**DETAIL** | **DESCRIPTION**
--- | ---
| | **GENERAL**
1 | TYPICAL CITY UTILITY LOCATIONS
| | **STREETS**
2 | TYPICAL CROSS SECTION (LOCAL STREETS)
2 | OPTIONAL TYPICAL CROSS SECTION (LOCAL STREETS W/ SEPARATED SIDEWALK)
2 | TYPICAL CROSS SECTION (NEIGHBORHOOD COLLECTOR)
2 | OPTIONAL TYPICAL CROSS SECTION (NEIGHBORHOOD COLLECTOR)
2 | TYPICAL CROSS SECTION (MINOR ARTERIAL/ARTERIAL COLLECTOR)
2 | OPTIONAL TYPICAL CROSS SECTION (MINOR ARTERIAL/ARTERIAL COLLECTOR)
2 | TYPICAL CROSS SECTION (PRINCIPLE ARTERIAL)
2 | OPTIONAL TYPICAL CROSS SECTION (PRINCIPLE ARTERIAL)
2 | TYPICAL CROSS SECTION RURAL ROADWAY
2 | ALTERNATE TURN-AROUND
2 | ALLEYWAY / HILLSIDE DEVELOPMENT
2 | TYPICAL CROSS SECTION (BIKE / PEDESTRIAN PATHWAY)
2 | TRENCH PAVEMENT RESTORATION
2 | TRENCHING AND UTILITY LAYOUT DETAIL FOR RESIDENTIAL PROPERTY
2 | SURVEY MONUMENT
2 | CONCRETE VALLEY GUTTER
2 | CURB AND SIDEWALK DETAILS
2 | CATCH BASIN GUTTER WIDENING
2 | PUBLIC SIDEWALK PEDESTRIAN RAMP TYPE PARALLEL A
2 | PUBLIC SIDEWALK PEDESTRIAN RAMP TYPE PARALLEL B
2 | PUBLIC SIDEWALK PEDESTRIAN RAMP NEW TYPE PERPENDICULAR A
2 | PUBLIC SIDEWALK PEDESTRIAN RAMP NEW TYPE PERPENDICULAR B
2 | STANDARD DRIVEWAY
2 | ADA BYPASS DRIVEWAY
2 | DRIVEWAY WITH SEPARATED SIDEWALK
2 | RURAL ROADWAY DRIVEWAY APPROACH
2 | SIDEWALK-HMA RAMP
2 | DROPPED BACK SIDEWALK WALL DETAIL
2 | MODIFIED SIDEWALK RETAINING WALL DETAIL
| | **SEWER**
3 | SEWER CLEANOUT
3 | STANDARD MANHOLE DETAIL (MINIMUM 5’ INVERT TO COVER)
3 | SHALLOW MANHOLE DETAIL (UNDER 5’ INVERT TO COVER)
3 | SADDLE MANHOLE DETAIL (MINIMUM 5’ INVERT TO COVER)
3 | MANHOLE FRAME AND COVER
3 | ADJUSTMENTS
3 | OUTSIDE DROP CONNECTION REQUIRED FOR INVERT DROPS OVER 2’
3 | INSIDE DROP CONNECTION
3 | SEWER SERVICE INSTALLATION
3 | SEWER SERVICE AND MARKER POST DETAIL
3 | PRESSURE SEWER CONNECTION
4 | **WATER**
4 | **TYPICAL CITY UTILITY LOCATIONS**
4 | PIPE BEDDING DETAIL FOR SANITARY SEWERS, STORM, AND WATER MAINS
