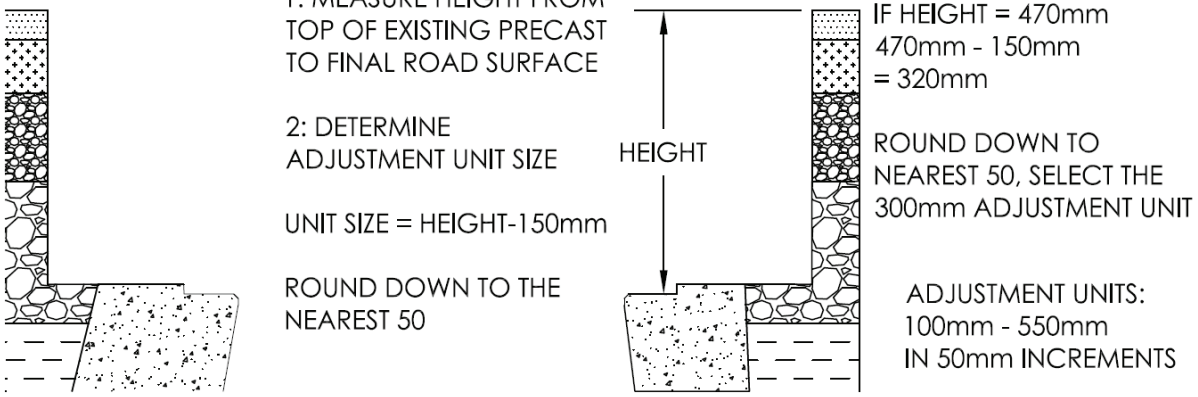
STEP 1: EXCAVATION (ONLY FOR EXISTING MHS)

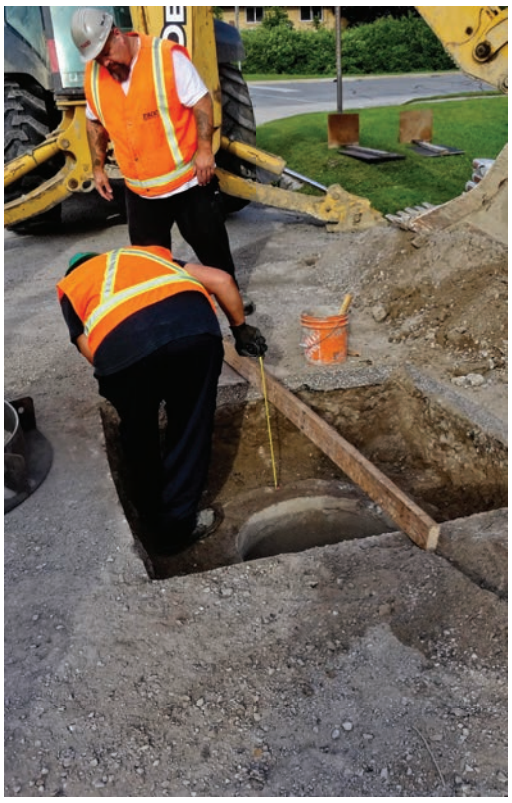
- Sawcut a square perimeter and excavate down to the conventional tapered top, flat top or chamber and remove existing grade rings
- Typically, the cover can be reused and the conventional MH frame and most likely broken grade rings are discarded



