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# City of Fernley

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GENERAL NOTE FOR ALL DETAILS

1. ALL MATERIALS FURNISHED AND WORK PERFORMED SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT EDITION OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (SSPWC OR ORANGE BOOK)."

GENERAL NOTES FOR WATER SERVICE

1. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF OSHA AND CHAPTER 618 OF NRS, IN THE CONSTRUCTION PRACTICES FOR ALL EMPLOYEES DIRECTLY ENGAGED IN THE COMPLETION OF THIS PROJECT.

2. THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR THE CONDITIONS AT THE JOB SITE, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY DURING THE PERFORMANCE OF THE WORK ACCORDING TO GENERALLY ACCEPTED CONSTRUCTION PRACTICES.

3. ALL UNDERGROUND VALVES LARGER THAN 2", TEES, ETC., SHALL BE COATED IN MASTIC.

4. NOTIFY CITY OF FERNLEY 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

5. FIBER-REINFORCED PORTLAND CEMENT CONCRETE (P.C.C.) SHALL HAVE THE FOLLOWING CHARACTERISTICS:
   - 4000 PSI MIN. COMPRESSION STRENGTH @ 28 DAYS;
   - MIN 6 SACKS OF CEMENT PER CUBIC YARD WITH A MAX. WATER/CEMENT RATIO OF 0.45;
   - AIR ENTRAINMENT 6% ± 1.5%;
   - SLUMP AT 1 TO 4 INCHES;
   - ALL MATERIALS SHALL CONFORM TO SSPWC SECTION 202.
   - POLYPROPYLENE FIBERS SHALL BE ADDED TO THE P.C.C. PER THE MANUFACTURERS RECOMMENDATIONS.

6. NO OTHER UTILITIES MAY BE PLACED IN A WATER OR SEWER TRENCH.

7. BACKFLOW PREVENTION IS REQUIRED PER DETAILS # 31 THRU # 40. RESIDENTIAL SUBDIVISIONS DO NOT TYPICALLY REQUIRE DETAILS # 31 THRU # 40. CITY OF FERNLEY WILL NOTIFY WHEN THESE SHEETS ARE REQUIRED.

8. CONTRACTORS SHALL COMPLY WITH HOST EMPLOYER (CITY OF FERNLEY) SAFETY PROGRAM.

9. CONTRACTOR IS RESPONSIBLE FOR REVIEWING HOST EMPLOYER'S SAFETY PROGRAM. CONTRACTOR AT PRE-BID SHALL FURNISH CITY OF FERNLEY SAFETY RECORDS FROM THE LAST THREE YEAR PERIOD AND A COPY OF ITS OWN COMPANY SAFETY PROGRAM.

10. ALL VALVE BOXES, MANHOLE STRUCTURES, AND CLEANOUTS SHALL BE MARKED AND ACCESSIBLE AT ALL TIMES.

11. FOR DETAILS NOT SHOWN, CONTACT CITY OF FERNLEY @ 775-784-9910, FAX 775-784-9966.

12. THE OWNER IS RESPONSIBLE FOR FURNISHING QUALIFIED SITE INSPECTIONS DURING CONSTRUCTION OF PUBLIC IMPROVEMENTS.

13. CITY OF FERNLEY SHALL APPROVE OF THE INSPECTOR & TESTING FIRM PRIOR TO CONSTRUCTION.

14. THE INSPECTOR SHALL INVENTORY ALL CONSTRUCTION MATERIALS TO ENSURE QUALITY CONTROL. REJECTION OF DEFECTIVE MATERIALS MUST BE COORDINATED WITH CITY OF FERNLEY.

15. PERFORM PLASTIC PIPE BALL AND MANDREL TESTS ON NEWLY INSTALLED SEWER PIPE IN ACCORDANCE WITH SECTION 336.03.09 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

16. PERFORM AIR PRESSURE TESTING ON NEWLY INSTALLED SEWER PIPE IN ACCORDANCE WITH SECTION 336.03.07.04 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

17. ALL NEW PUBLIC WATER MAINS SHALL BE 8" OR LARGER.

18. CONTRACTOR IS RESPONSIBLE TO MAKE FIELD MEASUREMENTS TO LOCATE AND SIZE EXISTING FACILITIES OR UNDERGROUND UTILITIES.

19. PLACE CHLORINE TABLETS IN WATER LINES AS FOLLOWS:
   - 3 TABLETS PER 6" DIAMETER OF LINE;
   - 4 TABLETS PER 8" DIAMETER LENGTH OF LINE;
   - 5 TABLETS PER 10" DIAMETER LENGTH OF LINE;
   - 6 TABLETS PER 12" OR GREATER DIAMETER LENGTH OF LINE;
   - TABLETS MUST BE GLUED AT EQUALLY SPACED INTERVALS TO INSIDE OF PIPE USING APPROVED ADHESIVE. DISINFECTION SHALL MEET AWWA STANDARD C651.

20. CONTRACTOR SHALL SUBMIT CUT SHEETS & SHOP DRAWINGS FOR REVIEW TO THE PROJECT ENGINEER, AND/OR THE UTILITY ENGINEER PRIOR TO ORDERING CONSTRUCTION MATERIALS. A SIGNED SET OF DRAWINGS MUST ALWAYS BE AVAILABLE ONSITE DURING CONSTRUCTION.

21. PER THE CITY OF FERNLEY RULES AND REGULATIONS, SECTION 1.04.054, A BOND MUST BE IN PLACE PRIOR TO THE START OF CONSTRUCTION.
WATER MAIN PRESSURE & BACTERIA TESTING

1. CONTRACTOR SHALL MAINTAIN TEST PRESSURE WITHIN 5 PSI FOR A PERIOD OF 2 HOURS. TEST PRESSURE SHALL BE 150 AND 200 PSI, PER PRESSURE ZONE, AS INDICATED ON PLANS.

2. ALLOWABLE LEAKAGE SHALL BE DETERMINED BY THE FOLLOWING:

   \[ \text{ALLOWABLE LEAKAGE (GALLONS PER HOUR)} = \frac{SD\sqrt{P}}{133,200} \]

   WHERE  
   - \( S \) = LENGTH OF PIPE IN TEST SECTION (FEET)  
   - \( D \) = PIPE DIAMETER (INCHES)  
   - \( P \) = TEST PRESSURE (PSIG)

3. LEAKAGE SHALL BE MEASURED BY THE VOLUME OF WATER REQUIRED TO MAINTAIN THE TEST PRESSURE WITHIN 5 PSI FOR THE TEST PERIOD, NOT THE DROP IN PRESSURE.

4. INSPECTOR IS RESPONSIBLE FOR OBTAINING AND DELIVERING TESTING LAB SAMPLE BOTTLES AND COLLECTING SAMPLES FOR BACTERIA TESTING. INSPECTOR SHALL PRESENT TEST RESULTS TO THE UTILITY.

REduced Pressure Principle Backflow Prevention Assembly (RP):

1. THE RP SHALL ALWAYS BE INSTALLED ABOVE GRADE AND WILL NOT BE ALLOWED IN BASEMENTS.

2. A DRAIN SHALL BE INSTALLED IN THE BOX FOR OUTDOOR INSTALLATIONS AND A DAYLIGHT DRAIN AND A FLOOR DRAIN SHALL BE INSTALLED FOR INDOOR INSTALLATIONS. REFER TO TABLE A FOR MINIMUM REQUIRED DRAIN SIZES.

3. AN AIR GAP (VERTICAL PHYSICAL SEPARATION) OF AT LEAST 2 TIMES THE DIAMETER OF THE RELIEF VALVE OPENING, WITH A MINIMUM OF 1", SHALL BE MAINTAINED BETWEEN THE WATER DISCHARGE POINT ON THE RELIEF VALVE AND THE DRAIN OR 1" ABOVE THE MINIMUM FLOOD LEVEL, WHICHERSOEVER IS HIGHER.

Double Check Valve Backflow Prevention Assembly (DC):

1. BELOW GROUND VAULTS SHALL REMAIN DRY THROUGHOUT THE YEAR.

PRESSure Vacuum Breaker (PVB) Spill Resistant Pressure Vacuum Breaker (SVB) Backflow Prevention Assembly:

1. THE PVB SHALL NOT BE SUBJECT TO ANY BACK PRESSURE FROM: ELEVATED DOWNSTREAM PIPING, INJECTION SYSTEMS, COMPRESSED AIR, PUMPS, OR OTHER MEANS. IF BACK PRESSURE EXISTS, AN RP MUST BE INSTALLED.

DC, RP, AND PVB/SVB ASSEMBLIES:

1. SUPPORTS SHALL BE PROVIDED AS NECESSARY.
2. ELECTRIC SUPPLY SOCKETS SHALL BE AWAY FROM RELIEF VALVE & TESTCOCK.
3. FREEZE PROOF INSULATED BOX AND 1 TYPE OF HEAT ARE REQUIRED. 2 TYPES ARE STRONGLY RECOMMENDED.
4. PLACE WATERTIGHT, FLEXIBLE SEALANT AT PIPE PENETRATIONS.
5. INSULATED BOX SHALL EITHER SWING CLEAR OF ASSEMBLY OR BE SIZED TO PROVIDE CLEARANCES SHOWN IN THE DETAILS.
6. SPRING LOADED LID IS REQUIRED ON LARGE BOXES.
7. EITHER VALVE BOXES OR PIPE RISERS MAY BE USED FOR THE SHUT OFF VALVES.
8. MANUAL SHUTOFF VALVES SHALL BE BRASS GLOBE OR CURB VALVE SIZED THE SAME AS SERVICE LINE.
9. DRAIN CONFIGURATION SHALL BE AN INLINE TEE TO BRASS SHUTOFF VALVE WITH A RUBBER SEAT & SCHEDULE 80 1/2" 90° ELBOW WITH FEMALE THREADS. ADD 1/2" RED FREEZE KING DRAIN.
10. USE 2 FULL TURNS OF TEFLON TAPE ON ALL THREADED JOINTS.
11. NO STOP AND WASTE VALVES.
12. ADEQUATE CLEARANCE MUST BE PROVIDED FOR OPERATION OF VALVES AND REPAIR AND TESTING OF THE ASSEMBLIES.
13. NO OUTLET, TEE, OR AN CONNECTION MAY BE MADE TO THE SERVICE LINE BETWEEN THE METER AND THE ASSEMBLY.
14. ALL ASSEMBLIES MUST BE INSTALLED IN THE HORIZONTAL ORIENTATION UNLESS USC APPROVED IN A DIFFERENT ORIENTATION.
15. ASSEMBLIES MUST BE INSTALLED AS CLOSELY AS PRACTICAL TO THE WATER METER.
16. CITY OF FERNLEY RECOMMENDS PROTECTING THE ASSEMBLIES FROM VANDALISM IN SUSCEPTIBLE AREAS. REQUIRED CLEARANCES MUST STILL BE MET AND UTILITY ACCESS MUST BE PROVIDED.
17. ASSEMBLIES LESS THAN 2" REQUIRE 1 CU. FT OF CLEAN GRAVEL AND ASSEMBLIES GREATER THAN OR EQUAL TO 2" REQUIRE 8 CU. FT OF CLEAN GRAVEL FOR ALL DRAINS.

GENERAL NOTES
AIR GAP SEPARATION

1. THE TANK AND PUMP SHALL BE DESIGNED TO SUIT CUSTOMER'S NEEDS.
2. AN AIR GAP (THE DISTANCE BETWEEN THE LOWEST POINT OF THE SUPPLY LINE AND OVERFLOW ELEVATION OF THE RECEIVING TANK) MUST BE AT LEAST 2 TIMES THE DIAMETER OF THE SUPPLY LINE, WITH A MINIMUM AIR GAP OF 1".
3. FREEZE PROTECTION SHALL BE PROVIDED FOR THE SUPPLY PIPE AND THE RECEIVING TANK WHERE NECESSARY.
4. THE WATER METER SHALL BE LOCATED UPSTREAM OF THE AIR GAP.
5. AIR GAP BYPASSES MUST BE AUTHORIZED BY THE UTILITY.

TYPICAL LOCATIONS WHERE RP ASSEMBLIES ARE REQUIRED
(This list is according to NAC 445A.67195, CITY OF FERNLEY MAY REQUIRE AN RP FOR APPLICATIONS NOT LISTED HERE):

- A BUILDING THAT:
  - CONTAINS A HOTEL, MOTEL, CASINO, CONDOMINIUM OR TOWNHOUSE, OR ANY APARTMENTS;
  - IS USED FOR UNIDENTIFIED COMMERCIAL PURPOSES;
  - UTILIZES ANY SEWAGE PUMPS OR EJECTORS;
  - UTILIZES A HYDRONIC HEATING SYSTEM WITH A CHEMICAL ADDITIVE;
  - HAS A BAPTISMAL FONT;
  - UTILIZES A BOTTLING SYSTEM;
  - IS A BREWERY, CANNERY, PACKING HOUSE, DAIRY PROCESSING FACILITY, RESTAURANT, OR OTHER FACILITY WHERE FOOD IS PROCESSED OR SERVED, DENTAL CLINIC, MEDICAL FACILITY, HOSPITAL, CONVALESCENT HOME, SANITARIUM, MORGUE, MORTUARY, FACILITY FOR CONDUCTING AUTOPSIES, LABORATORY, SCHOOL, COLLEGE, UNIVERSITY, PUBLISHING OR PRINTING FACILITY, VETERINARY CLINIC, PET SHOP, PET GROOMING FACILITY, LAUNDRY OR DRY CLEANING FACILITY, DYEING FACILITY, ANY ELECTROCHEMICAL PLATING FACILITY, FACILITY THAT HAS A POOL OR SPA, A PARK FOR MOBILE HOMES OR RECREATIONAL VEHICLES, FACILITY FOR PRODUCTION OF POWER, FACILITY THAT HANDLES, PROCESSES OR STORES RADIOACTIVE MATERIALS, FACILITY THAT PROCESSES SAND OR GRAVEL, FACILITY THAT MANUFACTURES OR UTILIZES CHEMICALS, FACILITY FOR THE MANUFACTURING, REPAIR, OR WASHING OF MOTOR VEHICLES, FACILITY FOR MANUF. OR PROCESSING OF FILM, FACILITY FOR MANUFACTURING OF ICE, A FACILITY FOR MANUF., PROCESSING OR CLEANING OF METAL, FACILITY FOR MANUF. OF ANY RUBBER, FACILITY FOR MANUF. OF ANY PAPER, ANY FACILITY FOR MANUF., PROCESSING OR FABRICATION, CLASS 4, CLASS 5, OR CLASS 6 FIRE SPRINKLER SYSTEMS, IRRIGATION SYSTEMS WHERE CHEMICALS ARE INJECTED OR BOOSTER PUMPS ARE ADDED.

TYPICAL LOCATIONS WHERE DC OR PVB/SVB ASSEMBLIES OR AIR GAPS ARE REQUIRED
(This list is according to NAC 445A.67195, CITY OF FERNLEY MAY REQUIRE A DC, PVB/SVB OR AG FOR APPLICATIONS NOT LISTED HERE):

- A DC IS REQUIRED FOR A BUILDING WITH CLASS 1, CLASS 2, OR CLASS 3 FIRE SPRINKLER SYSTEMS, A SITE WITH AN AUXILIARY WATER SUPPLY, AND A SITE WITH TWO METERS. A PVB/SVB IS REQUIRED FOR IRRIGATION SYSTEMS WITH NO PUMPS OR CHEMICAL INJECTION SYSTEMS. AN AIR GAP IS REQUIRED FOR STORM DRAINAGE SYSTEMS, SEWAGE COLLECTION, DISTRIBUTION, OR TREATMENT SYSTEMS, AND FILL LOCATIONS FOR PORTABLE SPRAYING OR CLEANING EQUIPMENT.