4 | TRACER WIRE INSTALLATION AND VALVE EXTENSION DETAIL
4 | TYPICAL FIRE HYDRANT INSTALLATION
4 | GUARD POST
4 | DETAILS FOR TAPPING WATER MAINS
4 | THRUST BLOCK DETAILS
4 | SADDLE THRUST BLOCK
4 | MECHANICAL RESTRAINT
4 | AIR VACUUM RELEASE VALVE
4 | FIRE LINE TO MULTI-FAMILY / COMMERCIAL BUILDING
4 | SINGLE WATER SERVICE - 1” FROM PVC TO WATER MAIN
4 | 1” TAP FOR D.I. STEEL AND A.C. WATER MAINS
4 | 1 1/2” AND 2” WATER SERVICES
4 | DOUBLE CHECK VALVE ASSEMBLY INSTALLATION FOR ASSEMBLIES 3/4” TO 1”
4 | BOOSTER PUMP SYSTEM - RESIDENTIAL
4 | CASING WITH SPACER
| | **STORM**
5 | TYPE 1 CATCH BASIN
5 | CATCH BASIN FRAME AND GRATE
5 | STANDARD 48” STORM DRAIN MANHOLE
5 | PERCOLATION TRENCH DETAIL
5 | PRECAST CONCRETE DRYWELL, 9 FEET DEPTH
5 | MODIFIED DRYWELL DETAIL
| | **LIGHTING**
6 | STREET LIGHT STANDARD
6 | TYPICAL LIGHT-EMITTING-DIODE (LED) LUMINAIRE
6 | TYPICAL STREET LIGHT CIRCUIT
6 | FUSED SAFETY DISCONNECT SINGLE AND MULTI-LIGHT CIRCUIT
6 | STREET CUT AND PATCH DETAIL FOR SIGNALS, LIGHTING AND CONDUITS
6 | STREET LIGHT CONDUIT SINGLE AND MULTI-LIGHT CIRCUIT
6 | STREET LIGHT J-BOX INSTALLATION
| | **TRAFFIC CONTROL**
7 | TYPICAL SIGN POST
7 | STREET NAME SIGN
7 | TYPICAL SIGN INSTALLATION
7 | END OF ROADWAY MARKERS
7 | SHOULDER WORK FOR ANY ROADWAY
7 | TYPICAL LANE CLOSURE 2 LANE ROADWAY
7 | TYPICAL 1-LANE CLOSURE 2.4-LANE ROADWAY
7 | TYPICAL LEFT LANE CLOSURE FOR A 4-LANE ROADWAY
7 | TYPICAL DOUBLE LANE CLOSURE INSIDE 4-LANE ROADWAY
7 | TYPICAL 2-LANE CLOSURE ON A 4-LANE ROADWAY
7 | TYPICAL 3-LANE CLOSURE ON A 5-LANE ROADWAY
7 | INSIDE LANE CLOSURE NEAR SIDE OF INTERSECTION
7 | INSIDE LANE CLOSURE FAR SIDE OF INTERSECTION
7 | TYPICAL 1-LANE CLOSURE ON A 3-LANE ROADWAY
7 | TYPICAL LANE CLOSURE INSIDE A ROUND-ABOUT
NOTES:
1. DEVELOPER OR CONTRACTOR IS REQUIRED TO CALL 811 A MINIMUM OF 2 BUSINESS DAYS PRIOR TO DIGGING WITHIN THE LIMITS OF CITY RIGHT-OF-WAY FOR THE LOCATION MARKING OF ALL UNDERGROUND UTILITIES.

