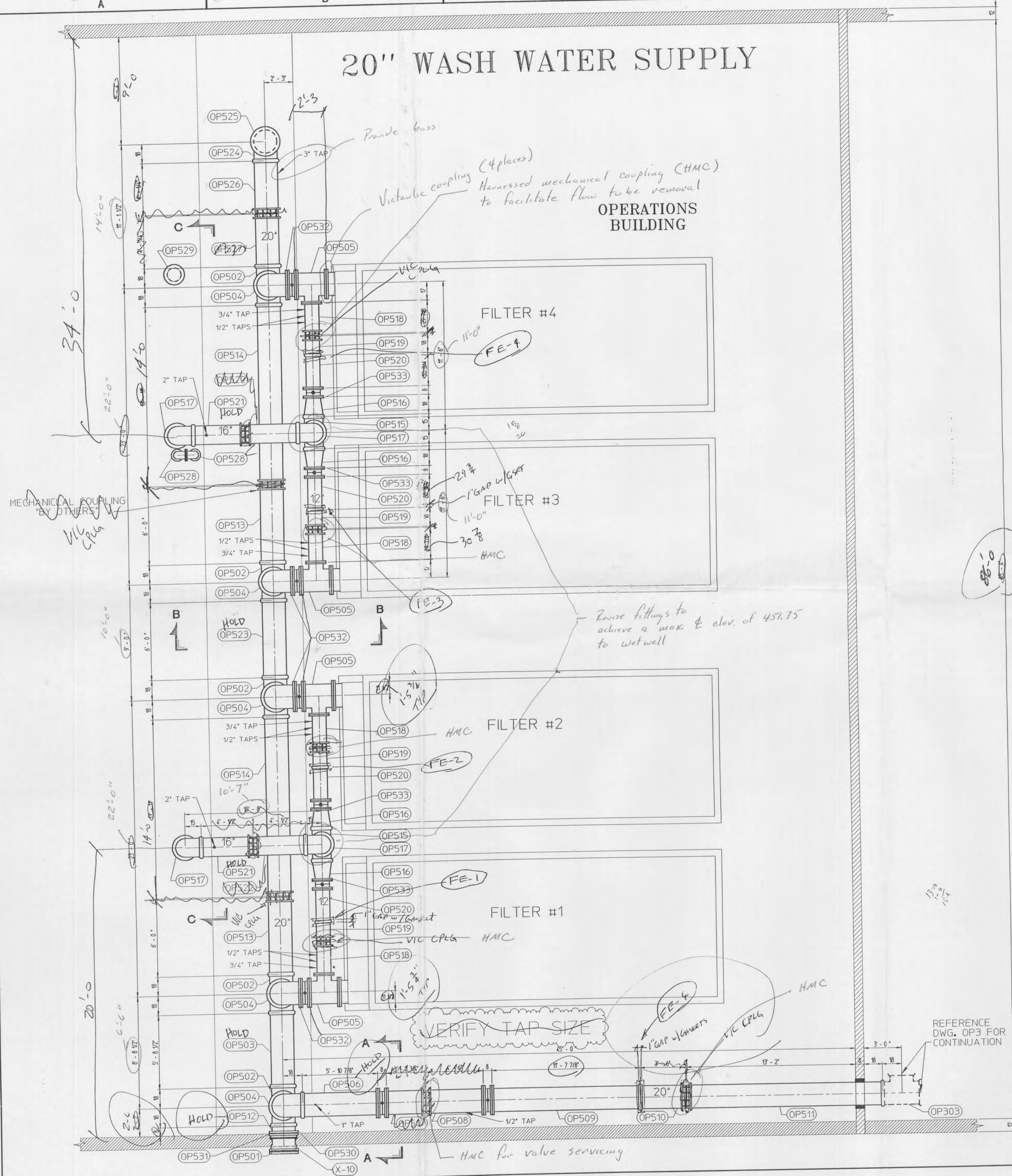
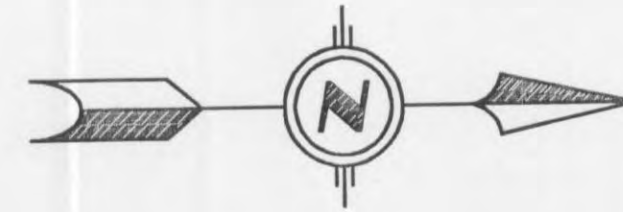


