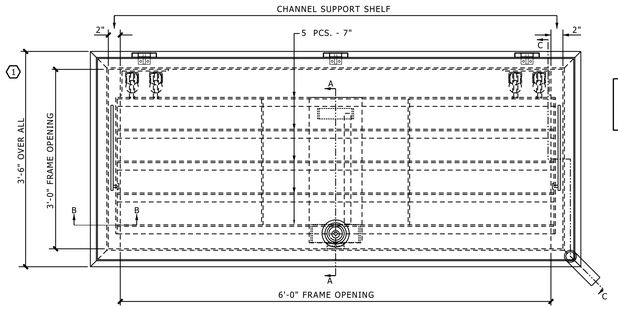
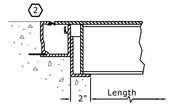
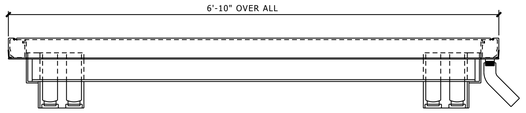


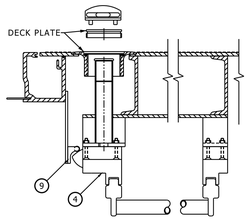
NOTE:
DESIGNED TO WITHSTAND AASHTO HS-20 WHEEL LOADINGS SUITABLE FOR USE IN OFF-STREET LOCATIONS WHERE NOT SUBJECTED TO HIGH DENSITY TRAFFIC



CHANNEL SUPPORT SHELF MUST BE SUPPORTED BY CONCRETE OR STEEL TO CARRY HS-20 LOADING

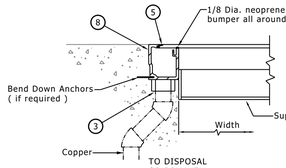
SECTION B-B



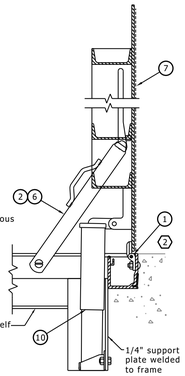


SECTION A-A

Frame areas that come in contact with concrete shall be coated with bituminous paint



SECTION C-C



SIDEWALK/VAULT (H20) DOOR DETAIL

NOT TO SCALE

(1) FOR USE IN AREAS SUBJECT TO VEHICULAR TRAFFIC, INCLUDING OVER SIDEWALK AND HARDSCAPED AREAS OF PLAZAS.

(2) VERIFY SIZE OF DOOR WITH TUNNELS MANAGER FOR EACH PROJECT AND EACH LOCATION.

DESIGN NOTES

(1) ENGINEER TO DETERMINE WHETHER HATCH LENGTH DIMENSION CAN BE REDUCED,BASED ON ACCESS CLEARANCE REQUIRED FOR REPLACEMENT EXPANSION JOINTS INSTALLED AT THE TUNNEL SEGMENT LOCATION.

(2) HATCH & FRAME MUST BE SET FLUSH OR SLIGHTLY RECESSED (+0, -1/8) TO AVOID SNOW PLOW BLADE INTERFERENCE.

KEY NOTES (Typical)

1. BILCO HEAVY DUTY FORGED STAINLESS STEEL HINGES WITH STAINLESS STEEL PINS
2. STAINLESS STEEL GUIDE ARM
3. 1-1/2" DRAIN COUPLING
4. VON DUPRIN 88NLUS4 PANIC LOCK (KEYED TOPSIDE & ALIKE) W/ BEST 1E72 RIM CYLINDER W/ REMOVABLE CORE
5. CONTINUOUS EPDM DEBRIS GASKET
6. BILCO STAINLESS STEEL AUTOMATIC LOCK OPEN ARM
7. 1/4" ALUMINUM DIAMOND PATTERN PLATE COVER
8. BILCO 1/4" ALUMINUM CHANNEL FRAME WITH RECESSED ANCHORS
9. STAINLESS STEEL LOCK STRIKE
10. STAINLESS STEEL SPRING LIFTING MECHANISM