2. STREET LIGHT POLES TYPICALLY WILL BE INSTALLED ON ALTERNATING SIDES OF THE STREET AND SPACED AS INDICATED ON STANDARD DETAIL 6-2. WHEN THE SIDEWALK IS SEPARATED BY A PLANTER STRIP, PLACE FACE OF POLE 2 FEET FROM FACE OF CURB.

3. WATER METER BOXES WILL BE INSTALLED AT THE BACK OF NEW OR EXISTING SIDEWALKS. WHEN SIDEWALKS ARE SEPARATED BY A PLANTER STRIP SET FRONT OF METER BOX 18 INCHES FROM THE FACE OF CURB. STUB WATER SERVICE LINE TO BACK OF EASEMENT.

4. POTABLE WATER LINES TYPICALLY SHALL BE INSTALLED 6 FEET FROM AND PARALLEL TO THE CENTERLINE OF THE RIGHT-OF-WAY.

5. SANITARY SEWER LINE TYPICALLY SHALL BE INSTALLED 6 FEET FROM AND PARALLEL TO THE CENTERLINE OF THE RIGHT-OF-WAY.

6. STORMWATER LINES TYPICALLY SHALL BE INSTALLED UNDER THE GUTTER PAN, OR UNDER THE CENTER OF THE ROADWAY IF APPROVED BY CITY ENGINEER.

7. FIRE HYDRANTS TYPICALLY WILL BE INSTALLED ON ALTERNATING SIDES OF THE STREET ON 300 FOOT SPACING IN INDUSTRIAL AND COMMERCIAL AREAS AND ON 400 FOOT SPACING IN RESIDENTIAL AREAS AND/OR EVERY INTERSECTION UNLESS OTHERWISE SPECIFIED IN THE PLANS, OR CONTRACT.

8. IF CONFLICTS REQUIRE ALTERNATE WATER OR SEWER MAIN LOCATIONS, APPROVAL SHALL BE OBTAINED FROM THE CITY ENGINEER FOR THE LOCATION. A MINIMUM 3 FOOT SEPARATION FROM THE FACE OF CURB IS REQUIRED.
NOTES:

1. CONCRETE CURB AND GUTTER - STAB JOINTS EVERY 10 FEET, MASTIC AT PC/PT & CATCH BASINS.

2. CONCRETE SIDEWALK - DUMMY JOINTS EVERY 5 FEET, EXPANSION JOINT EVERY 30 FEET. 2" COMPACTED CSTC UNDER SIDEWALK. CONCRETE THICKNESS OF SIDEWALKS AT DRIVEWAY APPROACHES SHALL BE 6".

3. SEE STD. DETAIL 1-1 FOR HYDRANT AND STREET LIGHT LOCATIONS.

4. ROADWAY SECTION ABOVE IS CONSIDERED MINIMUM DEPTHS. DEVELOPERS SHALL MAY BE REQUIRED TO CONDUCT A GEOTECHNICAL ANALYSIS OF SITE SOILS AND HAVE A ROADWAY SECTION DESIGNED BY A LICENSED PROFESSIONAL ENGINEER TO SATISFY THE CITY ROADWAY DESIGN CONDITIONS AT THE DISCRETION OF THE CITY ENGINEER.

5. MINIMUM CENTERLINE RADII FOR LOCAL STREETS SHALL BE DESIGNED PER THE LOW-SPEED URBAN STREETS STANDARDS IN THE MOST RECENT AASHTO EDITION UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. WHEN APPROVED BY THE CITY ENGINEER, MINOR LOOPS ON LOCAL STREETS WHERE THE STREET MAKES A 90° PLUS OR MINUS 5° TURN, THE MINIMUM CENTERLINE RADIUS SHALL BE 100'.
NOTES: (**USE OF THIS ROADWAY SECTION MUST BE APPROVED BY THE CITY COMMUNITY DEVELOPMENT AND PUBLIC WORKS DEPARTMENTS**)

1. CONCRETE CURB AND GUTTER - STAB JOINTS EVERY 10 FEET, MASTIC AT PC/PT & CATCH BASINS.

2. CONCRETE SIDEWALK - DUMMY JOINTS EVERY 5 FEET, EXPANSION JOINT EVERY 30 FEET. 2" COMPACTED CSTC UNDER SIDEWALK. CONCRETE THICKNESS OF SIDEWALKS AT DRIVEWAY APPROACHES SHALL BE 6".