20" WASH WATER SUPPLY

OPERATIONS BUILDING



| BILL OF MATERIAL | | | | |
|--------------------------|------------|-------------|---|--|
| Project Number: KM001998 | | | Drawing Rev. 0 | |
| QTY | SP/IB MARK | DESCRIPTION | Drawing Num. C02070-OP5 | |
| 1 | ASP-ASP | OP501 | 20" MPE C163 DISHED PLUG, 350 PSI (R) 1/2"-2 | |
| 5 | CL-PRE | OP502 | 20"x20"x20" VGER C110 TEE, ALL CENTERS 18", 150 PSI (N1130279) | |
| | | | 4-F-5-5/C | |
| 7 | CL-PRE | OP503 | 20" VGER VGER PIPE CL-55 0.51' 5/8"-1/2", 2-F-5-5 | |
| 5 | CL-PRE | OP504 | 20" VGER C110-SR 90 BEND, ALL CENTERS 18", 150 PSI (N1130279) | |
| | | | 4-F-5-5/C | |
| 4 | CL-PRE | OP505 | 20"x20"x17" TEE, CENTER TO FLG FACE 14", CENTER TO FLG FACE 14", CENTER TO FLG FACE 17", 250 PSI (N1130279), 4-F-5-5 | |
| 1 | CL-PRE | OP506 | 20" VGER VGER PIPE CL-55 0.51' 5/10-7/8", W/1/2" NPT TAP, 10" FROM VGER & 0 DEG FROM TDC, 2-F-5-5 | |
| 1 | CL-PRE | OP507 | 20" VGER VGER PIPE CL-55 0.51' 3/4"-1/2", 2-F-5-5 | |
| 1 | CL-PRE | OP508 | 20" VGER VGER PIPE CL-55 0.51' 3/4"-1/2", W/1/2" NPT TAP, 30" FROM PE & 90 DEG FROM TDC, 2-F-5-5 | |
| 1 | CL-PRE | OP509 | 20" VGER VGER PIPE CL-55 0.51' 3/4"-1/2", 2-F-5-5 | |
| 1 | CL-PRE | OP510 | 20" VGER VGER PIPE CL-55 0.51' 3/4"-1/2", 2-F-5-5 | |
| 1 | CL-PRE | OP511 | 20" VGER VGER PIPE CL-55 0.51' 3/4"-1/2", 2-F-5-5 | |
| 1 | CL-PRE | OP512 | 20" VGER VGER PIPE CL-55 0.51' 11-1/2", 2-F-5-5 | |
| 1 | CL-PRE | OP513 | 20" VGER VGER PIPE CL-55 0.51' 6"-0", 2-F-5-5 | |
| 2 | CL-PRE | OP514 | 20" VGER VGER PIPE CL-55 0.51' 6"-0", 2-F-5-5 | |
| 2 | CL-PRE | OP515 | 16"x16"x16" VGER C110 TEE, ALL CENTERS 15", 250 PSI (N1130279) | |
| | | | 4-F-5-5/C | |
| 4 | CL-PRE | OP516 | 16"x12" VGER C110-CC REDUCER 16", 250 PSI (N1130279), 4-F-5-5/C | |
| 4 | CL-PRE | OP517 | 16" VGER C110-SR 90 BEND, ALL CENTERS 15", 250 PSI (N1130279) | |
| | | | 4-F-5-5/C | |
| 4 | CL-PRE | OP518 | 12" VGER VGER PIPE CL-53 0.4' 75-7/8", W/1/2" NPT TAP, 10" FROM PE & 90 DEG FROM TDC, W/1/2" NPT TAP, 16" FROM PE & 90 DEG FROM TDC, W/3/4" NPT TAP, 20" FROM PE & 90 DEG FROM TDC, 2-F-5-5 | |
| 4 | CL-PRE | OP519 | 12" VGER VGER PIPE CL-53 0.4' 16", 2-F-5-5 | |
| 4 | CL-PRE | OP520 | 12" VGER VGER PIPE CL-53 0.4' 26-3/4", 2-F-5-5 | |
| 2 | CL-PRE | OP521 | 16" VGER VGER PIPE CL-53 0.43' 40-1/2", W/2" NPT TAP, 30" FROM PE & 0 DEG FROM TDC, 2-F-5-5 | |
| 2 | CL-PRE | OP522 | 16" VGER VGER PIPE CL-53 0.43' 40-1/2", 2-F-5-5 | |
| 1 | CL-PRE | OP523 | 20" VGER VGER PIPE CL-55 0.51' 6"-0", 2-F-5-5 | |
| 1 | CL-PRE | OP524 | 20" VGER VGER PIPE CL-55 0.51' 6"-0", 2-F-5-5 | |
| 1 | CL-PRE | OP525 | 20" VGER DISHED CAP, 150 PSI USA (N1130279), INEMEC 140-1211 | |
| 1 | CL-PRE | OP526 | 20" VGER VGER PIPE CL-55 0.51' 16"-0", W/3" NPT TAP, 30" FROM PE & 0 DEG FROM TDC, 2-F-5-5 | |
| 1 | CL-PRE | OP527 | 20" VGER VGER PIPE CL-55 0.51' 16"-0", 2-F-5-5 | |
| 2 | CL-PRE | OP528 | 6" FLG C110-SR 90 BEND, ALL CENTERS 8", 250 PSI USA (N1130279), 4-F-5-5 | |
| 1 | CL-PRE | OP529 | 12" VGER VGER PIPE CL-55 0.51' 16"-0", 2-F-5-5 | |
| 1 | CL-PRE | OP530 | 20" MEGALUG ACCESSORY KIT WITH SBR GASKET AND 14 BOLTS (MEGALUG RETAINER GLAND NOT INCLUDED) | |
| 1 | CL-PRE | OP531 | 20" MEGALUG RETAINER GLAND W/COATING 2 | |
| 1 | CL-PRE | OP532 | KIT 20 ST341 VIC FLANGE-ADAPTER INCLUDING NBR GASKET & COATING CODE (ITNEMEC 140-1211 EP) | |
| 4 | CL-PRE | OP533 | KIT 12 ST341 VIC FLANGE-ADAPTER INCLUDING NBR GASKET & COATING CODE (ITNEMEC 140-1211 EP) | |
| 1 | CL-ASP | **X-10 | 20" MJ TAPPED FOR STUDS DWG P000097, MJ-FAB TAPPED FOR STUDS DWG P000097, PIPE CL-53 0.45' 14-1/2" OVERALL (P111) W/STL COLLAR 8-1/4" FROM MJ-FAB FACE, 2-2-2-2/N | |