INSTALLATION NOTES (Typical)

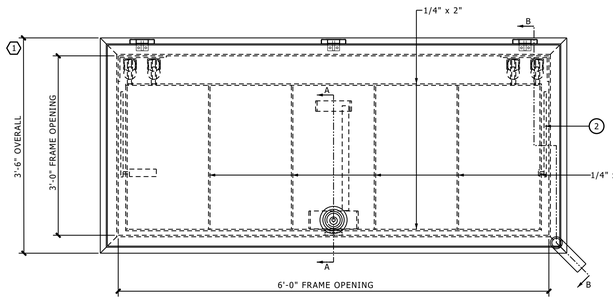
A. USE CAUTION. COVER IS SPRING LOADED. DO NOT REMOVE SAFETY SHIPPING BOLT UNTIL UNIT IS TO BE INSTALLED AND IN NORMAL HORIZONTAL OPERATING POSITION.

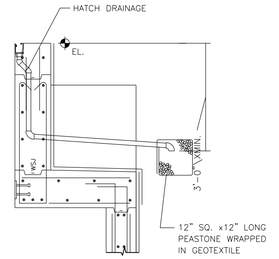
B. BE SURE UNIT IS SET ON SLIGHT PITCH TOWARD DRAIN CORNER.

C. BEFORE ANCHORING IN PLACE OPEN AND CLOSE DOOR. CHECK TO SEE THAT THE DOOR IN THE CLOSED POSITION RESTS ON THE FRAME ALL AROUND. IF NOT, SHIM UNDER THE FRAME AT THE PROPER CORNER.

D. DO NOT REDUCE 1 1/2" DRAIN PIPE TO DISPOSAL SYSTEM.

E. BEND DOWN ANCHORS IF REQUIRED.



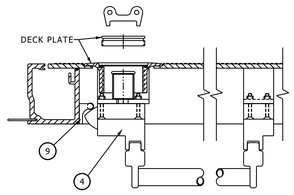


HATCH DRAINAGE SECTION

NOT TO SCALE

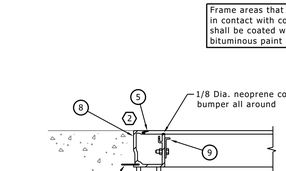
EXTERIOR TUNNEL DRAINAGE SYSTEM:

ALL DRAINAGE, EXTERIOR TO TUNNEL SHALL DISCHARGE INTO THE STORM SYSTEM. DISCHARGING INTO ANY TUNNEL SYSTEM IS PROHIBITED.

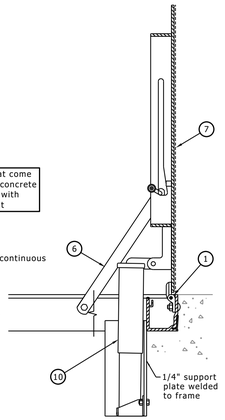


SECTION A-A

Frame areas that come in contact with concrete shall be coated with bituminous paint



SECTION B-B



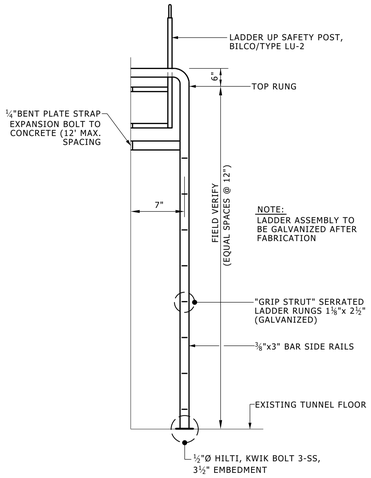
SIDEWALK/VAULT DOOR DETAIL

NOT TO SCALE

(1) FOR USE IN AREAS WHERE THERE IS NO POSSIBILITY OF VEHICULAR TRAFFIC OVER THE HATCH.

(2) VERIFY SIZE OF DOOR WITH TUNNELS MANAGER FOR EACH PROJECT AND EACH LOCATION.