STEP 2: MEASURE & SELECT THE CONCRETE ADJUSTMENT UNIT

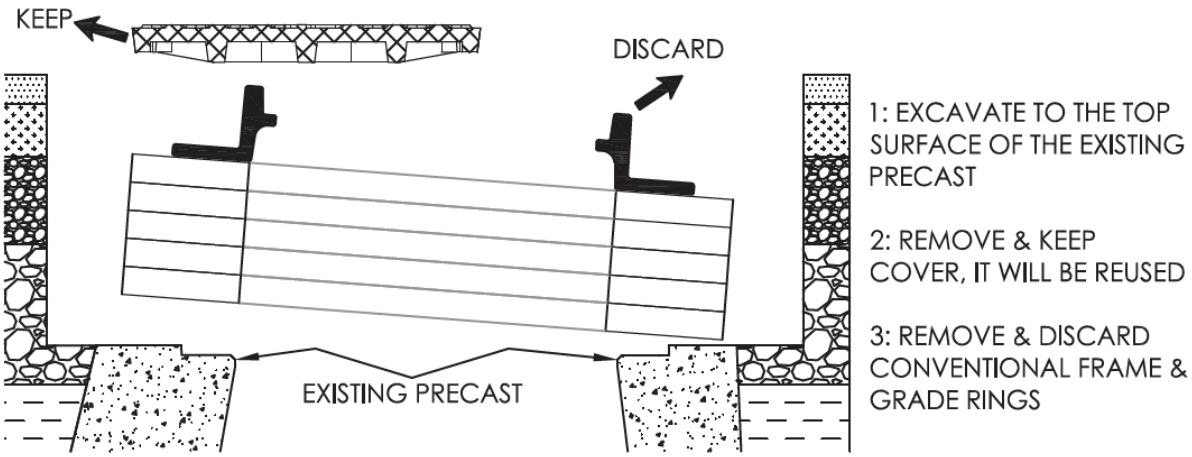
- Measurements are taken and an adjustment unit size is selected, available in 50mm increments from 100mm - 550mm





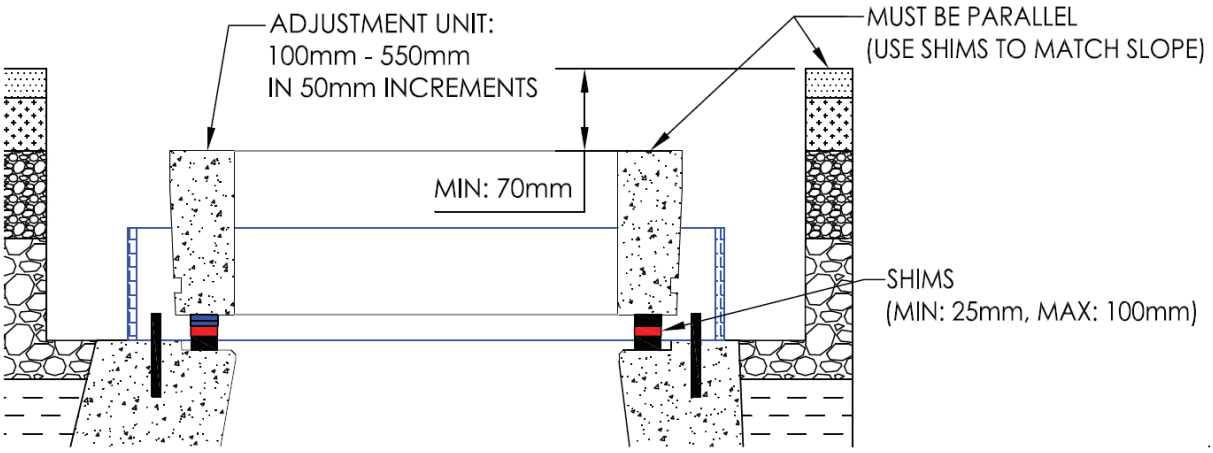
STEP 3: SET SONOTUBE & INSTALL REBAR STIRRUPS

- Center a 40” cardboard sonotube around the opening of the tapered top, flat top or chamber
- Using a hammer drill, drill 4 sets of 1/2” holes spaced evenly around the opening, 50mm within the sonotube, to install the curb stirrups
- This step creates the “grouting bell” that the revised IFC-25 tapered top has to accommodate one solid precast grade adjustment unit