Boundary ID: CL-PRE
Boundary name: CL-PRE
Boundary unit: 1

Service type: PROCESS
Service temp: 50
Environment: EXT/BURIED

Pipe lining: Single Thick C/L with Seal Coat: Black, 1-Coat, AMMA C104
Pipe coating: Tnemec 140-1211 Epoxy: Red Oxid, 1-Coat, 4-Avg, 3-Min
Filling lining: Double Thick C/L with Seal Coat: Black, 1-Coat, AMMA C104
Filling coating: Tnemec 140-1211 Epoxy: Red Oxid, 1-Coat, 4-Avg, 3-Min

Gasket types
FASTITE - Fastite Gasket, Plain Rubber Styrene-Butadiene
FLEX-RING 4-12 - Fastite Gasket, Plain Rubber Styrene-Butadiene
FLG LESS ACCESSORIES - none
FRBELL FLEX-RING - Fastite Gasket, Plain Rubber Styrene-Butadiene
MJ - Mechanical Joint Gasket, Plain Rubber Styrene-Butadiene
RIGID GROOV LESS ACC - none

Boundary ID: CL-ASP
Boundary name: CL-ASP
Boundary unit: 1

Service type: PROCESS
Service temp: 50
Environment: EXT/BURIED

Pipe lining: Single Thick C/L with Seal Coat: Black, 1-Coat, AMMA C104
Pipe coating: Asphaltic Lined: Black, 1-Coat, 3-Avg, 1-Min
Filling lining: Asphaltic Lined: Black, 1-Coat, 3-Avg, 1-Min
Filling coating: Asphaltic Lined: Black, 1-Coat, 3-Avg, 1-Min