CITY OF FERNLEY CROSS-CONNECTION CONTROL PROGRAM REQUIREMENTS

1. ALL BACKFLOW PREVENTION ASSEMBLIES MUST BE INSPECTED BY A UTILITY REPRESENTATIVE AND A TEST FORM (COMPLETED BY A HEALTH DISTRICT CERTIFIED TESTER) MUST BE SUBMITTED TO CITY OF FERNLEY BEFORE SERVICE IS ACTIVATED.
2. THE TEST FORM MUST BE SUBMITTED TO CITY OF FERNLEY ANNUALLY WITHIN 30 DAYS OF THE ASSEMBLY INSTALLATION ANNIVERSARY DATE.
3. CITY OF FERNLEY MAY TEST THE ASSEMBLY AT ANY TIME AT ITS OWN EXPENSE.
4. THE CUSTOMER IS RESPONSIBLE TO PROTECT HIS/HER SYSTEM FROM THERMAL EXPANSION BY INSTALLING EITHER AN EXPANSION TANK OR PRESSURE RELIEF VALVE IN THE FEED LINE TO THE WATER HEATER (NO PROTECTION COULD RESULT IN SERIOUS DAMAGE AND/OR INJURY).
5. ALL ASSEMBLIES MUST BE USC APPROVED.
6. ALL WATER USED DURING CONSTRUCTION SHALL BE METERED AND SHALL FLOW THROUGH AN APPROVED BACKFLOW PREVENTION ASSEMBLY. UNAUTHORIZED FIRE HYDRANT USAGE SHALL RESULT IN COLLECTION OF REVENUES, FINES, POSSIBLE LEGAL ACTION, AND INVOLVEMENT OF STATE/LOCAL LICENSING BOARDS.
7. IF A CONTINUOUS WATER SUPPLY IS CRITICAL TO A PREMISE, PARALLEL ASSEMBLIES SHOULD BE INSTALLED.
8. IT IS THE CUSTOMER'S RESPONSIBILITY TO ACCOUNT FOR PRESSURE LOSSES FROM THE ASSEMBLY.
9. BACKFLOW PREVENTION SHALL NOT BE RELOCATED, REMOVED, OR REPLACED WITHOUT PRIOR APPROVAL FROM CITY OF FERNLEY.
10. PLEASE NOTE THAT THE REQUIRED ASSEMBLIES PROTECT THE PUBLIC WATER SYSTEM ONLY.
11. ENGINEER TO PROVIDE DOCUMENTATION THAT THE ASSEMBLIES ARE USC APPROVED.

GENERAL NOTES

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Detail No. | 3 | GEN NOTES
GENERAL NOTES FOR SANITARY SEWER

1. SEWER LINE CLEANING SHALL BE PERFORMED WITH HYDRAULICALLY PROPELLED, HIGH-VELOCITY JET, MECHANICALLY POWERED EQUIPMENT, OR OTHER PUBLIC WORKS APPROVED DEVICES. THE CLEANING SHALL RESTORE THE SEWER LINES TO A MINIMUM OF 95% OF THE LINES ORIGINAL CARRYING CAPACITY. FINAL ACCEPTANCE SHALL BE MADE AFTER SUCCESSFUL INSPECTION TO THE PUBLIC WORKS INSPECTORS SATISFACTION THAT THE CONDITIONS ABOVE HAVE BEEN MET.

2. SEWER GRADES SHALL BE VERIFIED AT EACH MANHOLE. INSPECTOR SHALL VERIFY PROPER OPERATION OF LEVELING EQUIPMENT AND PROCEDURE.

3. ALL NEW PUBLIC COLLECTOR SEWERS SHALL BE 8 INCHES OR LARGER.

GENERAL NOTES FOR E-ONE SEWER

1. MINIMUM BURY DEPTH IS 30 INCHES.

2. ALL LOW PRESSURE FORCE MAIN PIPING SHALL BE SDR 21 PVC FOR 2" AND 3" MAINS AND C900 PVC FOR 4" AND LARGER MAINS.

3. INSTALL AIR-RELEASE VALVES AT SYSTEM HIGH POINTS OR EVERY 2000 FT OF PIPE RUN.

4. INSTALL FLUSHING STATIONS AND ISOLATION VALVES AT EVERY 1500 FT OF PIPE RUN AND WHENEVER TWO OR MORE MAINS COME TOGETHER.

5. 'LOOPED' SYSTEMS ARE NOT ALLOWED.

6. SIZE SEWER MAINS IN ACCORDANCE WITH TABLES 4 AND 7 (MAXIMUM NUMBER OF GRINDER PUMP CORES OPERATING DAILY AND SCH 40 PVC PIPE FLUID DYNAMICS) FROM THE ENVIROMENT-ONE CATALOG.

7. USE OF ENVIROMENT-ONE SYSTEM COMPONENTS HAS BEEN AUTHORIZED BY THE UTILITY. ALTERNATE SYSTEM WILL BE REVIEWED ON A CASE-BY-CASE BASIS.

8. ‘FLAPPER’ TYPE STOP-CHECK VALVES SHALL BE INSTALLED AS CLOSE TO THE MAIN LINE AS FEASIBLE.

GEOTECHNICAL NOTE:


SYSTEM TESTING:

1. THE CITY OF FERNLEY OR IT’S AUTHORIZED INSPECTOR SHALL INSPECT ALL SYSTEMS PRIOR TO BURIAL.

2. COMPACTION TESTING (>90% ASTM D1557A) IS REQUIRED IN ALL STRUCTURAL AREAS.

3. HYDROSTATICALLY TEST THE LINE TO 150% OF DEAD HEAD PRESSURE (90 psi) FOR 2 HOURS. SYSTEM SHALL NOT LOSE MORE THAN 5 psi WITHIN THIS TESTING PERIOD.
GENERAL NOTES FOR ROADWAY GEOMETRICS

1. THE ENGINEER SHALL SUBMIT A TRAFFIC REPORT AND PAVEMENT SECTION DESIGN WITH THE IMPROVEMENT PLANS, UNLESS APPROVED OTHERWISE BY THE CITY ENGINEER.

2. THE ENGINEER OF RECORD SHALL SUBMIT THE PAVEMENT MIX DESIGN TWO (2) WEEKS PRIOR TO PAVING TO THE CITY OF FERNLEY PUBLIC WORKS DEPARTMENT FOR REVIEW.

3. DESIGN OF THE STRUCTURAL SECTION FOR ASPHALT CONCRETE PAVEMENT FOR BOTH PUBLIC AND PRIVATE STREETS SHALL CONFORM TO THE PROCEDURES AS SET FORTH IN THE CURRENT ASPHALT INSTITUTE MANUAL SERIES NO. 1 (MS-L) OR AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (ASSHTO) DESIGN GUIDE, BASED ON SUBGRADE STRENGTH VALUES DETERMINED BY RESILIENT MODULUS (MR) VALUE, RESISTANCE (R) VALUE OR CALIFORNIA BEARING RATIO (CBR), AND TRAFFIC DATA PROVIDED IN APPROVED TRAFFIC STUDY FOR THE PROJECT. SUFFICIENT TESTS SHALL BE MADE TO FULLY EVALUATE EACH DIFFERENT SOIL TYPE IN THE PROJECT. MAJOR ARTERIAL, MINOR ARTERIAL, INDUSTRIAL AND COMMERCIAL STREETS SHALL BE A TYPE 2 AC-20P ASPHALT CONCRETE (AC) PAVEMENT MIX DESIGN WITH HYDRATED LIME (MINERAL FILLER) ADDED AT ONE AND ONE-HALF PERCENT OF THE WEIGHT OF THE DRY AGGREGATES. COLLECTOR AND LOCAL/RESIDENTIAL STREETS SHALL BE A TYPE 3 AC-20 ASPHALT CONCRETE (AC) PAVEMENT MIX DESIGN WITH HYDRATED LIME (MINERAL FILLER) ADDED AT ONE AND ONE-HALF PERCENT OF THE WEIGHT OF THE DRY AGGREGATES. THE MINIMUM DESIGN LIFE OF THE STRUCTURAL SECTION SHALL BE 20 YEARS. MINIMUM STREET STRUCTURAL SECTIONS FOR BOTH PUBLIC AND PRIVATE STREETS SHALL BE 3" AC ON 6" OF TYPE 2, CLASS B AGGREGATE BASE FOR LOCAL/RESIDENTIAL STREETS, 3" AC ON 6" TYPE 2, CLASS B AGGREGATE BASE FOR MINOR ARTERIAL, INDUSTRIAL, COMMERCIAL AND COLLECTOR STREETS, AND 4" AC ON 6" TYPE 2, CLASS B AGGREGATE BASE FOR EXPRESSWAYS AND MAJOR ARTERIAL STREETS. ALL STREETS, BOTH PUBLIC AND PRIVATE, WHICH ARE TO BE UTILIZED BY CONSTRUCTION VEHICLES DURING DEVELOPMENT, SHALL BE DESIGNED TO CARRY THE MAXIMUM ANTICIPATED LOADS. CONCRETE STREETS MAY BE PERMITTED UPON APPROVAL OF STRUCTURAL DESIGNS BY PUBLIC WORK.

STRIPING AND SIGNAGE

1. PAVEMENT STRIPING SHALL BE NDOT TYPE II WATERBORNE PAINT WITH A MINIMUM FILM THICKNESS OF 25 MILS APPLIED IN TWO COATS. DROP ON GLASS BEADS SHALL BE APPLIED ON SECOND COAT. SEE SECTION 632 OF THE CURRENT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (SILVER BOOK).

2. PAVEMENT SYMBOL MARKINGS, YIELD LINES, AND STOP BARS SHALL BE REFLECTIVE THERMOPLASTIC MATERIAL MEETING THE CURRENT SPECIFICATIONS FROM SECTION 634 OF THE SILVER BOOK.

3. THE DESIGN AND INSTALLATION OF TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION, PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.

TRENCHING AND PATCHING

1. THE DESIGN AND INSTALLATION OF TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION, PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
GENERAL NOTES FOR CONCRETE WORK

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY THE CITY EXCAVATION
   PERMIT INSPECTOR OR APPLICABLE ENGINEER OF RECORD

2. FIBER-REINFORCED PORTLAND CEMENT CONCRETE (P.C.C.) SHALL HAVE THE FOLLOWING CHARACTERISTICS:
   4000 PSI MIN. COMPRESSIVE STRENGTH @ 28 DAYS.
   MIN. 6 SACKS OF CEMENT PER CUBIC YARD WITH A MAX. WATER/CEMENT RATIO OF 0.45.
   AIR ENTRAINMENT 6% ± 1.5%.
   SLUMP AT 1 TO 4 INCHES.
   ALL MATERIALS SHALL CONFORM TO SSPWC SECTION 202.
   POLYPROPYLENE FIBERS SHALL BE ADDED TO THE P.C.C. PER THE MANUFACTURERS RECOMMENDATIONS.

3. COMMERCIAL DRIVEWAYS SHALL HAVE #4 BARS AT 18" ON-CENTER LONGITUDINAL AND TRANSVERSE EXTENDING
   INTO GUTTER PAN AND DRIVEWAY WINGS. MINIMUM 2" CONCRETE COVER FOR ALL REINFORCING BARS.

4. IF EXPANSION JOINT EXISTS WITHIN 4 FEET OF DRIVEWAY, REMOVE SIDEWALK AND CURB AND GUTTER TO THAT
   JOINT.

5. CONCRETE REMOVAL SHALL BE TO NEAT SAWCUT LINES

6. REMOVE CONCRETE WHEN CONSTRUCTING DRIVEWAY WHERE CURB AND GUTTER EXIST

7. DEPRESSED CURB LENGTH TO MATCH DRIVEWAY WIDTH

8. WEAKENED PLAIN JOINTS AT 5'-0" O.C. WITH EXPANSION JOINT IF NECESSARY
DETAIL IDs
7 THRU 16
RESERVED FOR FUTURE USE
SINGLE SERVICE

3/4" OR 1" PE PIPE

1" PE PIPE - DUAL SERVICE
3/4" PE PIPE - SINGLE SERVICE

NOTES:
1. NO OBSTRUCTION WITHIN 3' OF METER BOX.
2. CITY OF FERNLEY SHALL SET METER IN YOKE AND LOCK OUT AFTER SUCCESSFUL BACTERIOLOGICAL TEST. 48 HOURS ADVANCE NOTIFICATION IS REQUIRED.
3. FENCING SHALL IN NO WAY PREVENT ACCESS BY CITY PERSONNEL FOR READING AND FOR MAINTENANCE. METER BOXES SHALL NOT BE INSTALLED IN DRIVEWAYS OR SIDEWALKS AND THE FRONT OF THE METER BOX SHALL BE INSTALLED NO CLOSER THAN 1' AND NO FURTHER THAN 4' BEHIND BACK OF WALK.
4. TUBING (3/4" & 1") SHALL BE PE-COPPER TUBE SIZE EQUIVALENT.
5. ALL PIPE AND FITTINGS SHALL BE 200 PSI PRESSURE RATED.
6. H-20 CONCRETE BOXES & LID ASSEMBLIES SHALL BE USED IN ALL HEAVY TRAFFIC AREAS.
7. CITY OF FERNLEY REQUIRES SENSUS SR/TR/PL METER INCLUDING MXU MODEL 520R SENSUS RADIOREAD MODULE.
8. SERVICES MUST BE CENTERED INSIDE THE BOX WITH DIRT 4" BELOW IDLER.
NOTES:
1. THERE SHALL BE NO OBSTRUCTIONS WITHIN 3' OF METER BOX.
2. CITY OF FERNLEY SHALL SET METER IN YOKE AND LOCK OUT AFTER SUCCESSFUL BACTERIOLOGICAL TEST. 48 HOURS ADVANCE NOTIFICATION IS REQUIRED.
3. FENCING SHALL IN NO WAY PREVENT ACCESS BY CITY PERSONNEL FOR READING AND FOR MAINTENANCE. METER BOXES SHALL NOT BE INSTALLED IN DRIVEWAYS OR SIDEWALKS AND THE FRONT OF METER BOX SHALL BE INSTALLED NO CLOSER THAN 1' AND NO FURTHER THAN 4' BEHIND BACK OF WALK.
4. ALL PIPE AND FITTINGS SHALL BE 200 PSI PRESSURE RATED.
5. H-20 CONCRETE BOXES & LID ASSEMBLIES SHALL BE USED IN ALL HEAVY TRAFFIC AREAS.
6. METER SIZES LARGER THAN 2" SHALL BE DESIGNED BY AN ENGINEER AND APPROVED BY CITY OF FERNLEY.
7. METER SIZES LARGER THAN 3" SHALL INCLUDE A BYPASS LINE TO BE DESIGNED BY AN ENGINEER.
8. CITY OF FERNLEY REQUIRES SENSUS TR / PL METER INCLUDING MXU MODEL 520R SENSUS RADIO READ MODULE.

1 1/2" - 2" WATER METER
METER BOX LID

30 1/2"
CHRISTY 62D85 OR FIBRELYTE #FL36d LID WITH TWO TRPL HOLE

7/8" TYP.
TRPL CUT OUT

7 1/2"
TRPL CUT OUT

7 1/2"
NON-SKID SURFACE

WATER

4"
7 1/2"

19
WATER

DATE
REVISIONS
BY

06/04 ADD CHRISTY OPTION, MISC TEXT EDIT
MU

06/07 GENERAL EDITS
EB

10/04
NOTES:

1. All connections shall be Mueller compression couplings (or approved equal) or Instatite taped with 6 wraps of duct tape after pipe inserted.
2. All valves shall be ring tight (RT) or resilient seal valves.
3. Water service lines shall be 3/4" SDR 7 Class 200 (ASTM D2239) or approved equal.
4. All service lines shall have a minimum test pressure rating of 200 PSI.
5. Locate front of meter box no closer than 1' and no further than 4' behind sidewalk. Where curb or sidewalk does not exist, locate meter box as directed by City of Fernley.
6. Service clamps shall be 317 stainless steel double-strap epoxy-coated (or approved equal), O.D. controlled saddle for distribution mains.
7. All single and dual water meter boxes shall have a remote reader cable provision in lid (see water meter details #17 & #18).
8. Minimum distance between taps and couplings 18".
9. Corporation stop, curb stop, and service line to be the same size.
10. Couplings 3/4" and 1" shall be compression or Instatite couplings. 1 1/2" & 2" shall be brass compression coupling with sleeve.
11. Customers are required to have a shutoff device on their side of the water meter for emergency.
12. All polyethylene tubing shall conform to AWWA standard C901 "Polyethylene (PE) Pressure Pipe and Tubing, 1/2 inch through 3 inch for water service" and ASTM D2737 specification for polyethylene (PE) plastic tubing.