3. SEE STD. DETAIL 1-1 FOR HYDRANT AND STREET LIGHT LOCATIONS.

4. SIDEWALK, LANDSCAPE ELEMENTS, AND IRRIGATION SYSTEM SHALL BE COMPLETED BY THE HOME BUILDER AND MAINTAINED BY THE INDIVIDUAL PROPERTY OWNER. ONLY ROCK AND/OR GRASS IS ALLOWED BETWEEN LANDSCAPING STRIP BETWEEN BACK OF CURB AND SIDEWALK. HOME.builder SHALL INSTALL 1 1/2" CL 160 PVC CAPPED AND MARKED IRRIGATION CONDUIT 12" UNDER SIDEWALK ON EACH SIDE OF THE DRIVEWAY. ROADSIDE EDGE OF SIDEWALK SHALL BE SET 2% HIGHER THAN TOP OF CURB.

5. ROADWAY SECTION ABOVE IS CONSIDERED MINIMUM DEPTHS. DEVELOPERS SHALL BE REQUIRED TO CONDUCT A GEOTECHNICAL ANALYSIS OF SITE SOILS AND HAVE A ROADWAY SECTION DESIGNED BY A LICENSED PROFESSIONAL ENGINEER TO SATISFY THE CITY ROADWAY DESIGN CONDITIONS.

6. MINIMUM CENTERLINE RADII FOR LOCAL STREETS SHALL BE DESIGNED PER THE LOW-SPEED URBAN STREETS STANDARDS IN THE MOST RECENT AASHTO EDITION UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. WHEN APPROVED BY THE CITY ENGINEER, MINOR LOOPS ON LOCAL STREETS WHERE THE STREET MAKES A 90° PLUS OR MINUS 5° TURN, THE MINIMUM CENTERLINE RADIUS SHALL BE 100'.
NOTES:

1. ROADWAY SECTION ABOVE IS CONSIDERED MINIMUM DEPTHS. DEVELOPERS SHALL BE REQUIRED TO CONDUCT A GEOTECHNICAL ANALYSIS OF SITE SOILS AND HAVE A ROADWAY SECTION DESIGNED BY A LICENSED PROFESSIONAL ENGINEER TO SATISFY THE CITY ROADWAY DESIGN CONDITIONS.

2. CONCRETE CURB AND GUTTER - STAB JOINTS EVERY 10 FEET, MASTIC AT PC/PT & CATCH BASINS

3. CONCRETE SIDEWALK - DUMMY JOINTS EVERY 5 FEET, EXPANSION JOINT EVERY 30 FEET. 2" COMPACTED CSTC UNDER SIDEWALK. CONCRETE THICKNESS OF SIDEWALKS AT DRIVEWAY APPROACHES SHALL BE 6".

4. SEE STD. DETAIL 1-1 FOR HYDRANT AND STREET LIGHT LOCATIONS.

5. MINIMUM CENTERLINE RADII FOR NEIGHBORHOOD COLLECTOR STREETS SHALL BE DESIGNED PER THE LOW-SPEED URBAN STREETS STANDARDS IN THE MOST RECENT AASHTO EDITION UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

6. ON ROADWAYS DESIGNATED LIMITED ACCESS, NO PARKING SIGNS WILL BE INSTALLED AND NO PARKING WILL BE ALLOWED ALONG THE ROADWAY.
NOTES: (**USE OF THIS ROADWAY SECTION MUST BE APPROVED BY THE CITY COMMUNITY DEVELOPMENT AND PUBLIC WORKS DEPARTMENTS**)

1. ROADWAY SECTION ABOVE IS CONSIDERED MINIMUM DEPTHS. DEVELOPERS SHALL BE REQUIRED TO CONDUCT A GEO TECHNICAL ANALYSIS OF SITE SOILS AND HAVE A ROADWAY SECTION DESIGNED BY A LICENSED PROFESSIONAL ENGINEER TO SATISFY THE CITY ROADWAY DESIGN CONDITIONS.

2. CONCRETE CURB AND GUTTER - STAB JOINTS EVERY 10 FEET, MASTIC AT PC/PT & CATCH BASINS.

3. CONCRETE SIDEWALK - DUMMY JOINTS EVERY 5 FEET, EXPANSION JOINT EVERY 30 FEET. 2" COMPACTED CSTC UNDER SIDEWALK. CONCRETE THICKNESS OF SIDEWALKS AT DRIVEWAY APPROACHES SHALL BE 6".