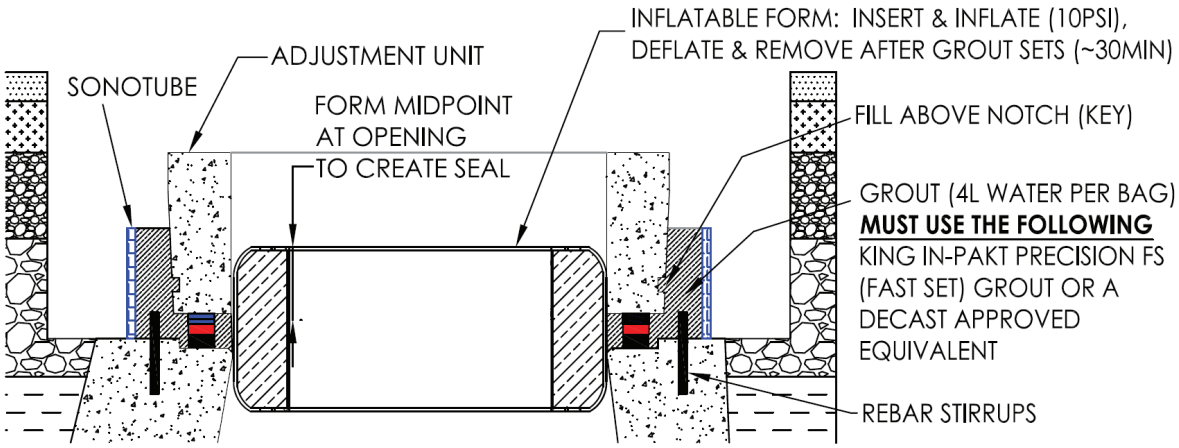
STEP 4: SET CONCRETE ADJUSTMENT UNIT ON SHIMS

- The selected adjustment unit is placed on HDPE shims to be approximately 100mm below the road surface and angled to match the required cross slope



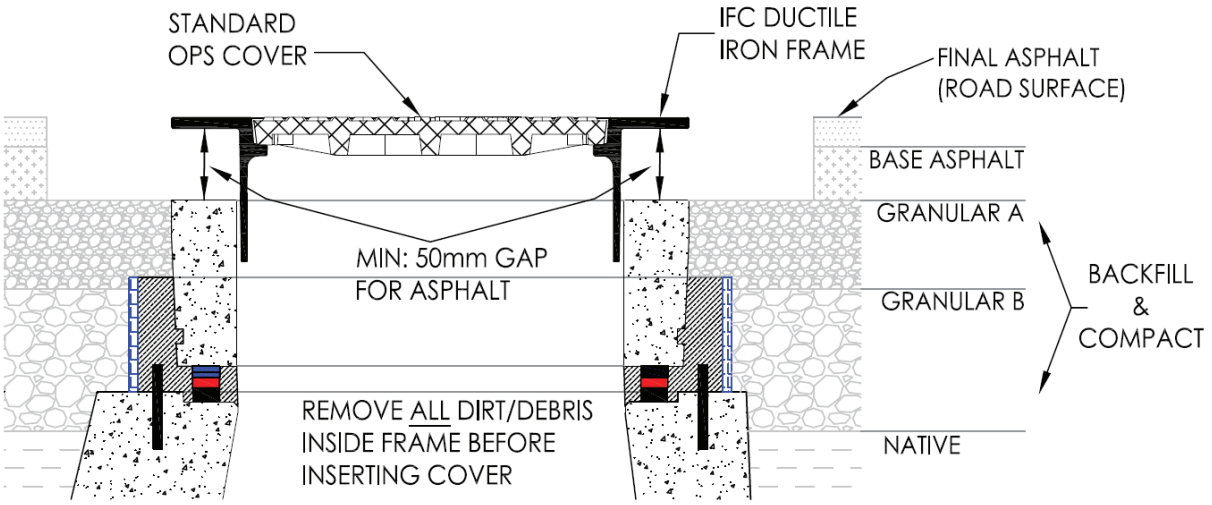
STEP 5: GROUT CONCRETE ADJUSTMENT UNIT

- The inflatable form is inserted and creates a watertight seal to allow grout to be poured on the exterior of the adjustment unit, within the cardboard sonotube, to permanently bond the adjustment unit to the tapered top, flat cap or chamber
- The rebar stirrups provide reinforcement and anchor the structure together