WATER SERVICE CONNECTION

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| 03/08 | TEXT EDITS | LP |
| 11/07 | NOTEP EDIT: NOTE 12 ADDED | EB |
| 03/04 | REMOVE CURB MARKER TEXT | ME |
VERTICAL RESTRAINT

PAVEMENT SECTION

42" MIN

ELBOW

5/8" ALL THREAD, OR MEGALUG THRUST RESTRAINT. ALTERNATE METHODS MUST BE APPROVED BY THE CITY ENGINEER.

ELBOW & T.B.

CONCRETE THRUST BLOCK REFER TO DETAIL #28

Detail No. 21

WATER

DATE

REVISIONS

2007

ADD THRUST BLOCK REF TE-W-10

BY

EB
NOTE:
1. USE CONCRETE THRUST BLOCK IF LATERAL LINE IS 4" OR GREATER.
NOTES:
1. GATE VALVE SHALL BE AWWA MUELLER A-2360 RESILIENT SEAT GATE VALVE.
2. SEE THRUST BLOCK BEARING AREAS FOR THRUST BLOCK SIZE. (SEE DETAIL #28)
NOTES:
1. GATE VALVE SHALL BE AWWA MUELLER A-2360 RESILIENT SEAT GATE VALVE (OR APPROVED EQUAL).
2. SEE THRUST BLOCK BEARING AREAS FOR THRUST BLOCK SIZE. (SEE DETAIL #28)
3. WHERE CENTER OF PIPE EXCEEDS 5 FOOT DEPTH, PROVIDE EXTENSION STEM WITH STEM GUIDE.
4. ALL VALVES SHALL BE RING TIGHT (RT) RESILIENT SEAT VALVES.
5. VALVES 12" AND SMALLER SHALL BE GATE VALVES AND VALVES LARGER THAN 12" SHALL BE BUTTERFLY VALVES (MUELLER LINESEAL III).
6. CONTRACTOR MUST ENSURE THAT THE VALVE BOX IS CLEAN AND ACCESSIBLE.

CONCRETE COLLAR
SEE WATER/SEWER GENERAL NOTE # 5

#4 BARS (BEND OVER VALVE BODY)

CONCRETE THRUST BLOCK REFER TO DETAIL #28

FINISH GRADE
TRAFFIC-RATED LID MARKED WATER
VALVE BOX AND COVER MARKED "WATER", CHRISTY G5 TRAFFIC VALVE BOX, OR EQUAL. 4" MIN. INSIDE GS BOX

8" STEEL OR C900 BLUE PVC CONDUCTOR PIPE

2" SQ OPERATING NUT
TRACER WIRE

WATER MAIN

WATER

TRACER WIRE

TRAFFIC-RATED LID MARKED WATER

CONCRETE COLLAR
SEE WATER/SEWER GENERAL NOTE # 5

FINISH GRADE

#4 BARS (BEND OVER VALVE BODY)

CONCRETE THRUST BLOCK REFER TO DETAIL #28

8" STEEL OR C900 BLUE PVC CONDUCTOR PIPE

2" SQ OPERATING NUT
TRACER WIRE

NOTES:
1. GATE VALVE SHALL BE AWWA MUELLER A-2360 RESILIENT SEAT GATE VALVE (OR APPROVED EQUAL).
2. SEE THRUST BLOCK BEARING AREAS FOR THRUST BLOCK SIZE. (SEE DETAIL #28)
3. WHERE CENTER OF PIPE EXCEEDS 5 FOOT DEPTH, PROVIDE EXTENSION STEM WITH STEM GUIDE.
4. ALL VALVES SHALL BE RING TIGHT (RT) RESILIENT SEAT VALVES.
5. VALVES 12" AND SMALLER SHALL BE GATE VALVES AND VALVES LARGER THAN 12" SHALL BE BUTTERFLY VALVES (MUELLER LINESEAL III).
6. CONTRACTOR MUST ENSURE THAT THE VALVE BOX IS CLEAN AND ACCESSIBLE.

VALVE & VALVE BOX

24
WATER
PERMANENT FLUSH VALVE ASSEMBLY

1. Mastic all exposed metal
2. Installations at city discretion

NOTE:

1. Drill 1/8" dia. hole in bottom of pipe and provide 2 cu.ft. of drain rock below
2. Pipe extended 20' beyond last valve.

Detail No. 25

Revisions

- 10/04: Add installation note
- 10/04: Title edit
- 10/07: General edits

Water
1. All valves shall be bronze or brass. All pipe and fittings shall be brass excluding vent pipe.
2. Air valve shall be between 2' to 4' behind sidewalk.
NOTES:

1. AT CITY OF FERNLEY DIRECTION, BOLLARDS WILL BE REQUIRED TO PROTECT FIRE HYDRANTS, WATER METERS, ETC. AT ANY LOCATION WHICH IS SUSCEPTIBLE TO DAMAGE PER APPROVED PLANS.

2. ALL WELDS AND BENDS SHALL BE SMOOTH, EVEN AND PAINTED

3. THE CITY OF FERNLEY SHALL PROVIDE THE PADLOCK AND MAINTAIN THE KEYS

**BOLLARDS**

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<td>06/07</td>
<td>Add Removable Bollard Detail</td>
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<tr>
<td>05/01</td>
<td>Add ARV Protection Detail</td>
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THRUST BLOCK BEARING AREAS (IN SQ. FT.)

NOTES:
1. THRUST BLOCKS TO BE CONSTRUCTED OF 3000 PSI CONCRETE.
2. AREAS GIVEN ARE FOR CLASS 150 PIPE AT TEST PRESSURE OF 150 P.S.I. WITH 2000 P.S.F. SOIL BEARING CAPACITY. INSTALLATIONS USING DIFFERENT PIPE, TEST PRESSURES, AND / OR SOIL TYPES SHOULD ADJUST AREAS ACCORDINGLY, SUBJECT TO APPROVAL OF ENGINEER.
3. BLOCKS TO BE POURED AGAINST UNDISTURBED SOIL.
4. JOINTS AND FACE OF PLUGS TO BE KEPT CLEAR OF CONCRETE.
NOTES:
1. HYDRANTS SHALL BE MUELLER A-423, 5 1/4 V0., SUPER CENTURION, 250 PSI HYDRANT WITHOUT EXCEPTION.
2. HYDRANT SHALL BE ENAMELED RED USING SHERWIN-WILLIAMS B54R38 OR EQUAL AS PER NLCFPD REQUIREMENTS.
3. ALL HYDRANTS SHALL HAVE (2) 2 1/2" HOSE NOZZLES AND (1) 4 1/2" STEAMER NOZZLE. ALL THREADS SHALL BE AS SPECIFIED FOR AMERICAN NATIONAL HOSE COUPLING STANDARD.
4. OPERATING NUT SHALL BE 1 1/2" PENTAGON.
5. QUALITY ASSURANCE FIRM INSPECTION REQUIRED PRIOR TO BACKFILLING. 48 HOUR NOTICE REQUIRED.
6. MINIMUM DEPTH OF MAIN SHALL BE 42" TO TOP OF PIPE.
7. HYDRANTS MUST BE FREE OF OBSTRUCTIONS WITHIN A 5' RADIUS.
8. HYDRANTS SET @ ONE-QUARTER BUBBLE BACK FROM PLUMB.
9. FIRE HYDRANTS ARE TO BE INSTALLED ON THE OPPOSITE SIDE OF THE STREET FROM UTILITIES (GAS, ELECTRIC, ETC.)
FIRE HYDRANT
LOCATIONS

FIRE HYDRANT PROPERTY
FENCE SHALL BE MIN. OF 3' FROM CENTER OF HYDRANT.

CURB SHALL BE PAINTED RED WITH APPROVED WATERBORNE PAINT,
SINGLE COAT, A MINIMUM OF 6" BOTH SIDES OF FIRE HYDRANT.

12" MIN BEHIND SIDEWALK

VARIES

3' MAX

12'

18'

FIRE HYDRANT

CURB RETURN

CURB RETURN

12' MIN

PEDESTRIAN RAMP

10' 4'

6"
TYPICAL RP / DC
PLAN VIEW

POC OR METER

24" MIN. FROM TESTCOCKS OR DETECTOR BYPASS

12" MIN.

TESTCOCKS

12" MIN.

12" MIN.

TO BUILDING

Detail No. 31
WATER
NOTES
1. FOR WATER METERS 6" OR GREATER
   BURY DEPTH MUST BE 42" MIN.
2. FOR WATER METERS LESS THAT 6"
   BURY DEPTH MUST BE 30" MIN.
3. FOR AIR GAP DISTANCE REFER TO
   4.3.10.4 OF THE CITY OF FERNLEY
   DESIGN STANDARDS

EXTERNAL RP

CONCRETE PAD 4" MIN
FINISH GRADE

POC OR METER

12" MIN
UNION

DRAIN

DATE
06/07 ADD BURY DEPTH NOTE
06/07 UPDATE LINWORK
32 WATER

REVISIONS
EB
EB

BY
SUBGRADE DC

33
WATER

NOTES:
1. FOR WATER METERS 6" OR GREATER BURY DEPTH MUST BE 42" MIN.
2. FOR WATER METERS LESS THAN 6" BURY DEPTH MUST BE 30" MIN.

CALL LOCAL BUILDING DEPT. FOR TYPE OF PIPE TO BE USED DOWNSTREAM OF METER.

PROVIDE LADDER (NOT SHOWN FOR CLARITY) USC APPROVED ASSEMBLY

INSULATE COVER AND INSULATE TO 2' DEPTH OR PROVIDE INSULATED BLANKET FOR DC0.6856'

30" MIN. PIPE DEPTH SEE NOTES

12" MIN

POC OR METER

SHUT OFF VALVE. BRASS GLOBE VALVE OR CURB VALVE. NO STOP AND WASTE.

4" MIN. CONCRETE SLAB OR VAULT BASE

12" MAX FROM METER

UNION

WATER TIGHT FLEXIBLE SEALANT AT PIPE PENETRATIONS

6" MIN. TYPE II BASE

12" MIN FROM METER

12" MIN TO BUILDING

12" MIN FROM METER

6" MIN. TYPE II BASE

PROVIDE LADDER (NOT SHOWN FOR CLARITY) USC APPROVED ASSEMBLY

INSULATE COVER AND INSULATE TO 2' DEPTH OR PROVIDE INSULATED BLANKET FOR DC0.6856'

NOTES:
1. FOR WATER METERS 6" OR GREATER BURY DEPTH MUST BE 42" MIN.
2. FOR WATER METERS LESS THAN 6" BURY DEPTH MUST BE 30" MIN.

CALL LOCAL BUILDING DEPT., FOR TYPE OF PIPE TO BE USED DOWNSTREAM OF METER.
NOTES:

1. FOR WATER METERS 6" OR GREATER BURY DEPTH MUST BE 42" MIN.
2. FOR WATER METERS LESS THAT 6" BURY DEPTH MUST BE 30" MIN.

CALL LOCAL BUILDING DEPT. FOR TYPE OF PIPE TO BE USED DOWNSRREAM OF METER.

WATER TIGHT FLEXIBLE SEALANT AT PIPE PENETRATIONS

EXTERNAL DC

WATER

Detail No. 34
PARALLEL BACKFLOW

12" MIN

24" MIN FROM TESTCOCKS OR DETECTOR BYPASS

ADEQUATE CLEARANCE FOR OPERATION OF VALVES

24" MIN FROM TESTCOCKS OR DETECTOR BYPASS

DATE

REVISIONS

BY

35

WATER
CALL LOCAL BUILDING DEPT. FOR TYPE OF PIPE TO BE USED DOWNSTREAM OF METER.

FLOW

POC OR METER

CURB

FINISH GRADE

UNION

USC APPROVED ASSEMBLY

SHUT OFF VALVE BRASS GLOBE VALVE OR CURB VALVE. NO STOP AND WASTE.

12" MIN. 36" MAX. CLEARANCE

36" MIN. CLEARANCE

CUSTOMER

CURB FINISH GRADE

UNION

USC APPROVED ASSEMBLY

SHUT OFF VALVE BRASS GLOBE VALVE OR CURB VALVE. NO STOP AND WASTE.

12" MIN. 36" MAX. CLEARANCE

CUSTOMER
DOMESTIC & IRRIGATION

DOMESTIC:
- 24" min. from testcocks or detect or bypass.
- 12" min.

IRRIGATION:
- 12" min.

POC or Meter

TO BUILDING
NOTE:

1. FOR WATER METERS 6" OR GREATER BURY DEPTH MUST BE 42" MIN.
2. FOR WATER METERS LESS THAN 6" BURY DEPTH MUST BE 30" MIN.
3. FOR AIR GAP DISTANCE REFER TO 4.3.10.4 OF THE CITY OF FERNLEY DESIGN STANDARDS
INTERNAL RP

CALL LOCAL BUILDING DEPT. FOR TYPE OF PIPE TO BE USED DOWNSTREAM OF METER

FINISH GRADE

POC OR METER

FLOW

COF

CUSTOMER

36" MIN CLEARANCE

AIR GAP~2D

SHUT OFF VALVE: GLOBE VALVE OR CURB VALVE. NO STOP AND WASTE.

WATER TIGHT FLEXIBLE SEALANT AT PIPE PENETRATIONS.

FLOOR DRAIN REQUIRED

DAYLIGHT DRAIN REQUIRED

12" MIN 36" MAX CLEARANCE

CURB UNION

FLAP TO KEEP COLD AND ANIMALS OUT

FLAP TO KEEP COLD AND ANIMALS OUT

USC APPROVED ASSEMBLY

36" MIN CLEARANCE

WATER TIGHT FLEXIBLE SEALANT AT PIPE PENETRATIONS.
CALL LOCAL BUILDING DEPT. FOR TYPE OF PIPE TO BE USED DOWNSTREAM OF METER

CURB

FINISH GRADE

POC OR METER

FLOW

COF CUSTOMER

SHUT OFF VALVE: GLOBE VALVE OR CURB VALVE. NO STOP AND WASTE.

WATER TIGHT FLEXIBLE SEALANT AT PIPE PENETRATIONS.

USC APPROVED ASSEMBLY

12" MIN 36" MAX CLEARANCE

36" MIN CLEARANCE

UNION

POC

OR

METER

36" MIN CLEARANCE

INTERNAL DC

40

WATER
DETAIL IDs
41 THRU 54
RESERVED FOR FUTURE USE
NOTES:
1. THERE SHALL BE NO OBSTRUCTION WITHIN 3' OF METER BOX.
2. FENCING SHALL IN NO WAY PREVENT ACCESS BY CITY PERSONNEL FOR READING AND FOR MAINTENANCE. METER BOXES SHALL NOT BE INSTALLED IN DRIVEWAYS OR SIDEWALKS AND THE FRONT OF THE METER BOX SHALL BE INSTALLED NO CLOSER THAN 1' AND NO FURTHER THAN 4' BEHIND BACK OF WALK.
3. TUBING (3/4" & 1") SHALL BE PE-COPPER TUBE SIZE EQUIVALENT.
4. ALL PIPE AND FITTINGS SHALL BE 200 PSI PRESSURE RATED.
5. CITY OF FERNLEY REQUIRES SENSUS TR / PL METER INCLUDING MXU MODEL 520R SENSUS RADIOREAD MODULE.
6. SERVICES MUST BE CENTERED INSIDE THE BOX WITH DIRT 4" BELOW IDLER.
7. INSULATION BLANKETS TO BE PROVIDED FOR ALL METER BOXES.
NON-POTABLE WATER
METER BOX LID

FIBRELYTE #FL36d
WITH 2 TRPL HOLE

30 1/2"

7/8" TYP.