Gasket types
FASTITE - Fastite Gasket, Plain Rubber Styrene-Butadiene
FLEX-RING 4-12 - Fastite Gasket, Plain Rubber Styrene-Butadiene
FLG LESS ACCESSORIES - none
FRBELL FLEX-RING - Fastite Gasket, Plain Rubber Styrene-Butadiene
MJ - Mechanical Joint Gasket, Plain Rubber Styrene-Butadiene
RIGID GROOV LESS ACC - none

Boundary ID: ASP-PRE
Boundary name: ASP-PRE
Boundary unit: 1

Service type: PROCESS
Service temp: 50
Environment: EXT/BURIED

Pipe lining: Asphaltic Lined: Black, 1-Coat, 3-Avg, 1-Min
Pipe coating: Tnemec 140-1211 Epoxy: Red Oxid, 1-Coat, 4-Avg, 3-Min
Filling lining: Asphaltic Lined: Black, 1-Coat, 3-Avg, 1-Min
Filling coating: Tnemec 140-1211 Epoxy: Red Oxid, 1-Coat, 4-Avg, 3-Min

Gasket types
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FLEX-RING 4-12 - Fastite Gasket, Plain Rubber Styrene-Butadiene
FLG LESS ACCESSORIES - none
FRBELL FLEX-RING - Fastite Gasket, Plain Rubber Styrene-Butadiene
MJ - Mechanical Joint Gasket, Plain Rubber Styrene-Butadiene
RIGID GROOV LESS ACC - none

Boundary ID: CL-PRE
Boundary name: CL-PRE
Boundary unit: 1

Service type: PROCESS
Service temp: 50
Environment: EXT/BURIED

Pipe lining: Single Thick C/L with Seal Coat: Black, 1-Coat, AMMA C104
Pipe coating: Tnemec 140-1211 Epoxy: Red Oxid, 1-Coat, 4-Avg, 3-Min
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Filling coating: Tnemec 140-1211 Epoxy: Red Oxid, 1-Coat, 4-Avg, 3-Min

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FLG LESS ACCESSORIES - none
FRBELL FLEX-RING - Fastite Gasket, Plain Rubber Styrene-Butadiene
MJ - Mechanical Joint Gasket, Plain Rubber Styrene-Butadiene
RIGID GROOV LESS ACC - none

Boundary ID: CL-PRE
Boundary name: CL-PRE
Boundary unit: 1

Service type: PROCESS
Service temp: 50
Environment: EXT/BURIED

Pipe lining: Single Thick C/L with Seal Coat: Black, 1-Coat, AMMA C104
Pipe coating: Tnemec 140-1211 Epoxy: Red Oxid, 1-Coat, 4-Avg, 3-Min
Filling lining: Double Thick C/L with Seal Coat: Black, 1-Coat, AMMA C104
Filling coating: Tnemec 140-1211 Epoxy: Red Oxid, 1-Coat, 4-Avg, 3-Min

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FRBELL FLEX-RING - Fastite Gasket, Plain Rubber Styrene-Butadiene
MJ - Mechanical Joint Gasket, Plain Rubber Styrene-Butadiene
RIGID GROOV LESS ACC - none

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Boundary unit: 1

Service type: PROCESS
Service temp: 50
Environment: EXT/BURIED

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FRBELL FLEX-RING - Fastite Gasket, Plain Rubber Styrene-Butadiene
MJ - Mechanical Joint Gasket, Plain Rubber Styrene-Butadiene
RIGID GROOV LESS ACC - none

Boundary ID: CL-PRE
Boundary name: CL-PRE
Boundary unit: 1

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Service temp: 50
Environment: EXT/BURIED

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Pipe coating: Tnemec 140-1211 Epoxy: Red Oxid, 1-Coat, 4-Avg, 3-Min
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MJ - Mechanical Joint Gasket, Plain Rubber Styrene-Butadiene
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FRBELL FLEX-RING - Fastite Gasket, Plain Rubber Styrene-Butadiene
MJ - Mechanical Joint Gasket, Plain Rubber Styrene-Butadiene
RIGID GROOV LESS ACC - none

Approved As Noted
on 10/18/02

RELEASE ALL ITEMS NOT MARKED HOLD

NOTE: ALL SECTION VIEWS ARE PROVIDED ON DWG. OP8

NOTE: PLEASE VERIFY ALL VALVE DIMENSIONS, GASKETS BETWEEN FLANGE FACES ARE 1/8" THICK.