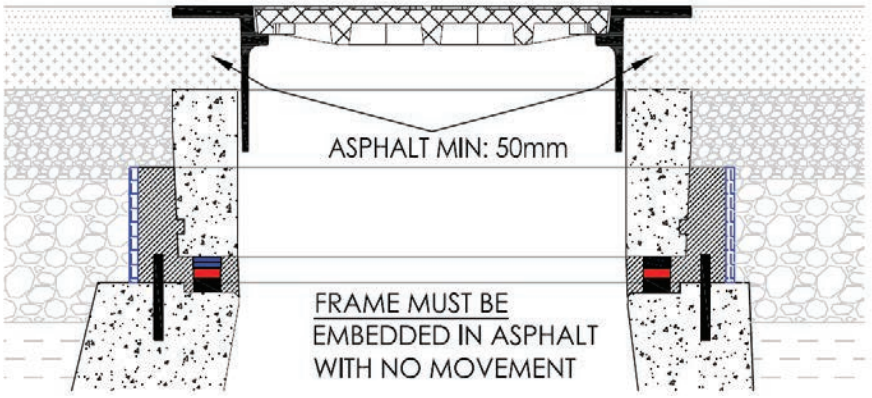
STEP 6: INSTALL IFC-25 FRAME, STANDARD COVER, BACKFILL AND COMPACT

- The telescopic ductile iron frame and standard OPS cover are set into the concrete monolithic structure
- The surrounding road subbase granular material is reinstated up to the top surface of the adjustment unit and compacted



STEP 7: ASPHALT

- Asphalt is compacted between the frame and concrete structure to ensure the frame is cushioned and acts as one unit with the surrounding asphalt
- The asphalt roller compactor drives directly over the frame and cover



1: ASPHALT SPREAD ACROSS EXCAVATED AREA

2: FRAME LIFTED OFF CONCRETE, ASPHALT COMPACTED UNDER FRAME FLANGE

3: ROLLER COMPACTS

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TRAINING & CERTIFICATION PROGRAM

FOR CONTRACTORS, MUNICIPALITIES AND CONSULTANTS

All contractors installing IFC-25 MH Systems shall complete the IFC-25 Training & Certification Program, offered free of charge by all distributors. All companies sign off on the training checklist and receive a certificate permitting the company to install the IFC-25 MH System on future projects.

Trainers will not give a passing grade until the contractors prove they can follow the correct process. The current list of approved companies is maintained on the IFC-25 website, www.ifcmhsystem.com. Additionally, all distributors will train and certify inspectors from municipalities and consultants as requested.

IFC-25 TRAINING & CERTIFICATION CHECKLIST

Company: Company XYZ
Representative: Company XYZ Supervisor
Trainer: DECAST Trainer
Date: yyyy.mm.dd

ACTIVITY	TRAINER INITIAL	REPRESENTATIVE INTIAL
BASE ADJUSTMENT		
Setting concrete adjustment units on shims, shim stacks: 25mm MIN, 100mm MAX		
Ensure distance from top of concrete adjustment unit to predicted surface of base asphalt is 70mm MIN		
Ensure concrete adjustment unit is parallel (same slope) with road surface		
Full understanding of the inflatable form and grouting process		
BASE ASPHALT		
Ensure 50mm MIN of asphalt is compacted under the frame flange		
Ensure the frame is embedded in the asphalt with no movement after compaction		
Ensure only asphalt is under the frame flange, ****No shims under the frame flange****		
FINAL ASPHALT		
Ensure distance from top of concrete adjustment unit to predicted surface of base asphalt is 70mm MIN		
Full understanding of the inflatable form and grouting process		
Full understanding of the inflatable form and grouting process		

Representative Signature

Trainer Signature

http://www.ifcmhsystem.com

CERTIFIED PARTNERS

• Accardi Schaeffers • Aecon Group Inc. • Associated Paving & Materials Ltd.
• B&J Construction • Brennan Paving and Construction Ltd.
• Cedar Infrastructure Products • Coco Paving • D. Crupi & Sons Ltd
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• Fermar Paving Ltd. • Foggia Construction Ltd.
• Fourwinds Construction Inc. • Furfari Paving Co. Ltd. • Georgian Paving Ltd.
• Graham Bros Construction Ltd. • JC Infrastructure Ltd.
• London Excavators & Trucking Ltd. • Memme Infrastructure Contractors
• M Con • Oak Hill Paving & Concrete • Pachino Construction Co. Ltd.
• RA Crete-Scape Ltd. • Rinker • Sam Rabito Construction Ltd.
• TACC Construction Ltd. • The Miller Group • Thorncrete Construction Ltd.