1 1/4"

7 1/2"

4"

7/8" TYP.

1 1/2"

5 1/2"

21"

8 5/8"

NON-SKID SURFACE

"PURPLE LID"

TRPL CUT OUT

TRPL CUT OUT

NON-POTABLE

56
NP WATER
1. All connections shall be Mueller compression couplings (or approved equal) or Instatite taped with 6 wraps of duct tape after pipe inserted.

2. All valves shall be ring tight (RT) or resilient seal valves.

3. Non-potable service lines shall be 3/4" SDR 7 CLASS 200 (ASTM D2239) or approved equal.

4. All service lines shall have a minimum test pressure rating of 200 PSI.

5. Front of meter box no closer than 1' and no further than 4' max behind sidewalk. Where curb or sidewalk does not exist, locate meter box as directed by City of Fernley.

6. Service clamps shall be 317 stainless steel double-strap epoxy-coated (or approved equal), O.D. controlled saddle for distribution mains.

7. All single and dual water meter boxes shall have a remote reader cable provision in purple lid (see water meter detail #55).

8. Minimum distance between taps and couplings 18".

9. Corporation stop, curb stop, and service line to be the same size.

10. Couplings 3/4" and 1" shall be compression or Instatite couplings. 1 1/2" & 2" shall be brass compression coupling with sleeve.

11. Customers are required to have a shutoff device on their side of the non-potable service meter for emergency.

**NOTES:**

- 30" Min Cover
- 36" Min Cover
- Polyethylene tubing size as directed
- Corporation stop 3/4" H-15457 Female Iron Piping by Copper Tubing Size Instatite or Compression Adapter
- Installation Service Clamp before drilling (see note 6)
- PVC Main, "Purple Pipe" (Class 150 or Equal)
- Rubber or Neoprene Gasket
- Notepad Water
- Service Clamp
- Purple Main, "Purple Pipe" (Class 150 or Equal)
- Corporation Stop B-20013 Male Iron Piping by Female Iron Piping Corporation Stop
- I.P. Threads

**DETAIL A**

**NON-POTABLE WATER SERVICE CONNECTION**

**Detail No.** 57

**NP WATER**
MATERIAL LIST:

1. 4", 6", 8", 10" OR 12" PVC PURPLE PIPE
2. PVC SPOOL
3. PIPE PLUG, PRESSURE PLATE. SYSTEM SIMILAR TO DETAIL 9 WILL BE APPROVED ON A CASE-BY-CASE BASIS.
4. 2" SERVICE SADDLE W/ 2" CORP. STOP AND MIP ADAPTER, AS NEEDED, PER CITY OF FERNLEY STANDARDS.
5. 2" BRASS OR COPPER TUBING (LENGTH AS NEEDED)
6. 2" BRASS OR COPPER 90° ELBOW
7. 2" M.I.P. X SWEAT COPPER ADAPTER, AS NEEDED
8. 2" BRASS BALL CURB STOP, FIP X FIP
9. METER BOX, WITH PURPLE LID
10. THRUST BLOCK
11. 2" BRASS NIPPLE WITH THREAD PROTECTOR

NON-POTABLE BLOW OFF AND SAMPLE STATION

NP WATER
NOTE:
1. 3" ROCK OR SMALLER SHALL BE USED FOR CLASS E NATIVE BACKFILL ABOVE PIPE ZONE. ORGANIC MATERIAL SHALL NOT BE PERMITTED IN BACKFILL.
2. DRAIN ROCK MAY BE USED FOR BEDDING IN GROUNDWATER CONDITIONS OR UPON THE APPROVAL OF THE CITY ENGINEER.
3. GEO-FABRIC MUST BE INSTALLED ON TOP OF DRAIN ROCK PRIOR TO BACKFILL.

TYPICAL UNIMPROVED TRENCH SECTION
**NOTES:**

1. CHIP SEAL ROADS SHALL BE PATCHED WITH 2.5" AC ON 6" MIN. TYPE 2 AGG. BASE.
2. SAWCUT EXISTING AC AND TACK COAT ALL JOINTS PRIOR TO PAVING.

**ASPHALT SURFACE REPLACEMENT**

**DIRT SURFACE REPLACEMENT**

**GRAVEL SURFACE REPLACEMENT**

**TYPICAL IMPROVED ROAD TRENCH SECTION**

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<td>RENUMBERED</td>
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NOTE:

1. ALL PIPES AND FITTINGS SHALL BE EPOXY PAINTED PURPLE.
2. ALL VALVES SHALL BE BRONZE OR BRASS. ALL PIPE AND FITTINGS SHALL BE BRASS EXCLUDING VENT PIPE.

NON-POTABLE WATER AIR VALVE

1. 24" STEEL TRAFFIC LID, "PURPLE"
   GROOM F.G. TO SLOPE AWAY FROM BOX IN ALL DIRECTIONS

2. 2" RIGID INSULATION GLUED TO INTERIOR WALLS AND UNDER BOX LID W/CAULKING BROOKS 17" X 28" (MIN.)

3. CHRISTY B-40 TRAFFIC-RATED BOX & CHRISTY 61D75 LID. H-20 RATED

4. COPPER TUBING SIZE POLYETHYLENE RISER INSTALL W/CONSTANT UPWARD SLOPE FROM CORP STOP TO ANGLE VALVE

5. C-VENT PIPE PURPLE

6. CONCRETE COLLAR

7. APCO AIR VALVE OR APPROVED EQUAL

8. CONSTRUCT VALVE SUPPORT CHAIR

9. 3.5" X 5" X 1" MIN. DRAIN ROCK (3/4" - 1/2") GRAVEL BED BASE FOR METER BOX

10. NEOPRENE GASKET

11. MUELLER B25028 MALE BRASS PIPING BY 110 CORP STOP

12. CONCRETE BLOCK FOOTING

13. PURPLE NON-POTABLE WATER MAIN

14. 2" RIGID INSULATION GLUED TO INTERIOR WALLS AND UNDER BOX LID W/CAULKING BROOKS 17" X 28" (MIN.)

15. CENTER AIR VAC VALVE IN BOX

16. CONCRETE TRAFFIC LID, "PURPLE"

17. GROOM F.G. TO SLOPE AWAY FROM BOX IN ALL DIRECTIONS

18. PAINT J-VENT PIPE PURPLE

19. 317 STAINLESS STEEL EPOXY-COATED DOUBLE STRAP O.D.-CONTROLLED SADDLE (SEE NON-POTABLE WATER SERVICE CONNECTION DETAIL #57).

20. NEOPRENE GASKET

21. MUELLER B25028 MALE BRASS PIPING BY 110 CORP STOP

22. CONCRETE COLLAR

23. CONSTRUCT VALVE SUPPORT CHAIR

24. 3.5" X 5" X 1" MIN. DRAIN ROCK (3/4" - 1/2") GRAVEL BED BASE FOR METER BOX
IRON COVER WITH WORD "NON-POTABLE" CAST THERON FOR NON-POTABLE WATER LINES WITH PURPLE LID.

NON-POTABLE WATER VALVE & VALVE BOX INSTALLATION

NOTES:

1. GATE VALVE SHALL BE AWWA MUELLER A-2360 RESILIENT SEAT GATE VALVE (OR APPROVED EQUAL).
2. SEE THRUST BLOCK BEARING AREAS FOR THRUST BLOCK SIZE. (SEE DETAIL #28)
3. WHERE CENTER OF PIPE EXCEEDS 5 FOOT DEPTH, PROVIDE EXTENSION STEM WITH STEM GUIDE.
4. ALL VALVES SHALL BE RING TIGHT (RT) RESILIENT SEAT VALVES.
5. VALVES 12” AND SMALLER SHALL BE GATE VALVES AND VALVES LARGER THAN 12” SHALL BE BUTTERFLY VALVES (MUELLER LINESEAL III).
6. CONTRACTOR MUST ENSURE THAT THE VALVE BOX IS CLEAN AND ACCESSIBLE.
7. IN NEW TRACT DEVELOPMENTS EXTEND VALVE WELL PIPE 2’ ABOVE GROUND ON "KEY VALVES" FOR EMERGENCY SHUT-OFFS.
8. BUTTERFLY VALVE OPERATORS SHALL BE LOCATED ON THE LEFT-HAND SIDE OF THE VALVE (AT THE TEE OR AT THE CROSS), LOOKING THROUGH THE VALVE TOWARD THE PIPE END.
9. WHERE CONCRETE CROSS GUTTERS AT STREET INTERSECTIONS WILL INTERFERE WITH VALVE BOXES, THE PIPELINE SHALL BE MOVED TO A POSITION 7 FEET OFF THE CURB FACE TO CLEAR THE CROSS GUTTER.
10. VALVES TO BE LOCATED ADJACENT TO FITTINGS WHEREVER POSSIBLE.
11. VALVES BOLTED TO FITTINGS WILL NOT REQUIRE ANCHOR BLOCKS.
CALL LOCAL BUILDING DEPT. FOR TYPE OF PIPE TO BE USED DOWNSTREAM OF METER.

SHUT OFF VALVES: BRASS GLOVE VALVE OR CURB VALVE. NO STOP AND WASTE

30" MINIMUM PIPE DEPTH

METER

ASSEMBLY 12" MAX. FROM METER

12" MIN. ABOVE ALL DOWNSTREAM PIPING AND SPRINKLER HEADS

FINISH GRADE

SPRINKLER

USC APPROVED ASSEMBLY

UNION

12" MINIMUM ABOVE ALL DOWNSTREAM PIPING AND SPRINKLER HEADS

ASSEMBLY 12" MAX. FROM METER

THRUST BLOCKS USE STANDARD

SPRINKLER

IRRIGATION PVB

63
NP WATER
IRRIGATION RP

64
NP WATER

30" MINIMUM PIPE DEPTH

METER

SHUT OFF VALVES: BRASS GLOVE VALVE OR CURB VALVE. NO STOP AND WASTE

30" MINIMUM PIPE DEPTH

ASSEMBLY 12" MAX. FROM METER

12" MIN.

UNION

CALL LOCAL BUILDING DEPT. FOR TYPE OF PIPE TO BE USED DOWNSTREAM OF METER

THRUXT BLOCKS USE STANDARD

THRUXT BLOCKS USE STANDARD

FINISH GRADE

USE STANDARD

USE STANDARD

USC APPROVED ASSEMBLY

DATE

REVISIONS

BY

DET MOVED FROM W-11 TO R 10

06/07 RENUMBER EB

07/14 DET MOVED FROM W-11 TO R 10

Acroplot, 07/14/2008, 5:55:34 PM

AcroPlot.pc3
DETAIL IDs
65 THRU 78
RESERVED FOR FUTURE USE
SAND/OIL INTERCEPTOR

INLET INVERT

24" MANHOLE FRAME & COVER WITH GAS TIGHT GASKET

4" INLET & OUTLET PIPE AND FITTINGS STANDARD

PLAN
(COVERS & RISERS REMOVED)

LIQUID CAPACITY: MINIMUM 500 GALLONS
VAULT DESIGN LOAD: H-20 TRAFFIC LOADING

MINIMUM 3" VERTICAL DIFFERENTIAL BETWEEN INLET & OUTLET APPLY RAMNEK PRIMER & SEALANT TO BOTH SURFACES AT ALL JOINTS

SAND/OIL INTERCEPTOR

79
SEWER

DATE
REVISIONS
BY
12/03
ADD SAND/OIL INTERCEPTOR
MJ
12/04
RENUMBER
MJ
NOTES:

1. IN NO CASE SHALL A LATERAL CONNECT TO THE SEWER MAIN DIRECTLY ON TOP OF THE PIPE.

2. SEWER LATERALS SHALL HAVE A MINIMUM SLOPE OF 2%.

3. ALL JOINTS ON SEWER LATERAL PIPE SHALL BE COMPRESSION TYPE OR APPROVED SOLVENT WELD.

4. LATERAL SHALL EXTEND TO PROPERTY LINE UNLESS OTHERWISE SHOWN ON PLANS.

5. ON EXISTING INTERCEPTORS, SADDLE WYES AND SADDLE TEES SHALL BE INSTALLED AS PER MANUFACTURERS RECOMMENDATIONS.

6. ON ALL NEW INTERCEPTORS W / LATERALS, STANDARD WYES OR TEES WILL BE SLIP-GASKETED SEWER FITTINGS.

7. THERE SHALL BE 12" MINIMUM CLEARANCE WHEN SEWER LATERAL CROSSES WATER MAIN.

SEWER LATERAL CONNECTION

SEWER COLLECTOR MAIN

PROPERTY LINE

NOTES:

1. IN NO CASE SHALL A LATERAL CONNECT TO THE SEWER MAIN DIRECTLY ON TOP OF THE PIPE.

2. SEWER LATERALS SHALL HAVE A MINIMUM SLOPE OF 2%.

3. ALL JOINTS ON SEWER LATERAL PIPE SHALL BE COMPRESSION TYPE OR APPROVED SOLVENT WELD.

4. LATERAL SHALL EXTEND TO PROPERTY LINE UNLESS OTHERWISE SHOWN ON PLANS.

5. ON EXISTING INTERCEPTORS, SADDLE WYES AND SADDLE TEES SHALL BE INSTALLED AS PER MANUFACTURERS RECOMMENDATIONS.

6. ON ALL NEW INTERCEPTORS W / LATERALS, STANDARD WYES OR TEES WILL BE SLIP-GASKETED SEWER FITTINGS.

7. THERE SHALL BE 12" MINIMUM CLEARANCE WHEN SEWER LATERAL CROSSES WATER MAIN.
SEWER MAIN CLEANOUT

8" WYE BRANCH

10 5/8" X 14 1/8"

8" RISER

45°

FIBER REINFORCED CONCRETE COLLAR

6" MIN

D&L SUPPLY CASTING NO. H-6520 OR EQUAL

81
SEWER

SEWER MAIN CLEANOUT

81
SEWER

DATA No.

DATE

REVISIONS

BY

8/03
UPDATE DETAIL TITLE

MAL
LATERAL CLEANOUT ASSEMBLY

**OPTION 1**

*NOT RECOMMENDED IN AREAS WHERE HEAVY EQUIPMENT IS OPERATED*

- **Cleanout Box and Lid**
- **8" Min. Below Finished Grade**
- **Finish Grade**
- **Depth Varies Min. 30"**
- **8" Min. Below Finished Grade**
- **Inline Wye**
- **Removable Watertight Plug**
- **Tracer Wire Attached to Top of Pipe**
- **Tracer Wire is to End at Sewer Main Within Right-Of-Way**

**Option 2**

- **Cleanout Box and Lid**
- **8" Min. Below Finished Grade**
- **Finish Grade**
- **Depth Varies Min. 30"**
- **Inline Wye**
- **Removable Watertight Plug**
- **Tracer Wire Attached to Top of Pipe**
- **Tracer Wire is to End at Sewer Main Within Right-Of-Way**

**WELL COMPACTED CLASS A BEDDING MATERIAL PLACED AT FULL TRENCH WIDTH AND 6" MINIMUM DEPTH BELOW PIPE**

**EXTRA CARE MUST BE TAKEN FOR THE PROPER PLACEMENT AND COMPACTION OF BACKFILL IN THIS AREA.**
NOTES:

1. MANHOLES 5' DEEP OR MORE REQUIRE LADDERS (SEE DETAIL #86).
2. MANHOLES SHALL BE VACUUM TESTED PER ASTM C1244-93.
3. DROP MANHOLES ARE TO BE USED ON ALL SANITARY SEWERS WITH MORE THAN 2' VERTICAL DROP AT MANHOLE, NOT TO EXCEED 8 FEET.
4. MAINS SHALL BE SLOPED TO FALL AT LEAST 0.1 FEET ACROSS MANHOLE SECTION.
NOTES:
1. MANHOLES 5' DEEP OR MORE REQUIRE LADDERS (SEE DETAIL #86).
2. MANHOLES SHALL BE VACUUM TESTED PER ASTM C1244-93.
3. DROP MANHOLES ARE TO BE USED ON ALL SANITARY SEWERS WITH MORE THAN 2' VERTICAL DROP AT MANHOLE, NOT TO EXCEED 8 FEET.
4. MAINS SHALL BE SLOPED TO FALL AT LEAST 0.1 FEET ACROSS MANHOLE SECTION.