4. SEE STD. DETAIL 1-1 FOR HYDRANT AND STREET LIGHT LOCATIONS.

5. WHEN DESIGNATED A LIMITED ACCESS ROADWAY THE DEPICTED RIGHT OF WAY AND EASEMENT TYPICAL SECTION SHALL BE USED. IN THESE SITUATIONS THE DEVELOPER SHALL BE REQUIRED TO INSTALL SIDEWALK AS PART OF PLAT DEVELOPMENT. ON ROADWAYS DESIGNATED LIMITED ACCESS, NO PARKING SIGNS WILL BE INSTALLED AND NO PARKING WILL BE ALLOWED ALONG THE ROADWAY. ADDITIONAL ROADWAY STRIPING MAY BE REQUIRED.

6. SIDEWALK, LANDSCAPE ELEMENTS, AND IRRIGATION SYSTEM SHALL BE COMPLETED BY THE HOME BUILDER AND MAINTAINED BY THE INDIVIDUAL PROPERTY OWNER. ONLY ROCK AND/OR GRASS IS ALLOWED BETWEEN LANDSCAPING STRIP BETWEEN BACK OF CURB AND SIDEWALK. HOME BUILDER SHALL INSTALL 1 1/2" CL 160 PVC CAPPED AND MARKED IRRIGATION CONDUIT 12" UNDER SIDEWALK ON EACH SIDE OF THE DRIVEWAY. ROADSIDE EDGE OF SIDEWALK SHALL BE SET 2% HIGHER THAN TOP OF CURB.

7. MINIMUM CENTERLINE RADII FOR NEIGHBORHOOD COLLECTOR STREETS SHALL BE DESIGNED PER THE LOW-SPEED URBAN STREETS STANDARDS IN THE MOST RECENT AASHTO EDITION UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
NOTES:

1. ROADWAY SECTION ABOVE IS CONSIDERED MINIMUM DEPTHS. DEVELOPERS SHALL BE REQUIRED TO CONDUCT A GEOTECHNICAL ANALYSIS OF SITE SOILS AND HAVE A ROADWAY SECTION DESIGNED BY A LICENSED PROFESSIONAL ENGINEER TO SATISFY THE CITY ROADWAY DESIGN CONDITIONS.

2. CONCRETE CURB AND GUTTER - STAB JOINTS EVERY 10 FEET, MASTIC AT PC/PT & CATCH BASINS.

3. CONCRETE SIDEWALK - DUMMY JOINTS EVERY 5 FEET, EXPANSION JOINT EVERY 30 FEET. 2" COMPACTED CSTC UNDER SIDEWALK. CONCRETE THICKNESS OF SIDEWALKS AT DRIVEWAY APPROACHES SHALL BE 6".

4. SEE STD. DETAIL 1-1 FOR HYDRANT AND STREET LIGHT LOCATIONS.

5. WHEN DESIGNATED A LIMITED ACCESS ROADWAY THE DEVELOPER SHALL BE REQUIRED TO INSTALL SIDEWALK AS PART OF PLAT DEVELOPMENT.

6. MINIMUM CENTERLINE RADII FOR ARTERIAL STREETS UP TO 45 MPH SHALL BE DESIGNED PER THE LOW-SPEED URBAN STREETS STANDARDS IN THE MOST RECENT AASHTO EDITION UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. STREETS IN EXCESS OF 45 MPH SHALL USE \( e_{	ext{ex}}=4\% \) TABLES IN THE LATEST AASHTO EDITION TO DETERMINE MINIMUM RADII FOR DESIGN SUPER ELEVATION RATES UNLESS APPROVED OTHERWISE BY CITY ENGINEER.