Installation guides (compact sized hardcopies and downloadable electronic versions online) were developed for contractors to have a quick reference for proper installation procedures.

All distributors completes continuous monitoring and inspections of all IFC-25 MH System projects.

The IFC-25 website, www.ifcmhsystem.com, was created to be the central hub for all current IFC-25 material; Installation Video, Brochure, Installation Guides, Certified Contractors & Partners, Manufacturers & Distributors and Contact Information. It is important to note, DECAST has manufacture/distribution license agreements with Cedar Infrastructure Products, M CON (Ayr), M CON (Ottawa), Rinker Materials to eliminate sole sourcing limitations.

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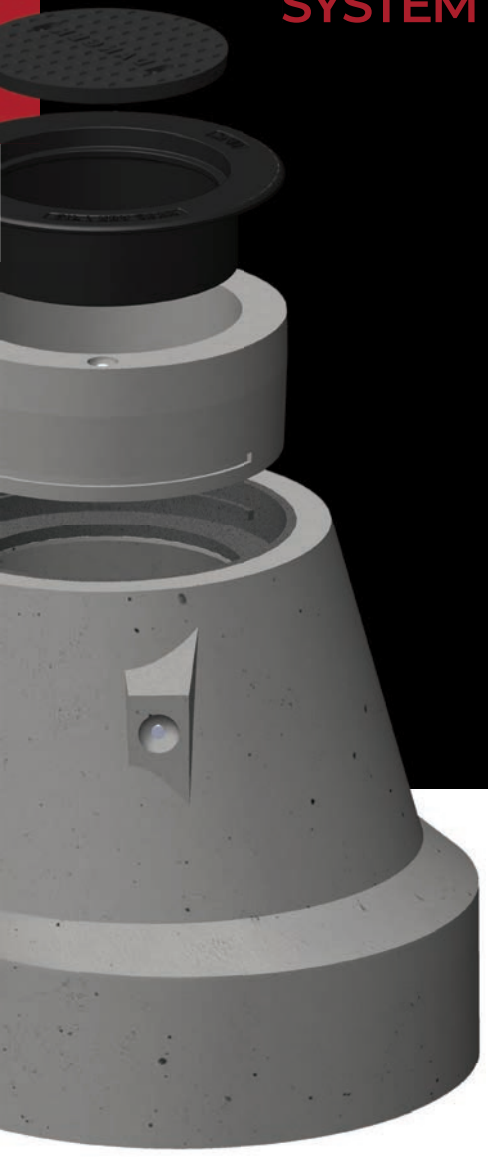
INTEGRATED FRAME & COVER SYSTEM



IFC-25 MAINTENANCE HOLE SYSTEM

A SOLID, ROBUST, IMPENETRABLE MH SYSTEM THAT LASTS MUCH LONGER THAN CONVENTIONAL INSTALLATIONS

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SAVES MILLIONS OF TAXPAYER DOLLARS

ELIMINATES INFLOW & INFILTRATION

MINIMIZES ROAD DETERIORATION, LONGER LIFE-CYCLE

DUCTILE IRON FRAME (270% STRONGER THAN CAST IRON)

PRECAST ADJUSTMENT UNIT (200% STRONGER THAN GRADE RINGS)

QUICK ADJUSTMENTS, LESS TRAFFIC DISRUPTIONS, IMPROVES SAFETY

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MATERIAL 25 YEAR GUARANTEE

INTEGRATED FRAME & COVER MH SYSTEM

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2023.03.08