TYPE 3
INSIDE DROP MANHOLE
NOTES:
1. PIPES SHALL NOT PROTRUDE MORE THAN 3" INSIDE MANHOLE SECTION.
2. MANHOLES 5' DEEP OR MORE REQUIRE LADDERS (SEE DETAIL #86).
3. MANHOLES SHALL BE VACUUM TESTED PER ASTM C1244-93 OR HYDROSTATIC TESTED.
4. MANHOLES 5' OR LESS IN HEIGHT MAY BE CONCENTRIC.
NOTES:

1. CONCRETE COLLAR SHALL BE PER WATER/SEWER GENERAL NOTE # 5.
2. HEIGHT OF COLLAR SHALL BE CONSISTENT ALL AROUND MANHOLE.
3. ALL MANHOLES SHALL INCLUDE D&L SUPPLY A-1024 FRAME AND COVER ASSEMBLY, OR EQUAL, WITH THE LETTERS "SANITARY SEWER" CLEARLY DISPLAYED ON THE COVER.
4. CONCRETE COLLAR SHALL BE FLUSH WITH ADJACENT PAVEMENT (0.00' TO 0.02').
5. CONSTRUCT AFTER PAVING IS COMPLETE.
6. CASTING AND COLLAR SHALL BE 12" TO 18" ABOVE GRADE IN UNIMPROVED AREAS.

TYPE 1A MANHOLE COLLAR & LADDER

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<tr>
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NOTES:

1. PIPES SHALL NOT PROTRUDE MORE THAN 3" INSIDE MANHOLE SECTION.
2. MANHOLES 5' DEEP OR MORE REQUIRE LADDERS (SEE DETAIL #86).
3. MANHOLES SHALL BE VACUUM TESTED PER ASTM C1244-93 OR HYDROSTATIC TESTED.
4. MANHOLES 5' OR LESS IN HEIGHT MAY BE CONCENTRIC

TYPE I STANDARD MANHOLE

SEWER
NOTES:

1. CONCRETE COLLAR SHALL BE PER WATER/SEWER GENERAL NOTE # 5.
2. HEIGHT OF COLLAR SHALL BE CONSISTENT ALL AROUND MANHOLE.
3. ALL MANHOLES SHALL INCLUDE D&L SUPPLY A-1024 FRAME AND COVER ASSEMBLY, OR EQUAL, WITH THE LETTERS "SANITARY SEWER" CLEARLY DISPLAYED ON THE COVER.
4. CONCRETE COLLAR SHALL BE FLUSH WITH ADJACENT PAVEMENT (0.00' TO 0.02')
5. CONSTRUCT AFTER PAVING IS COMPLETE
6. CASTING AND COLLAR SHALL BE 12" TO 18" ABOVE GRADE IN UNIMPROVED AREAS

GRADE RINGS

CONCENTRIC BARREL SECTION

CONCRETE COLLAR
(SEE NOTE 1)

GRADE RINGS

GROUT GRADE RINGS IN PLACE.
NO MORE THAN 12" OF GRADE RINGS WILL BE ALLOWED.

11" MIN.
24" MAX.

VARIES

6" MIN

TYPE 1 MANHOLE COLLAR
WITHOUT LADDER

88
SEWER
NOTES:

1. ALL MANHOLE BASE MATERIALS (DRAIN ROCK) SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
2. CAP ANY UNUSED STUB-OUTS UNLESS WAIVED BY THE UTILITY.
3. 4 WAY MANHOLES ARE TO BE INSTALLED ONLY WHERE REQUIRED.

TYPICAL BASE

89
SEWER
BOLT-DOWN LIDS REQUIRED ONLY IN EASEMENT AREAS, AREAS OF POTENTIAL FLOODING, AND WHERE REQUIRED BY THE CITY ENGINEER

SECTION DETAIL TAPERED FRAME & COVER

SECTION DETAIL BOLT-DOWN FRAME & COVER

LETTERS AS SHOWN 2" HIGH (TYPICAL)

1 3/8" DIA. 3 HOLES EQ. SPACED

FRAME TO COVER INDEXING MARK (BOLT-DOWN FRAME & COVERS).

FOR BOLT-DOWN COVERS LID BOLTS (4 PLACES) EQ. SPACED, SEE DETAIL BELOW

BOLT-DOWN LIDS REQUIRED ONLY IN EASEMENT AREAS, AREAS OF POTENTIAL FLOODING, AND WHERE REQUIRED BY THE CITY ENGINEER

SECTION VIEW

1/4" NEOPRENE #N-439"O" RING IN LID. MATING SURFACES OF FRAME & COVER MACHINED. GREASE "O" RING LIGHTLY ON FINAL ASSEMBLY "O" RING MUST BE IN COVER.

MANHOLE LID 1/4" x 1/8" DEEP MACHINE GROOVE COVER RIM FOR "O" RING.

SECTION DETAIL BOLT-DOWN FRAME & COVER

1/4" NEOPRENE #N-439"O" RING. MATING SURFACES OF FRAME & COVER MACHINED. GREASE "O" RING LIGHTLY ON FINAL ASSEMBLY "O" RING MUST BE IN COVER.

1/4" x 1/8" DEEP MACHINE GROOVE COVER RIM FOR "O" RING.

SECTION VIEW

1/2" Ø x 1" STAINLESS STEEL BOLTS (4 EACH)

COUNTERBORE 1 3/8" Ø x 1/2" DEEP (4 HOLES @ 90°)

1/4" x 1/8" DEEP MACHINE GROOVE COVER RIM FOR "O" RING.

MANHOLE LID 1/4" x 1/8" DEEP MACHINE GROOVE COVER RIM FOR "O" RING.

SECTION DETAIL TAPERED FRAME & COVER

SECTION VIEW

1/4" NEOPRENE #N-439"O" RING. MATING SURFACES OF FRAME & COVER MACHINED. GREASE "O" RING LIGHTLY ON FINAL ASSEMBLY "O" RING MUST BE IN COVER.

1/4" x 1/8" DEEP MACHINE GROOVE COVER RIM FOR "O" RING.

1/4" NEOPRENE #N-439"O" RING IN LID. MATING SURFACES OF FRAME & COVER MACHINED. GREASE "O" RING LIGHTLY ON FINAL ASSEMBLY "O" RING MUST BE IN COVER.

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NOTE: CAST IN PLACE MANHOLE BASE, BARREL SECTION(S), ECCENTRIC OR CONCENTRIC CONE, FRAME & COVER, AND RELATED APPURTEANCES SHALL MEET THE REQUIREMENTS OF THESE, STANDARD DRAWINGS.

CUSTOM MANHOLE BASES MAY BE USED IN THIS APPLICATION. SPECIAL REQUIREMENTS MAY APPLY.

CAST IN PLACE CONCRETE BASE
8" MINIMUM CONCRETE THICKNESS BETWEEN PIPELINE INVERT AND BOTTOM OF MANHOLE BASE

FORM SLOPING MANHOLE BASE TO PIPELINE MIDPOINT. 4" MIN. VERTICAL DROP TO PIPELINE

EXPOSE PIPELINE & GRIND AWAY TOP HALF TO WIDTH EQUAL TO MANHOLE I.D.

PRECAST BARREL SECTION FORMED TO CLEAR PIPELINE
CORE DRILL EXISTING CONCRETE MANHOLE WALL AND SET NEW PIPE INVERT EQUAL TO TOP OF EXISTING SLOPED FLOOR.

FLEXIBLE PIPE TO MANHOLE CONNECTOR OR MODULAR MECHANICAL TYPE WATERTIGHT SEAL. SEE APPENDIX A-6, CONNECTION TO EXISTING MANHOLE.

NEW CHANNEL FLOWLINE - GRIND OUT CONCRETE SECTION TO PROVIDE EVEN PROFILE GRADE TO TO EXISTING PIPELINE INVERT.

EXISTING MANHOLE BASE AND CHANNEL
NOTE:
ALL VALVES SHALL BE BRONZE OR BRASS. ALL PIPE AND FITTINGS SHALL BE BRASS EXCLUDING VENT PIPE.
STANDARD MANHOLE ABANDONMENT

94
SEWER

NOTES:
1. GROUT ALL EXISTING SEWER MAINS 5-FT MIN. BEYOND MANHOLE.
TYPICAL LATERAL INSTALLATION
LOW PRESSURE FORCE MAIN

NOTES:
1. USE SADDLE TAP FOR 0300 PVC FORCE MAIN OR MALE (THREAD X GLUE) TEE FOR 2" OR 3" SDR 21 FORCE MAIN.
2. LOCATION OF E-ONE UNITS TO BE APPROVED BY PUBLIC WORKS IN IMPROVEMENT PLAN SUBMITTAL AND FIELD VERIFIED DURING INSTALLATION.

SEGMENT

95
SEWER
NOTE:
1. Use saddle tap for 3/4" PVC force main or female (thread x glue) tee for 2" or 3" SDR 21 force main.
2. Location of EOC units to be approved by public works in improvement plan submittal and field verified during installation.

TYPICAL LATERAL INSTALLATION
GRAVITY MAIN

SEWER
NOTES:

1. LOCATION OF E-ONE UNITS TO BE APPROVED BY PUBLIC WORKS IN IMPROVEMENT PLAN SUBMITTAL AND FIELD VERIFIED DURING INSTALLATION.
2. ALARM/CONTROL PANEL IS TO BE PLACED TO ENSURE SERVICEABILITY

CONTRACTOR SHALL INSTALL CONCRETE BALLAST ONLY IN GROUNDWATER CONDITIONS

6" OF BASE OR DRAIN ROCK REQUIRED UNDER E-ONE UNIT, TYP.
TYPICAL DROP CONNECTION
LPSS IN EXISTING MANHOLE

- Low Pressure Sewer Line
- SS Strap 24" OC
- Elbow
- Existing Manhole
- Gravity Sewer
THRUST BLOCK TO BE SPEC'D BY ENGINEER

MUELLER RS GATE WITH 2" OPERATING NUT (OR APPROVED EQUAL)

WARNING TAPE
TRACER WIRE

PEA GRAVEL OR CRUSHED STONE

LPSS MAIN IN-LINE VALVE

100
SEWER
TRACER WIRE ATTACHED TO TOP OF FORCE MAIN. CONTINUOUS ALONG ENTIRE LENGTH OF FORCE MAIN. BEGINNING AT BOXED CHECK VALVE AND TERMINATING AT PROPERTY LINE CLEANOUT.

WARNING TAPE

45° FITTING (GLUED)

TWO 45° FITTINGS OR ONE 90° FITTING (GLUED)

45° FITTING (GLUED)

BUILDING FORCE MAIN

CONCRETE THRUST BLOCK

UNDISTURBED SOIL (TYP.)

WELL COMPACTED CLASS A BEDDING MATERIAL PLACED AT FULL TRENCH WIDTH. PLACE MIN. 12" ABOVE AND 6" BELOW PIPE.

SECURE 45° FITTING WITH 1/2" DIA. REBAR STRAP. HOOK ENDS OF REBAR WITHIN THRUST BLOCK.

FORCE MAIN
SIPHON BREAK AT PROPERTY LINE

SEWER
FORCE MAIN
SIPHON BREAK AT MANHOLE

NOTES:
SIPHON BREAK MAY BE LOCATED OUTSIDE OF MANHOLE PENDING FIELD CONDITIONS ON A CASE BY CASE BASIS AS DETERMINED BY PUBLIC WORKS. SPECIAL REQUIREMENTS MAY APPLY.
SEWER/STORM DRAIN CROSSING WATER MAIN

- **Notes:**
  - WATER includes water mains and laterals.
  - SEWER includes sanitary sewer, storm drain and reclaimed wastewater mains and laterals.
  - SLIP/Joint encasing the water or sewer with a 20' length of AMWA C800 Class 100 or greater water quality pipe, centered at the point of crossing. Avoid being caged in place. The water main and the sleeve must have a diameter equal to or greater than 20". The diameter of a sleeve less than 20" is an acceptable alternative to encasing the water and sewer at the point of crossing.
  - RESTRAINT MEANS using mechanical couplings to restrict joint movement or separation of pipe joints within 10' each side of the point of crossing.
  - SPECIAL CONSTRUCTION AND TO BE IDENTIFIED ON THE PLANS IN PLANT VIEW USING CROSS-HATCHING AND IN PROFILE VIEW BY REFERENCE TO A STANDARD DETAIL.
  - CONCRETE ENCASCING of the water as mitigation or protection is discouraged.

- **Important:**
  - It is to be made to keep water main or sewer lateral 10' above sewer main and water main 12' above sewer lateral, otherwise, the following special construction methods apply.
  - SLEEVE OR CENTER SEWER MAIN AND STORM DRAIN OR WATER MAIN OR CENTER AND RESTRAIN WATER MAIN.
  - SLEEVE OR CENTER SEWER MAIN OR CENTER SEWER MAIN BELOW EXISTING WATER MAIN BY LESS THAN 12'.
  - USE SLEEVE C800 WATER QUALITY PIPE, GREEN COATED FOR SEWER MAIN MANSION TO MANHOLE AND CENTER SEWER MAIN AT CROSSING AND RESTRAIN ANY EXPOSED WATERSHOPTERWATER MAIN JOINTS.
  - CENTER SEWER MAIN ABOVE WATER MAIN OR BELOW LESS THAN 12'.
  - POLYTETRAFLUOROETHYLENE WRAP AND CONCRETE ENCASING SEWER MAIN JOINTS WITHIN 10' EACH SIDE OF THE POINT OF CROSSING AND SLIP/JOINT WATER MAIN OR CENTER AND RESTRAIN WATER MAIN JOINTS BY LESS THAN 12'.
  - CENTER SEWER MAIN ABOVE WATER MAIN OR BELOW LESS THAN 12'.
  - POLYTETRAFLUOROETHYLENE WRAP AND CONCRETE ENCASING SEWER MAIN JOINTS WITHIN 10' EACH SIDE OF THE POINT OF CROSSING (LESSER VULGARD ROP 20" OR 20" NEEDED) AND SLIP/JOINT WATER MAIN OR CENTER AND RESTRAIN WATER MAIN JOINTS.
  - USE SLEEVE C800 WATER QUALITY PIPE, GREEN COATED FOR SEWER MAIN MANSION TO MANHOLE AND CENTER SEWER MAIN AT CROSSING AND RESTRAIN ANY EXPOSED WATER MAIN JOINTS.
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- **Detailed:**
  - SLEEVE OR CENTER STORM DRAIN AND SLEEPER WATER MAIN OR CENTER AND RESTRAIN WATERTAT THEIR JOINTS.
  - SLEEVE OR CENTER WATER MAIN OR CENTER AND RESTRAIN WATER MAIN JOINTS.
  - SLEEVE OR CENTER WATER MAIN JOINTS.
  - USE SLEEVE C800 WATER QUALITY PIPE, GREEN COATED FOR SEWER MAIN MANSION TO MANHOLE AND CENTER SEWER MAIN AT CROSSING AND RESTRAIN ANY EXPOSED WATER MAIN JOINTS.
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DETAIL IDs
104 THRU 122
RESERVED FOR FUTURE USE
COLLECTOR STREETS WITHOUT ON-STREET PARKING

1. SIXTY (60) FOOT RIGHT-OF-WAY IS REQUIRED FOR COLLECTOR STREETS AND LOCAL STREETS SERVING NONRESIDENTIAL USES.

2. MINIMUM SECTION TO BE 3" TYPE 2 AC20 WITH SAND SEAL OR TYPE 3 AC20 WITH FOG SEAL TO BE COMPACTED TO 96% MARSHALL DENSITY WITH 6" TYPE 2 AGGREGATE BASE COMPACTED TO A MINIMUM OF 95% MDD. ACTUAL SECTION TO BE VERIFIED BY A SOILS REPORT. SUBGRADE TO BE COMPACTED TO A RELATIVE DENSITY OF 90% OR BETTER.