7. ON ROADWAYS DESIGNATED LIMITED ACCESS, NO PARKING SIGNS WILL BE INSTALLED AND NO PARKING WILL BE ALLOWED ALONG THE ROADWAY.
NOTES: (**USE OF THIS ROADWAY SECTION MUST BE APPROVED BY THE CITY COMMUNITY DEVELOPMENT AND PUBLIC WORKS DEPARTMENTS**)

1. ROADWAY SECTION ABOVE IS CONSIDERED MINIMUM DEPTHS. DEVELOPERS SHALL BE REQUIRED TO CONDUCT A GEOTECHNICAL ANALYSIS OF SITE SOILS AND HAVE A ROADWAY SECTION DESIGNED BY A LICENSED PROFESSIONAL ENGINEER TO SATISFY THE CITY ROADWAY DESIGN CONDITIONS.

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4. SEE STD. DETAIL 1-1 FOR HYDRANT AND STREET LIGHT LOCATIONS.

5. WHEN DESIGNATED A LIMITED ACCESS ROADWAY THE DEPICTED RIGHT OF WAY AND EASEMENT TYPICAL SECTION SHALL BE USED. IN THESE SITUATIONS THE DEVELOPER SHALL BE REQUIRED TO INSTALL SIDEWALK AS PART OF PLAT DEVELOPMENT. ON ROADWAYS DESIGNATED LIMITED ACCESS, NO PARKING SIGNS WILL BE INSTALLED AND NO PARKING WILL BE ALLOWED ALONG THE ROADWAY.

6. SIDEWALK, LANDSCAPE ELEMENTS, AND IRRIGATION SYSTEM SHALL BE COMPLETED BY THE HOME BUILDER AND MAINTAINED BY THE INDIVIDUAL PROPERTY OWNER. ONLY ROCK AND/OR GRASS IS ALLOWED BETWEEN LANDSCAPING STRIP BETWEEN BACK OF CURB AND SIDEWALK. HOMEBUILDER SHALL INSTALL 1 1/2" CL 160 PVC CAPPED AND MARKED IRRIGATION CONDUIT 12" UNDER SIDEWALK ON EACH SIDE OF THE DRIVEWAY. ROADSIDE EDGE OF SIDEWALK SHALL BE SET 2% HIGHER THAN TOP OF CURB.

7. MINIMUM CENTERLINE RADII FOR ARTERIAL STREETS UP TO 45 MPH SHALL BE DESIGNED PER THE LOW-SPEED URBAN STREETS STANDARDS IN THE MOST RECENT AASHTO EDITION UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. STREETS IN EXCESS OF 45 MPH SHALL USE $e_{av}=4\%$ TABLES IN THE LATEST AASHTO EDITION TO DETERMINE MINIMUM RADII FOR DESIGN SUPER ELEVATION RATES UNLESS APPROVED OTHERWISE BY CITY ENGINEER.
NOTES:

1. ROADWAY SECTION ABOVE IS CONSIDERED MINIMUM DEPTHS. DEVELOPERS SHALL BE REQUIRED TO CONDUCT A
   GEOTECHNICAL ANALYSIS OF SITE SOILS AND HAVE A ROADWAY SECTION DESIGNED BY A LICENSED PROFESSIONAL
   ENGINEER TO SATISFY THE CITY ROADWAY DESIGN CONDITIONS.

2. CONCRETE CURB AND GUTTER - STAB JOINTS EVERY 10 FEET, MASTIC AT PC/PT & CATCH BASINS.

3. CONCRETE SIDEWALK - DUMMY JOINTS EVERY 5 FEET, EXPANSION JOINT EVERY 30 FEET. 2" COMPACTED CSTC
   UNDER SIDEWALK. CONCRETE THICKNESS OF SIDEWALKS AT DRIVEWAY APPROACHES SHALL BE 6".

4. SEE STD. DETAIL 1-1 FOR HYDRANT AND STREET LIGHT LOCATIONS.

5. WHEN DESIGNATED A LIMITED ACCESS ROADWAY THE DEVELOPER SHALL BE REQUIRED TO INSTALL SIDEWALK AS
   PART OF PLAT DEVELOPMENT. ON ROADWAYS DESIGNATED LIMITED ACCESS, NO PARKING SIGNS WILL BE INSTALLED
   AND NO PARKING WILL BE ALLOWED ALONG THE ROADWAY.