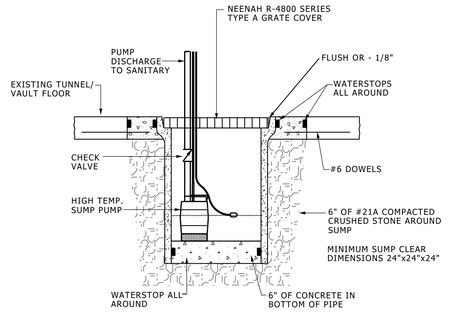
(3) EVALUATE FOR EACH INSTALLATION IF EXISTING BUILT FACTORS DO NOT ALLOW ACCESS FOR LONGER PIPE LENGTHS,CONSIDER REDUCING DOOR LENGTH. MAINTAIN 36" WIDE FRAME OPENING.



FOR ALL LADDERS USED IN THE TUNNELS AND TUNNEL VAULTS.

VERTICAL LADDER DETAIL

SCALE: ½" = 1'-0"



HIGH TEMPERATURE SUMP PUMP SCHEDULE

MARK	SERVICE	PUMPS GPM	PUMPS HEAD	MOTORS HP	MOTORS RPM	DISCHARGE HEADER	MOTOR ELECTRICAL REQUIREMENTS VOLTS	PH	HZ
SP-1									

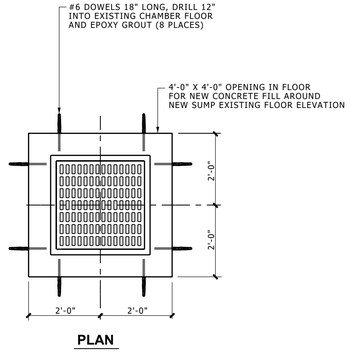
BASIS OF DESIGN: GRUNDFOS UNILIFT AP12

SUMP PUMP DETAIL

NO SCALE

INTERIOR TUNNEL DRAINAGE:

INTERIOR TUNNEL DRAINAGE SYSTEMS SHALL DISCHARGE TO NEAREST BUILDING SANITARY SYSTEM AND REQUIRE A CHECK VALVE TO ENSURE SEWER GASES CANNOT ENTER THE TUNNEL SYSTEM.



PLAN

NEW SUMP IN EXISTING FLOOR DETAIL

SCALE: ½" = 1'-0"

SCALE: 1/2" = 1'-0"
2' 1' 0 2'

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Fax: 734-936-3334

TUNNEL TOOL-KIT

REFERENCE DETAILS, SUPPORTS & SECTIONS

For

Design Professionals Use if Deemed Applicable and Adequate for Project

Not For Construction

UM TUNNEL TOOL KIT REFERENCE DETAILS, SUPPORTS & SECTIONS
FOR DESIGN PROFESSIONAL USE IF DEEMED APPLICABLE & ADEQUATE
APPROVED BY
AEC - Architecture & Engineering
REPRESENTING
AF/BB — DRAWN BY
WPG — PROJECT LEAD
CVW/VSM — DESIGNED BY
REVIEWED BY

MARK	ISSUED FOR/REVISIONS	DATE
•	Posted to Web	10/20/23
•	~~New Master~~	~~05/20/23~~
•	~~Draft Master Review~~	~~05/09/2023~~

Tunnels

Tool Kit

University Of Michigan Ann Arbor , MI

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ARCHITECTURE, ENGINEERING AND CONSTRUCTION
326 East Hoover, Mail Stop E
Ann Arbor, MI 48109-1002
Phone: 734-763-3020
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P0000XXXX — U OF M PROJECT NO.
XXXX — BUILDING NO.

SHEET TITLE
Tunnels
Access Hatch, Drainage & Sump Pump Typical Sections & Details

SHEET NO.
TK-8

SHEET NO. 10 OF 13 SHEET FILE NO. TK-8 04 15.dgn

10/19/2023 1:51:12 PM pschmand Q:\AES\PROJECT TYPES\TUNNELS\TUNNEL TOOL-KIT\CAD\TK-08 Rev 2023_10_20.dgn