3. DITCH DEPTH SHALL BE 6" MIN. OR AS REQUIRED BY HYDROLOGY REPORT.

4. FOR SLOPE STABILIZATION REFER TO SECTION 3.4.9 OF THE CURRENT CITY OF FERNLEY DESIGN STANDARDS.

5. ADDITIONAL RIGHT OF WAY OR SLOPE EASEMENT SHALL BE PROVIDED AS NEEDED TO AT LEAST 2' OUTSIDE HIGH POINT. CUT AND FILL SLOPES SHALL MEET REQUIREMENTS PER CURRENT IBC.

6. AFTER PAVING IS COMPLETE, ROAD SHALL BE SHOULDERS WITH BASE TO EDGE OF PAVEMENT.

7. CITY OF FERNLEY SHALL MAINTAIN PAVING AND DITCHES UPON ISSUANCE OF NOTICE OF COMPLETION BY THE CITY. THE DEVELOPER/CONTRACTOR IS RESPONSIBLE FOR CORRECTION OF WORKMANSHIP AND/OR MATERIAL DEFICIENCIES AT THE ONE YEAR WARRANTY PERIOD. PUBLIC WORKS WILL BE RESPONSIBLE FOR THE MAINTENANCE OF PAVING AND DITCHES.

8. IF ON-STREET PARKING IS TO BE PROVIDED, THE SHOULDERS SHALL INCREASE FROM 4 FEET TO 8 FEET AND THE RIGHT OF WAY SHALL BE INCREASED AS NEEDED.
COLLECTOR STREETS WITHOUT ON-STREET PARKING

1. SIXTY (60) FOOT RIGHT-OF-WAY IS REQUIRED FOR COLLECTOR STREETS AND LOCAL STREETS SERVING NONRESIDENTIAL USES.

2. USE 6" TYPE 2 AGGREGATE BASE COMPACTED TO A MINIMUM OF 95% RELATIVE DENSITY.

3. SUB-GRADE TO BE COMPACTED TO A RELATIVE DENSITY OF 90% OR BETTER.

4. GRAVEL ROADS AND ASSOCIATED DRAINAGE FACILITIES WILL NOT BE MAINTAINED BY THE CITY OF FERNLEY.

5. DITCH DEPTH SHALL BE 6" MIN. OR AS REQUIRED BY HYDROLOGY REPORT.

6. ADDITIONAL RIGHT OF WAY OR SLOPE EASEMENT SHALL BE PROVIDED AS NEEDED TO AT LEAST 2' OUTSIDE HIGH POINT. CUT AND FILL SLOPES SHALL MEET REQUIREMENTS PER CURRENT IBC.

7. IF ON-STREET PARKING IS TO BE PROVIDED, THE SHOULDERS SHALL INCREASE FROM 4 FEET TO 8 FEET AND THE RIGHT OF WAY SHALL BE INCREASED AS NEEDED.

8. FOR SLOPE STABILIZATION REFER TO SECTION 3.4.9 OF THE CURRENT CITY OF FERNLEY DESIGN STANDARDS.

GRAVEL ROADWAY

TYPE 1G
LOCAL STREETS WITHOUT ON-STREET PARKING

1. FIFTY (50) FOOT RIGHT-OF-WAY IS REQUIRED FOR LOCAL STREETS.

2. MINIMUM SECTION TO BE 3" TYPE 2 AC20 WITH SAND SEAL OR TYPE 3 AC20 WITH FOG SEAL TO BE COMPACTED TO 96% MARSHALL DENSITY WITH 6" TYPE 2 AGGREGATE BASE COMPACTED TO A MINIMUM OF 95% MDD. ACTUAL SECTION TO BE VERIFIED BY A SOILS REPORT. SUB-GRADE TO BE COMPACTED TO A RELATIVE DENSITY OF 90% OR BETTER.

3. DITCH DEPTH SHALL BE 6" MIN OR AS REQUIRED BY HYDROLOGY REPORT.

4. FOR SLOPE STABILIZATION REFER TO SECTION 3.4.9 OF THE CURRENT CITY OF FERNLEY DESIGN STANDARDS.

5. ADDITIONAL RIGHT OF WAY OR SLOPE EASEMENT SHALL BE PROVIDED AS NEEDED TO AT LEAST 2' OUTSIDE HIGH POINT. CUT AND FILL SLOPES SHALL MEET REQUIREMENTS PER CURRENT IBC.

6. AFTER PAVING IS COMPLETE ROAD SHALL BE SHOULDIERED WITH BASE TO EDGE OF PAVEMENT.

7. CITY OF FERNLEY SHALL MAINTAIN PAVING AND DITCHES UNTIL ISSUANCE OF NOTICE OF COMPLETION BY THE CITY. THE DEVELOPER/CONTRACTOR IS RESPONSIBLE FOR CORRECTION OF WORKMANSHIP AND/OR MATERIAL DEFICIENCIES AT THE ONE YEAR WARRANTY PERIOD. PUBLIC WORKS WILL BE RESPONSIBLE FOR THE MAINTENANCE OF PAVING AND DITCHES.

8. IF ON-STREET PARKING IS TO BE PROVIDED, THE SHOULDERS SHALL INCREASE FROM 4 FEET TO 8 FEET AND THE RIGHT OF WAY SHALL BE INCREASED AS NEEDED.
LOCAL STREETS WITHOUT ON-STREET PARKING

1. FIFTY (50) FOOT RIGHT-OF-WAY IS REQUIRED FOR LOCAL STREETS WITH NO FUTURE POSSIBILITY OF SERVING MORE THAN FORTY (40) LOTS.

2. USE 6" TYPE 2 AGGREGATE BASE COMPACTED TO A MINIMUM OF 95% RELATIVE DENSITY.

3. SUB-GRADE TO BE COMPACTED TO A RELATIVE DENSITY OF 90% OR BETTER.

4. GRAVEL ROADS AND ASSOCIATED DRAINAGE FACILITIES WILL NOT BE MAINTAINED BY THE CITY OF FERNLEY.

5. DITCH DEPTH SHALL BE 6" MIN OR AS REQUIRED BY HYDROLOGY REPORT.

6. ADDITIONAL RIGHT OF WAY OR SLOPE EASEMENT SHALL BE PROVIDED AS NEEDED TO AT LEAST 2' OUTSIDE HIGH POINT.

7. IF ON-STREET PARKING IS TO BE PROVIDED, THE SHOULDERS SHALL INCREASE FROM 4 FEET TO 8 FEET AND THE RIGHT OF WAY SHALL BE INCREASED AS NEEDED.

8. FOR SLOPE STABILIZATION REFER TO SECTION 3.4.9 OF THE CURRENT CITY OF FERNLEY DESIGN STANDARDS.
NOTES:

1. AGGREGATE FOR AC PAVING SHALL CONFORM TO SPECIFICATIONS FOR TYPE 3 AGGREGATE, SECTION 200.02.02 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CURRENT EDITION. BITUMINOUS MATERIALS SHALL CONFORM TO SPECIFICATIONS FOR AC-20, SECTION 201:02, FOG SEAL-SECTION 317.02.01, PRIME COAT SECTION 315, AND CONSTRUCTION METHODS-SECTION 320.

TYPICAL 50' WIDE STREET SECTION

<table>
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<th>Detail No.</th>
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</tr>
<tr>
<td>STREET</td>
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TYPICAL 60' WIDE STREET SECTION

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128 STREETS
NOTES:

1. THE MAXIMUM SLOPE FOR RESIDENTIAL DRIVEWAYS SHALL BE 14%.

2. WHEN EXISTING SIDEWALK IS SETBACK FROM THE DRIVEWAY APRON (i.e. PARKWAY AREA) THE TRANSITION LENGTH FOR THE DRIVEWAY APRON WINGS MAY BE HALF THE VALUES SHOWN IN THE TABLE BELOW. THE TRANSITION TABLE IS BASED ON A 6" CURB HEIGHT. FOR DIFFERENT CURB HEIGHTS, THE TRANSITION LENGTH SHOWN ON THE TABLE SHALL VARY BASED UPON MAINTAINING A MAXIMUM SLOPE OF 12:1

DRIVEWAY GEOMETRICS

<table>
<thead>
<tr>
<th>RESIDENTIAL DR (DRIVEWAY WIDTH)</th>
<th>LIGHT COMMERCIAL DR (ONE-WAY)</th>
<th>HEAVY COMMERCIAL DR (TWO-WAY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12' MIN. 24' MAX.</td>
<td>14' MIN. 24' MIN. (TWO-WAY)</td>
<td>14' MIN. (ONE-WAY) 30' MIN. (TWO-WAY) 54' MAX. (HEAVY TRUCK)</td>
</tr>
</tbody>
</table>

LF (FRONT-SIDEYARD SETBACK) = 30' MIN.
LS (SIDEYARD SETBACK) = 5' MIN.

LIGHT COMMERCIAL INCLUDES OFFICE BUILDINGS AND OTHER COMMERCIAL BUILDINGS 2 STORIES IN HEIGHT. MOTEL DRIVEWAYS SHALL NOT EXCEED 30'.
HEAVY COMMERCIAL INCLUDES DRIVE-IN ESTABLISHMENTS, FACTORIES, SERVICE STATIONS AND WAREHOUSES.
RESIDENTIAL DEVELOPMENTS WITH THREE (3) CAR GARAGE LAYOUTS MAY INCREASE DRIVEWAY WIDTHS TO 30' MAXIMUM.

ANY DEVIATION FROM THESE DIMENSIONS MUST BE SUBMITTED AND APPROVED BY THE AGENCY ENGINEER

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>12/02</td>
<td>UPDATED</td>
</tr>
<tr>
<td>06/05</td>
<td>RESIDENTIAL DWY INCREASE 30' MAX</td>
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<tr>
<td>07/07</td>
<td>ADD NOTE 1</td>
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</table>

Detail No. 130 STREETS
TYPICAL UTILITY
MAIN LOCATIONS

TYPICAL SECTION 'A'
DETAIL IS FOR HORIZONTAL LOCATIONS ONLY

10' P.U.E.

SOUTH & WEST  NORTH & EAST

W - 10'

1/3 W  1/3 W  1/3 W

W

T.V.  TELEPHONE  ELECTRIC

GAS  WATER  SEWER  STORM DRAIN

ALTERNATIVE WATER

DATE  REVISIONS  BY
12/03  ADD ALTERNATIVE WATER LOCATION  JUL
06/07  ADD HORIZONTAL LOCATION ONLY  JUL

TYPICAL UTILITY
MAIN LOCATIONS

131 STREETS
PERMANENT CUL-DE-SAC

PAVED PERMANENT CUL-DE-SAC
WITH CURB & GUTTER

RURAL PAVED PERMANENT CUL-DE-SAC
WITHOUT CURB & GUTTER

4.0% max slope from center of bulb to lip of gutter along profile only

1% min slope

Tool joints 5' O.C.

25' R

50' R

32' R @ FFC

TOOL JOINTS 5' O.C.

25' R

50' R

Paved permanent cul-de-sac

50' R.O.W. min.

7.0'

16.5' to lip

6.5' TBC to R/W

32' R @ FFC

43' min R.O.W.

4.0% max slope from center of bulb to EOP along profile only

1% min slope

Tool joints 5' O.C.

25' R

50' R

32' R @ EOP

EOP

24' EOP to EOP

7.0'

16.5' to lip

6.5' TBC to R/W

32' R @ FFC

43' min R.O.W.

RURAL PAVED PERMANENT CUL-DE-SAC
WITHOUT CURB & GUTTER

N.T.S.

PERMANENT CUL-DE-SAC

132 STREETS

Date

Revisions

By
NOTES:

1. TEMP TURNAROUND EASEMENT DOCUMENT REQUIRED WITH MIN 48' RADIUS TO BE ABANDONED WITH STREET EXTENSION.

2. PAVED TEMPORARY TURNAROUND IS REQUIRED ON ALL FUTURE THROUGH-STREETS THAT FRONT LOTS, OR EXTEND MORE THAN 150 FT BEYOND THE NEAREST INTERSECTING STREET.
NOTES:
1. BRONZE SURVEY MARKER (SERVCO #286 OR EQUAL) MAY BE SUBSTITUTED FOR THE 5/8" SHAFT & CAP.
2. 1-1/2" (MIN.) NONFERROUS CAP W/ PLS # PERMANENTLY ATTACHED PRIOR TO PLACEMENT.
3. MONUMENT(S) SHALL BE SET BY CONTRACTOR.
4. PLACE MONUMENTS AT ALL BC's, EC's, PRC's, PCC's AND INTERSECTIONS ON STREET CENTERLINES.
5. CONCRETE COLLAR SHALL BE FLUSH WITH ADJACENT PAVEMENT (+0' to -0.02').
6. CONSTRUCT AFTER PAVING IS COMPLETED.
7. CONCRETE SHALL MEET ORANGE BOOK REQUIREMENTS FOR FREEZE AND THAW ENVIRONMENTS.
8. SEE CONCRETE WORK GENERAL NOTE 2.
NOTE:
1. MIN. CURB RETURN RADIUS SHALL BE 20 FEET UNLESS OTHER SPECIFIED
   a. TRANSVERSE EXPANSION JOINTS 1/2" WIDE SHALL BE CONSTRUCTED AT ALL SIDEWALK RETURNS. OPPOSITE EXPANSION JOINTS
      INADJACENT CURB. ISOLATION JOINTS SHALL BE INSTALLED AROUND ALL STRUCTURES. EXPANSION & ISOLATION JOINTS SHALL BE
      FILED W/ JOINT FILLER STRIPS 1/2" THICK. JOINT MATERIAL SHALL CONFORM TO SEC.202.10.
2. ALL AGGREGATE BASE SHALL BE TYPE 2, CLASS B.
3. ON SIDEWALKS WIDER THAN 5, JOINTING PATTERN SHALL BE .8-.12 TIMES THE WIDTH OF THE SIDEWALK.
4. SEE CONCRETE WORK GENERAL NOTE 2
5. OBSTRUCTIONS WILL NOT BE PERMITTED WITHIN A 3' MIN. WIDTH IN ANY SIDEWALK. ANY PORTION OF SIDEWALK THAT EXCEEDS 2%
   MAX. CROSS-SLOPE SHALL BE REMOVED AND REPLACED. SLOPES MUST BE VERIFIED WITH A SMART LEVEL BY INSPECTOR.

TYPICAL SIDEWALK

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<th>Detail No.</th>
<th>136</th>
<th>STREETS</th>
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<tr>
<td>DATE</td>
<td>REVISIONS</td>
<td>BY</td>
</tr>
<tr>
<td>07/02</td>
<td>ADD FIBER REINFORCED: NOTE 5</td>
<td>RRB</td>
</tr>
<tr>
<td>01/03</td>
<td>REMOVE REF. TO ROLLED CURB</td>
<td>RRB</td>
</tr>
<tr>
<td>12/04</td>
<td>OPD PED RAMP, TEXT EDITS</td>
<td></td>
</tr>
<tr>
<td>06/07</td>
<td>GEN EDITS</td>
<td>EB</td>
</tr>
</tbody>
</table>
NOTES:

1. AGGREGATE BASE SHALL BE TYPE 2, CLASS B AND BE COMPACTED TO A MIN. 95% OF MAX. DENSITY.
2. PORTLAND CEMENT CONCRETE SHALL BE FIBER-REINFORCED AND MEET 4,000 PSI MIN. AT 28 DAYS, 6% ±1.5% ENTRAINED AIR. ALL MATERIAL SHALL CONFORM TO SSPWC, CURRENT EDITION.
3. GUTTER PAN WIDTH SHALL BE 3'-0" TOTAL WIDTH OR 1'-6" HALF WIDTH ON PRIVATE PROPERTY.
4. FLOW LINE VARIES TO MATCH GUTTER 1
5. CITY OF FERNLEY ENGINEER SHALL REQUIRE #4 BARS AT 12" EACH DIRECTION IN VALLEY GUTTERS WITHIN ROADWAY IN INDUSTRIAL AND COMMERCIAL PROJECTS.
NOTES:
1. SEE CONCRETE WORK GENERAL NOTE 2.
2. ALL CONCRETE CURB, GUTTER, AND SIDEWALK SHALL HAVE 1/2" EXPANSION JOINTS AT ALL CURB RETURNS AND SHALL HAVE WEAKENED PLANE JOINTS EVERY 10 FEET.
3. AGGREGATE BASE MATERIAL SHALL CONFORM TO THE SPECIFICATIONS FOR TYPE 2 CLASS B AGGREGATE BASE AND BE COMP. TO A MIN. 95% MAX. DRY DENSITY.
4. ALL MATERIALS SHALL CONFORM TO SSPWC CURRENT EDITION.
5. FOR SLOPE STABILIZATION REFER TO SECTION 3.4.9 OF CURRENT CITY OF FERNLEY DESIGN STANDARDS.
NOTE:

1. TRANSITIONS FROM RAMPS TO GUTTERS OR ROADWAY SURFACE SHALL BE FLUSH AND FREE OF ABRUPT CHANGES
2. SEE CONCRETE WORK GENERAL NOTE 2
3. SEE PEDESTRIAN RAMP FOR THE DISABLED (127) FOR ADA COMPLIANCE.
NOTES:
1. RADIUS TO BE 1/2 INCH, OMIT ROUNding IF CURBS ARE BACK TO BACK.
2. SEE CONCRETE WORK GENERAL NOTE 2.
SAWCUT DETAIL

NEW A.C.