SPECIAL DIMENSIONS
Scaled dimensions have been estimated. Pipe lengths and fitting locations on this drawing are based on these estimated lengths. Please supply and/or verify these dimensions prior to ordering pipe material.

Third Party Products
Third party products such as, but not limited to, EBAA Iron Megalugs, Dresser couplings and compatibility information is available from these individual companies.

** - Indicates the item has been placed on order.

SPECIFICATION BOUNDARY DEFINITIONS

Boundary ID: CL-PRE d
Boundary name: 12" & Less Domestic
Boundary unit: D

Service type: PROCESS
Service temp: 50
Environment: EXT/BURIED

Pipe lining: Single Thick C/L with Seal Coat: Black, 1-Coat, AMMA C104
Pipe coating: Tnemec 140-1211 Epoxy: Red Oxid, 1-Coat, 4-Avg, 3-Min
Filling lining: Double Thick C/L with Seal Coat: Black, 1-Coat, AMMA C104
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RIGID GROOV LESS ACC - none

Boundary ID: CL-PRE
Boundary name: 12" & Less Domestic
Boundary unit: D

Service type: PROCESS
Service temp: 50
Environment: EXT/BURIED

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MJ - Mechanical Joint Gasket, Plain Rubber Styrene-Butadiene
RIGID GROOV LESS ACC - none

Boundary ID: CL-PRE
Boundary name: 12" & Less Domestic
Boundary unit: D

Service type: PROCESS
Service temp: 50
Environment: EXT/BURIED

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FRBELL FLEX-RING - Fastite Gasket, Plain Rubber Styrene-Butadiene
MJ - Mechanical Joint Gasket, Plain Rubber Styrene-Butadiene
RIGID GROOV LESS ACC - none

Boundary ID: CL-PRE
Boundary name: 12" & Less Domestic
Boundary unit: D

Service type: PROCESS
Service temp: 50
Environment: EXT/BURIED

Pipe lining: Single Thick C/L with Seal Coat: Black, 1-Coat, AMMA C104
Pipe coating: Tnemec 140-1211 Epoxy: Red Oxid, 1-Coat, 4-Avg, 3-Min
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FRBELL FLEX-RING - Fastite Gasket, Plain Rubber Styrene-Butadiene
MJ - Mechanical Joint Gasket, Plain Rubber Styrene-Butadiene
RIGID GROOV LESS ACC - none

AMERICAN DUCTILE IRON PIPE
A DIVISION OF AMERICAN CAST IRON PIPE COMPANY

PHONE: 1-800-442-2347 FAX: 1-800-442-2348

P O BOX 2727 2916 16TH STREET NORTH
BIRMINGHAM, ALABAMA 35202 BIRMINGHAM, ALABAMA 35207

4-6" Diameter Ductile Iron Pipe - Fastite Joint, Mechanical Joint, Flanged Joint
Flex-Ring Restrained Joint, Lok-Ring Restrained Joint, Flex-Lok Restrained Joint
ANSI A21.10, A21.53, & AMERICAN Standard Fittings
ANSI A21.4 Central Lining, POLYBOND Lining, plus Special Coatings & Linings
American Flow Control - Valves And Hydrants

This drawing is a service to the customer as an aid in developing a detailed bill of material. The purchaser must verify correctness of design and dimensions. It is the responsibility of the purchaser to verify all details on receipt of pipe. Changes desired shall be noted on a print and returned to American. Drawings will be revised per these changes. Drawings returned to American without signature or initial will be considered to have been reviewed by the customer with any required change noted.

| REVISED BY: | DATE: | REV #: |
|-------------|-------|--------|
| | | |

CONDRAIRE, INCORPORATED

WATER TREATMENT FACILITIES
O FALLON, MO

20" WASH WATER SUPPLY
REF. DWGS. D3, D5, D6, D7

DRAWN BY: Daniel Jones
DATE DRAWN: 26Sep2002

SCALE: NTS

PROJECT NUMBER: KM001998

C02070-OP5