NEW AGG. BASE

EX. A.C.

EX. AGG. BASE

MAX LIMITS OF NEW AGG. BASE

SAWCUT EX. AC. BACK

12" MIN. FROM EX. EDGE

12"

NEW A.C.

NEW AGG. BASE

SAWCUT DETAIL

141

STREETS
NOTES:
1. IF SAWCUT IS WITHIN 24” OF EDGE OF A.C. PAVEMENT REMOVE EXISTING PAVEMENT TO THAT EDGE AND REPLACE ENTIRE SECTION.
2. D = 8” MIN. TEMPORARY AND PERMANENT.
3. TESTING IS REQUIRED FOR ALL PERMANENT PATCHES. COMPACTION ON SUBGRADE/BASE GRADE AND A.C.

**PERMANENT PAVING PATCH**

Detail No. 142

STREETS
NOTE:
1. 3" ROCK OR SMALLER SHALL BE USED FOR CLASS E NATIVE BACKFILL ABOVE PIPE ZONE. ORGANIC MATERIAL SHALL NOT BE PERMITTED IN BACKFILL.
2. DRAIN ROCK MAY BE USED FOR BEDDING IN GROUNDWATER CONDITIONS OR UPON THE APPROVAL OF THE CITY ENGINEER. GEO FABRIC MUST BE ENVELOPED AROUND DRAIN ROCK PRIOR TO BACKFILL.
NOTES:
1. CHIP SEAL ROADS SHALL BE PATCHED WITH 3" AC ON 6" MIN. TYPE 2 AGG. BASE.
2. SAWCUT EXISTING AC AND TACK COAT ALL JOINTS PRIOR TO PAVING.
3. DRAIN ROCK MAY BE USED FOR BEDDING IN GROUNDWATER CONDITIONS OR UPON THE APPROVAL OF THE CITY ENGINEER. GEO.
   FABRIC MUST BE ENVELOPED AROUND DRAIN ROCK PRIOR TO BACKFILL.

TYPICAL IMPROVED ROAD TRENCH SECTION

Detail No. 144 STREETS

DATE: 07/05
REVISIONS
BY: 8010
ADDT. LOCATION WIRE 10/01
ADDT. FOR POTABLE AND IRRIGATION 10/04
ADDT. CUTOUTS 10/07

CUMMINS ENGINEERED
NOTE:
1. DESIGN ENGINEER SHALL FURNISH CITY OF FERNLEY ENGINEER SPECIFIC DRAWING FOR APPROVAL ON EACH BORE, INCLUDING DETAILS OF PIPE SKIDS, AND SEALS, DIAMETER OF CASING, JACKING / RECEIVING PIT DETAILS, CONNECTION TO MAIN, ETC.
2. DESIGN ENGINEER SHALL FURNISH CITY OF FERNLEY ENGINEER WITH DRAWING FOR APPROVAL PRIOR TO ANY DESIGN CHANGES IN FIELD.
NOTES:
1. A.C. in Driveway shall match A.C. section in road

RURAL ROADS
A.C. DRIVEWAY APRON

146
STREETS
DRIVEWAY APRON

SECTION A

MIN. RADIUS = 4'

SWALE TO MATCH ROADWAY
DITCH, INVERT AND LOCATION

PROPERTY LINE

5% MIN

2% TO 12%

6" MIN RISE

6" MIN TYPE 2 CLASS B
AGGREGATE BASE
COMPACT TO 95% MDD

RURAL ROADS
DRIVEWAY APRON

147
STREETS
COMMERCIAL DRIVEWAY APRON

Notes:
1. See Concrete Work General Notes 1 Thru 9

Table:

<table>
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<tr>
<th>T (FT.)</th>
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<tr>
<td>4.25</td>
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<tr>
<td>5.00</td>
<td>6&quot;</td>
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<tr>
<td>5.75</td>
<td>7&quot;</td>
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<tr>
<td>6.75</td>
<td>8&quot;</td>
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<tr>
<td>7.50</td>
<td>≥ 9&quot;</td>
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Diagram:
- Concrete Driveway
- 1/2" Expansion Joint
- Optional Contact Joint
- Property Line
- Sidewalk
- Depressed Curb
- Gutter
- Driveway Widths Shown on Plans
- Street
- Parkway Landscaping
- Lines for Visual Perspective Only (Not for Construction)
- Edge of Sidewalk
- Normal Rise 1/4" per Foot
- 2" R
- 1" Lip Beveled @ 1:1 Within Depressed Curb
- 5 1/2" MIN
- 16"
COMMERCIAL
DRIVEWAY APRON-TYPE 2

NOTES:
1. SEE CONCRETE WORK GENERAL NOTES 1 THRU 8
NOTES:
1. DRIVEWAY SLOPE SHALL BE 25.0\% (3‰ PER FOOT) MAXIMUM WITH TYPE "A" SIDEWALK.
2. COMMERCIAL DRIVEWAYS SHALL HAVE BEARING, SEE CONCRETE WORK GENERAL NOTE 3.
3. ASPHALT SHALL BE REMOVED 18" MINIMUM DEEP FOR REMOVAL OF CURBS FOR NEW DRIVEWAY UNLESS APPROVED OTHERWISE BY CITY ENGINEER.
4. SEE CONCRETE WORK GENERAL NOTE 2.
5. ALL MATERIALS SHALL CONFORM TO SPECIFIC SECTION 302, CURRENT EDITION.
6. THIS STANDARD DETAIL IS ALSO APPLICABLE TO RETROFITTING EXISTING INFRASTRUCTURE (SEE NOTE 2).
7. GROOVED CURBS WILL NOT BE PERMITTED WITHIN 3' OF WIDTH ON ANY SIDEWALK. ANY PORTION OF SIDEWALK THAT EXCEEDS 2% MAX CROSS-SLOPE SHALL BE REMOVED AND REPLACED. SLOPES MUST BE VERIFIED WITH A SMART LEVEL BY INSPECTOR.

<table>
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<th>&quot;A&quot; MINIMUM</th>
<th>&quot;B&quot; MINIMUM</th>
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<tr>
<td>4% TO 6%</td>
<td>4' 8&quot;</td>
<td>21' 6&quot;</td>
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<tr>
<td>5% TO 6%</td>
<td>4' 8&quot;</td>
<td>15' 5&quot;</td>
</tr>
<tr>
<td>5% TO 6%</td>
<td>4' 8&quot;</td>
<td>15' 5&quot;</td>
</tr>
<tr>
<td>5% TO 6%</td>
<td>5' 6&quot;</td>
<td>9' 6&quot;</td>
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<tr>
<td>5% TO 6%</td>
<td>5' 6&quot;</td>
<td>9' 6&quot;</td>
</tr>
<tr>
<td>7% TO 10%</td>
<td>7' 4&quot;</td>
<td>7' 4&quot;</td>
</tr>
<tr>
<td>5% TO 6%</td>
<td>8' 0&quot;</td>
<td>5' 3&quot;</td>
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<tr>
<td>5% TO 6%</td>
<td>5' 3&quot;</td>
<td>5' 3&quot;</td>
</tr>
<tr>
<td>3% TO 4%</td>
<td>12' 0&quot;</td>
<td>4' 4&quot;</td>
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<tr>
<td>4% TO 5%</td>
<td>15' 0&quot;</td>
<td>4' 4&quot;</td>
</tr>
<tr>
<td>5% TO 6%</td>
<td>21' 6&quot;</td>
<td>4' 4&quot;</td>
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</tbody>
</table>

DRIVEWAY APRON

SECTION A

MIN 6" AGGREGATE BASE (COMP. TO MIN 95% MAX DRY DENSITY)
24" L CURB
1'-0" UP ALONG FLOWLINE

SECTION B

MIN 6" AGGREGATE BASE UNDER CURB DRIVEWAY APRON (COMP. TO MIN 95% MAX DRY DENSITY)
2'-0" EXPANSION JOINT
4'-0" MTD DRY TAPER (TYP.)
4'-0" MTD DRY TAPER (TYP.)
1'-0" EXPANSION JOINT

SECTION C

MIN 4" AGGREGATE BASE UNDER SIDEWALK (COMP. TO MIN 95% MAX DRY DENSITY)
5'-10" MIN

PLANVIEW DRIVEWAY APRON
SCALE: NTS
NOTES:

The City of Fernley Public Works Department shall review and approve the type and location of street lights in public right-of-way, decorative or standard, when the project improvement plans are submitted to the city for review. All public street light fixtures shall be a Cutoff style and design and will be selected from the available choices approved for use by Sierra Pacific Power Company. Developers are required to utilize Sierra Pacific Power Company for the final installation phases.

LIGHT PATTERN TYPES FALL INTO TWO CATEGORIES

Cutoff: A luminaire light distribution is designated as Cutoff when the candlumens does not numerically exceed 25 (2.5 percent) at an angle of 90 degrees above the lowest point horizontal, and 100 (10 percent) at a vertical angle of 100 degrees above the lowest point horizontal. This applies to any angle around the luminaire.

LOCATION

1. Lights shall be spaced a minimum of 750 ft. or as dictated by SPPCo.
2. Lights shall be located at all street intersections and cul-de-sacs.

TRAFFIC POLE TYPE 7

151 STREETS
WASHINGTON 405 ORNAMENTAL POST

STANDARD FEATURES:
1. STANDARD GALVANIZED STEEL TENON 3" O.D. X 3" EXPOSED. PAINTED TO MATCH POST. POST TOP I.D. 2-3/8".
2. INTEGRAL POST TOP RING.
3. 3-LAYER, 16-FLUTE TAPERED SHAFT WITH PEBBLEGRAIN FINISH.
4. STAINLESS STEEL HEX SOCKET LOCKING SCREWS - 3 @ 120°.
5. ONE-PIECE COMPOSITE SLIP-OVER BASE COVER.
6. 2-1/2" ROUND HAND HOLE WITH COVER 12" ABOVE GRADE.

SPECIFICATIONS:  OE/OA-405
CATALOG NO: 6'-15' EMBEDDED MOUNTING HEIGHT: 6'-15' ANCHOR BASE
POST TOP DIAMETER: 4.5" BASE COVER WIDTH: 16.5"
BASE COVER HEIGHT: 20" POST COLORS: SIX STANDARD COLORS, UNLIMITED CUSTOM COLORS. SUBMIT CHIP WITH ORDER.
POST TOP OPTIONS: STANDARD TENON SIZE 3" O.D. X 3" EXPOSED ABOVE INTEGRAL POST TOP RING. OTHER TENONS AND LUMINAIRE MOUNTING CONFIGURATIONS AVAILABLE.
FINISH: FACTORY-APPLIED PEBBLEGRAIN FINISH WITH APPEARANCE AND TEXTURE OF CAST IRON. DURABLE, CHEMICAL RESISTANT COATING ENABLES THE REMOVAL OF GRAFFITI WITH PAINT DAMAGE.
INSTALLATION: AVAILABLE DIRECT EMBEDDED WITH 2" X 5" WIRE ENTRY OR ANCHOR BASE WITH MIN. 4" CONDUIT ENTRY AND STANDARD 9-11 BOLT CIRCLE.

ACORN STYLE MODEL 1004 DECORATIVE LUMINAIRE
TELLURIDE (D)

OPTIONAL FITTER
TELLURIDE (D)
NOTES:
1. NO PARKING WITHIN 20 FEET OF A CROSSWALK OR 12 FEET CENTERED ON FIRE HYDRANT.
2. PARKING SPACE MARKINGS SHALL BE WHITE, TRAFFIC PAINT. SEE PAVEMENT MARKINGS, STRIPING, AND SIGNAGE GENERAL NOTE # 1.
3. PARKING SPACE MARKINGS SHALL BE SYMMETRICAL ABOUT AXES.
SPEED LIMIT & STOP SIGNS

NOTES:

1. SEE DETAIL #156, FOR STANDARD INSTALLATION OF TRAFFIC SIGNS
2. ON STREETS WHERE CURB DOES NOT EXIST, SET SIGN 6' MIN FROM EDGE OF PAVEMENT. MIN MOUNT HEIGHT 7'-0"
NOTES:

1. SIGN MATERIALS AND CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

2. STREET NAME SIGN SHALL BE AS SPECIFIED BY THE GOVERNING AGENCY AND MOUNTED WITH VANDAL-PROOF HARDWARE. (SEE AGENCY SECTION).

3. ON STREETS WHERE CURBING DOES NOT EXIST, SET SIGN 6’ MINIMUM FROM PAVEMENT EDGE. MIN. MOUNTING HEIGHT = 7’-0”.

STANDARD STREET / TRAFFIC SIGN INSTALLATION

<table>
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<th>REVISIONS</th>
<th>BY</th>
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</table>
NOTES:
1. PAVEMENT MARKINGS, STRIPING, AND SIGNAGE GENERAL NOTE # 2.
NOTE:

1. STOP BAR STRIPING DETAIL IS REQUIRED AT ALL INTERSECTIONS WITH FOUR-WAY STOP AND ON STREETS THAT ARE CLASSIFIED COLLECTOR OR GREATER, UNLESS REQUIRED OTHERWISE BY THE CITY ENGINEER.

2. ONLY THE 12-INCH SOLID WHITE STOP BAR IS REQUIRED AT STOP SIGN LOCATIONS IN RESIDENTIAL AREAS, UNLESS REQUIRED OTHERWISE BY THE CITY ENGINEER.

3. PAVEMENT MARKINGS, STRIPING, AND SIGNAGE GENERAL NOTES 1 AND 2.

STOP CONTROL STRIPING

<table>
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<tbody>
<tr>
<td>158</td>
<td></td>
<td>ADD STRIPING NOTE</td>
<td>EB</td>
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</table>

STREETS
BARRICADES TO EXTEND WIDTH OF PAVEMENT.
BARRICADES TO BE PAINTED REFLECTORIZED
WHITE WITH REFLECTORIZED ORANGE STRIPES.

TYPE 3 BARRICADE

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<th>BY</th>
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<tbody>
<tr>
<td>159 STREETS</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
NOTES:
1. STREET NAME SIGN SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF THE M.U.T.C.D.
2. REFLECTIVE MATERIALS SHALL BE MOUNTED ON EXTRUDED ALUMINUM No. 6063-T6 (SEE DETAIL).

STREET NAME SIGN

<table>
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<tr>
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<th>By</th>
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**NOTES:**
1. PAVEMENT MARKINGS, STRIPING, AND SIGNAGE GENERAL NOTE 2.

---

**SCHOOL SYMBOL MARKING**

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<th>DATE</th>
<th>REVISIONS</th>
<th>BY</th>
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<tr>
<td></td>
<td>06/07</td>
<td>ADD STRIPING NOTE</td>
<td>EB</td>
</tr>
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**DIMENSIONS:**

- **SCHOOL:** 10'-0" x 8'-0"
- WHITE LETTERING

---

1. Add Striping Note (EB)
NOTES:
1. PAVEMENT MARKINGS, STRIPING, AND SIGNAGE GENERAL NOTE 2.

YIELD LINE STRIPING

162
STREETS

3" TO 12"

24"

36"

SOLID WHITE TRIANGLE STRIPE (TYP)
WHITE YIELD SYMBOLS VARY

4" SOLID YELLOW STRIPE

CURB, GUTTER AND SIDEWALK

VARIES

50'

4' MIN TO 30' MAX FROM EDGE OF TRAVEL LANE OR CROSSWALK

NOTES:
1. PAVEMENT MARKINGS, STRIPING, AND SIGNAGE GENERAL NOTES 1 AND 2.

YIELD CONTROL STRIPING

163
STREETS
DETAIL IDs
164 THRU 177
RESERVED FOR FUTURE USE
1. THE DESIGN ENGINEER SHALL SUBMIT CALCULATIONS SUPPORTING: STABILITY AT DESIGN VELOCITY, SLOPE STABILITY, PROPOSED LINING SECTION, SEDIMENT TRANSPORT, UPLIFT, SUBDRAINS, APPROPRIATE FREEBOARD, AND ANY OTHER PERTINENT DESIGN CONSIDERATIONS.

2. EARTHEN CHANNELS WITH BOTTOM WIDTHS LESS THAN 10-FEET SHALL HAVE SIDE SLOPES OF 3:1 OR FLATTER UNLESS OTHERWISE APPROVED. MINIMUM BOTTOM WIDTH 6- FEET.

3. FOR UNLINED CHANNELS, A "V" CHANNEL IS PREFERRED TO A TRAPEZOIDAL CHANNEL WITH A NARROW BOTTOM WIDTH TO FACILITATE MAINTENANCE.

4. ACCESS ROAD SHALL BE CONSTRUCTED AS REQUIRED PER ORDINANCE (16-FOOT MINIMUM WIDTH REQUIRED ON BOTH SIDES UNLESS OTHERWISE APPROVED) TURN AROUND SHALL BE PROVIDED FOR NON-CONTINUOUS ACCESS ROAD (30 FOOT MIN. RADIUS)

5. A MINIMUM 4 FOOT SETBACK SHALL BE PROVIDED AT GRADE ALONG THE TOP OF THE CHANNEL WHERE ACCESS ROADS ARE NOT REQUIRED.

6. THE DEVELOPER SHALL PROVIDE EASEMENTS COVERING THE CHANNEL, ACCESS ROADS, AND SETBACK AREAS PRIOR TO CITY APPROVAL OF IMPROVEMENT PLANS.

7. FENCING, GUARDRAILS, DELINEATORS, ETC. SHALL BE PROVIDED AS APPROPRIATE FOR PUBLIC SAFETY.

8. ACCESS ROADS SHALL SUPPORT ALL WEATHER ACCESS. ROAD BASE WILL BE REQUIRED WHERE COMPACTED NATIVE SOILS ARE NOT DEMONSTRATED TO BE ADEQUATE.

9. UNCONTROLLED INFLOWS DOWN THE CHANNEL BANKS SHALL NOT BE PERMITTED.

10. CHANNEL ACCESS SHALL BE PROVIDED AS NECESSARY FOR MAINTENANCE, RAMPS SHALL BE ACCESSIBLE FROM PUBLIC RIGHT-OF-WAY.

**TYPICAL OPEN CHANNEL SECTION**

**NOTES:**

- R/W WIDTH OR DEDICATED EASEMENT
- 2' MIN.
- 16' MIN
- 1.5' MIN
- WATER LEVEL (DESIGN STORM)
- FENCE (TYP)
- VARES NOTE 1
- R/W
- NOTES: 1. THE DESIGN ENGINEER SHALL SUBMIT CALCULATIONS SUPPORTING: STABILITY AT DESIGN VELOCITY, SLOPE STABILITY, PROPOSED LINING SECTION, SEDIMENT TRANSPORT, UPLIFT, SUBDRAINS, APPROPRIATE FREEBOARD, AND ANY OTHER PERTINENT DESIGN CONSIDERATIONS.
2. EARTHEN CHANNELS WITH BOTTOM WIDTHS LESS THAN 10- FEET SHALL HAVE SIDE SLOPES OF 3:1 OR FLATTER UNLESS OTHERWISE APPROVED. MINIMUM BOTTOM WIDTH 6- FEET.
3. FOR UNLINED CHANNELS, A "V" CHANNEL IS PREFERRED TO A TRAPEZOIDAL CHANNEL WITH A NARROW BOTTOM WIDTH TO FACILITATE MAINTENANCE.
4. ACCESS ROAD SHALL BE CONSTRUCTED AS REQUIRED PER ORDINANCE (16-FOOT MINIMUM WIDTH REQUIRED ON BOTH SIDES UNLESS OTHERWISE APPROVED) TURN AROUND SHALL BE PROVIDED FOR NON-CONTINUOUS ACCESS ROAD (30 FOOT MIN. RADIUS)
5. A MINIMUM 4 FOOT SETBACK SHALL BE PROVIDED AT GRADE ALONG THE TOP OF THE CHANNEL WHERE ACCESS ROADS ARE NOT REQUIRED.
6. THE DEVELOPER SHALL PROVIDE EASEMENTS COVERING THE CHANNEL, ACCESS ROADS, AND SETBACK AREAS PRIOR TO CITY APPROVAL OF IMPROVEMENT PLANS.
7. FENCING, GUARDRAILS, DELINEATORS, ETC. SHALL BE PROVIDED AS APPROPRIATE FOR PUBLIC SAFETY.
8. ACCESS ROADS SHALL SUPPORT ALL WEATHER ACCESS. ROAD BASE WILL BE REQUIRED WHERE COMPACTED NATIVE SOILS ARE NOT DEMONSTRATED TO BE ADEQUATE.
9. UNCONTROLLED INFLOWS DOWN THE CHANNEL BANKS SHALL NOT BE PERMITTED.
10. CHANNEL ACCESS SHALL BE PROVIDED AS NECESSARY FOR MAINTENANCE, RAMPS SHALL BE ACCESSIBLE FROM PUBLIC RIGHT-OF-WAY.
DRIVEWAY / ROADWAY
CULVERT CROSSING

NOTE:
1. HEADWALLS SHALL BE PER STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION.
(SEE CULVERT HEADWALL DETAILS 2-13.1 THRU 2-13.6 FROM SECTION 2 SEWER / STORM DRAIN
FROM THE STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION (ORANGE BOOK))

RIP RAP GRADATION SPECIFICATION

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<td>100</td>
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<tr>
<td>6&quot;</td>
<td>40 - 70</td>
</tr>
<tr>
<td>4&quot;</td>
<td>15 - 40</td>
</tr>
<tr>
<td>2&quot;</td>
<td>0 - 20</td>
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</table>

RIP RAP REQUIRED ON ALL INLETS AND OUTLETS

D = 6"
TYPE 4R CATCH BASIN

1. FIBER-REINFORCED PORTLAND CEMENT CONCRETE (PCC) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4,000 PSI MIN COMPRESSIVE STRENGTH AT 28 DAYS, MINIMUM 6 SACKS OF CEMENT PER CUBIC YARD WITH A MAX. WATER / CEMENT RATIO OF 0.45 AIR ENTRAINMENT 6%±1.5% SLUMP AT 1-4 INCHES. ALL MATERIALS SHALL CONFORM TO SSPWC SECTION 202.

2. REINFORCED STEEL SHALL BE GRADE 40 AND HAVE 1.5" MINIMUM CLEAR COVER.

3. CONCRETE STRUCTURE MAY BE A PRE-CAST CONCRETE UNIT UPON APPROVAL OF THE COUNTY ENGINEER. BASE OF PRE-CAST CONCRETE UNIT SHALL BE PLACED ON 6" COMPACTED DRAIN ROCK.

4. FRAME, GRATE & CURB BOX SHALL BE NEENAH R-3067 OR APPROVED EQUAL (WITH EQUAL FLOW CAPACITY AND WEIGHT.)

5. CONCRETE SHALL ONLY BE CONNECTED TO MANHOLES OR CONNECTED TO STORM DRAIN MAINS BY LATERALS.

6. INSTALL "SUR-TRAP" GREASE TRAP PER DETAIL #188.

NOTES:
1. FIBER-REINFORCED PORTLAND CEMENT CONCRETE (PCC) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4,000 PSI MIN COMPRESSIVE STRENGTH AT 28 DAYS, MINIMUM 6 SACKS OF CEMENT PER CUBIC YARD WITH A MAX. WATER / CEMENT RATIO OF 0.45 AIR ENTRAINMENT 6%±1.5% SLUMP AT 1-4 INCHES. ALL MATERIALS SHALL CONFORM TO SSPWC SECTION 202.

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4. FRAME, GRATE & CURB BOX SHALL BE NEENAH R-3067 OR APPROVED EQUAL (WITH EQUAL FLOW CAPACITY AND WEIGHT.)

5. CONCRETE SHALL BE PLACED AS SHOWN WHEN NOT LOCATED IN A SIDEWALK.

6. TILT FRAME & GRATE AS REQUIRED TO ATTAIN 6" MIN FLOW OPENING & SHIM BETWEEN CURB BOX & FRAME AS REQUIRED TO MATCH CURB BOX TO TOP OFF CURB AND FACE OF CURB (SEE SECTION B-B.)

7. CATCH BASINS SHALL ONLY BE CONNECTED TO MANHOLES OR CONNECTED TO STORM DRAIN MAINS BY LATERALS.

8. INSTALL "SUR-TRAP" GREASE TRAP PER DETAIL #188.
SIDEWALK

CROSS-DRAIN

1/2" STEEL PLATE WITH NON-SKID SURFACE

BOLT PLATE TO CONCRETE, HEADS FLUSH W/ PLATE.

CURB

SIDEWALK

PLAN

SLOPE TO DRAIN

MIN. 6" TYPE 2 AGG. BASE COMPACTED TO 95% MDD

SECTION A-A

MIN. 4" MIN

VARIES

2" MIN

2" MIN

4" MIN

1/2"

1/2" STEEL PLATE WITH NON-SKID SURFACE

SIDEWALK

CURB

SLOPE TO DRAIN

PLAN

MIN. 6" TYPE 2 AGG. BASE COMPACTED TO 95% MDD

SIDEWALK

CROSS-DRAIN

181

STORM DRAIN
NOTE

1. MANHOLE HOLE BARRELL SECTIONS MUST NOT BEAR DIRECTLY ON PIPE.
NOTE

1. MANHOLE HOLE BARREL SECTIONS MUST NOT BEAR DIRECTLY ON PIPE.

MANHOLE TYPE IV
(ANGLE POINT)

STANDARD 1 OR 1A MANHOLE
(SEE DETAIL #85 OR #87)
FORM CIRCULAR OR ELLIPTICAL HOLE

SECTION B

EARTH IN PLACE CAN BE USED AS FORM

SLOPE TO CONFORM W/ PIPE BELOW SPRING LINE PROVIDE SMOOTH FINISH

PLAN

PIECE ID OR 48" MAX OPENING

#4 AT 12" EACH WAY

NO. 4 AT 12" EACH WAY

PIPE ID OR 48" MAX OPENING

#4 AT 6"

9" MIN

SANDBAGS MAY BE USED AS FORM

6" DRAIN ROCK

5" CLEARANCE

11"

FORM CIRCULAR OR ELLIPTICAL HOLE

0" MIN

12" MAX

#4 AT 12"

#4 AT 4" EACH WAY

8" MIN

10" MIN

10" MIN

4" MIN

STORM DRAIN

183

MANHOLE TYPE IV
(ANGLE POINT)
TRASH RACK
(24" PIPE AND SMALLER)

DATE

REVISIONS

BY

Detail No. 184

STORM DRAIN

PLAN

2'-0"

5'-4"

3'-0"

6'-6"

SECTION A

TOP OF WALL 6" ABOVE
FINISHED GRADE

VARIES
12" MIN
24" MAX

24" DIA. MAX.

SECTION B

JOIN INVERT

SECTION C

TRASH RACK DETAIL

3" x 3" x 1/4" GALV.
ANGLE CAST IN PLACE

(3) NELSON STUDS OR
#4 x 3" (3 EACH SIDE)

3" x 3" x 1/4"
GALV. ANGLE
CAST IN PLACE

(2) 1/2" Ø x 6"
BOLTS W/ NUTS &
WASHERS, GALV.

2 1/2" x 2 1/2" x 3/8" ANGLE

5/8" DRILL THRU

3/4" SCHED 40
GALV. PIPE

DRILL THRU 5/8" (2 HOLES)

3/4" SCHED 40 GALV.
PIPE (TYP)

3" x 3" x 1/4" GALV.
ANGLE CAST IN PLACE

(3) NELSON STUDS OR
#4 x 3" (3 EACH SIDE)

3" x 3" x 1/4"
GALV. ANGLE
CAST IN PLACE

(2) 1/2" Ø x 6"
BOLTS W/ NUTS &
WASHERS, GALV.

2 1/2" x 2 1/2" x 3/8" ANGLE

5/8" DRILL THRU

3/4" SCHED 40
GALV. PIPE

DRILL THRU 5/8" (2 HOLES)

3/4" SCHED 40 GALV.
PIPE (TYP)

3" x 3" x 1/4" GALV.
ANGLE CAST IN PLACE

(3) NELSON STUDS OR
#4 x 3" (3 EACH SIDE)

3" x 3" x 1/4"
GALV. ANGLE
CAST IN PLACE

(2) 1/2" Ø x 6"
BOLTS W/ NUTS &
WASHERS, GALV.
TRASH RACK
(27" THRU 54" PIPE)

NOTE:
1. PIPE SIZES GREATER THAN 54" NEED TO BE DESIGNED BY A LICENSED ENGINEER AND APPROVED BY THE CITY ENGINEER.
CLASS DA CONCRETE
TRIM LATERAL PIPE FLUSH WITH INSIDE FACE OF MAIN PIPE.
CUT MAIN PIPE REINFORCING BARS, CLEAN, AND BEND INTO NEW CONCRETE (TYP).

4 HOOPED O.D. + 4" OVERLAP ENDS 1' - 1"

CONSTRUCT REINFORCED CONCRETE PIPE COLLAR FOR ALL CHANGES IN GRADE EXCEEDING 0.1FT. PER FT. OR AS DIRECTED BY THE GOVERNING AGENCY.

10" MIN. LATERAL PIPE

O.D. + 12"

CATCH BASIN LATERAL TO RCP MAIN

186
STORM DRAIN
CATCH BASIN PVC
LATERAL TO MAIN

NOTE:
CONNECTION OF THE NEW SERVICE LATERAL TO THE MAINLINE SHALL BE ACCOMPLISHED BY MEANS OF A COMPRESSION-FIT SERVICE CONNECTION. THE SERVICE CONNECTION SHALL BE SPECIFICALLY DESIGNED FOR CONNECTION TO THE STORM DRAIN MAIN BEING INSTALLED, AND SHALL BE INSERTA TEE AS MANUFACTURED BY FOWLER MANUFACTURING CO., HILLSBORO, OREGON. TELEPHONE (503) 357-2110; FAX (503) 359-5417; OR APPROVED EQUAL. INSTALL USING PROCEDURES AND EQUIPMENT AS REFERENCED IN MANUFACTURER’S WRITTEN INSTALLATION INSTRUCTIONS.
NOTE:

1. ALL CATCH BASINS SHALL BE PROVIDED WITH A "SUR-TRAP" GREASE TRAP OR APPROVED EQUAL.
2. INSTALL GREASE TRAP WITH THE BOTTOM EDGE PARALLEL TO THE WATER SURFACE AND THE RECTANGULAR OPENING FACING DOWNWARD AND THE CIRCULAR END PLACED INSIDE THE OUTLET PIPE.
DETAIL IDS
189 THRU 201
RESERVED FOR FUTURE USE