6. MINIMUM CENTERLINE RADII FOR ARTERIAL STREETS UP TO 45 MPH SHALL BE DESIGNED PER THE LOW-SPEED URBAN
   STREETS STANDARDS IN THE MOST RECENT AASHTO EDITION UNLESS OTHERWISE APPROVED BY THE CITY
   ENGINEER. STREETS IN EXCESS OF 45 MPH SHALL USE e_m=4% TABLES IN THE LATEST AASHTO EDITION TO DETERMINE
   MINIMUM RADII FOR DESIGN SUPER ELEVATION RATES UNLESS APPROVED OTHERWISE BY CITY ENGINEER.

TYPICAL CROSS SECTION
(PRINCIPLE ARTERIAL)
COMPACTED SUBGRADE
95% MAX DENSITY AASHTO T180 OR
98% AASHTO T99

3" MIN HMA CL. 1/2" PG 64-28
OR AS REQ'D BY CITY ENGINEER.
91% MAX DENSITY AASHTO T209

R/W
74' MINIMUM
LC R/W
37'' MINIMUM
37' MINIMUM

NOTES: (**USE OF THIS ROADWAY SECTION MUST BE APPROVED BY THE CITY COMMUNITY DEVELOPMENT AND PUBLIC WORKS DEPARTMENTS**)

1. ROADWAY SECTION ABOVE IS CONSIDERED MINIMUM DEPTHS. DEVELOPERS SHALL BE REQUIRED TO CONDUCT A GEOTECHNICAL ANALYSIS OF SITE SOILS AND HAVE A ROADWAY SECTION DESIGNED BY A LICENSED PROFESSIONAL ENGINEER TO SATISFY THE CITY ROADWAY DESIGN CONDITIONS.

2. CONCRETE CURB AND GUTTER - STAB JOINTS EVERY 10 FEET, MASTIC AT PC/PT & CATCH BASINS.

3. CONCRETE SIDEWALK - DUMMY JOINTS EVERY 5 FEET, EXPANSION JOINT EVERY 30 FEET. 2" COMPACTED CSTC UNDER SIDEWALK. CONCRETE THICKNESS OF SIDEWALKS AT DRIVEWAY APPROACHES SHALL BE 6".

4. SEE STD. DETAIL 1-1 FOR HYDRANT AND STREET LIGHT LOCATIONS.

5. WHEN DESIGNATED A LIMITED ACCESS ROADWAY THE DEPICTED RIGHT OF WAY AND EASEMENT TYPICAL SECTION SHALL BE USED. IN THESE SITUATIONS THE DEVELOPER SHALL BE REQUIRED TO INSTALL SIDEWALK AS PART OF PLAT DEVELOPMENT. ON ROADWAYS DESIGNATED LIMITED ACCESS, NO PARKING SIGNS WILL BE INSTALLED AND NO PARKING WILL BE ALLOWED ALONG THE ROADWAY.

6. SIDEWALK, LANDSCAPE ELEMENTS, AND IRRIGATION SYSTEM SHALL BE COMPLETED BY THE HOME BUILDER AND MAINTAINED BY THE INDIVIDUAL PROPERTY OWNER. ONLY ROCK AND/OR GRASS IS ALLOWED BETWEEN LANDSCAPING STRIP BETWEEN BACK OF CURB AND SIDEWALK. HOME-builder SHALL INSTALL 1 1/2"CL 160 PVC CAPPED AND MARKED IRRIGATION CONDUIT 12 " UNDER SIDEWALK ON EACH SIDE OF THE DRIVEWAY. ROADSIDE EDGE OF SIDEWALK SHALL BE SET 2% HIGHER THAN TOP OF CURB.

7. MINIMUM CENTERLINE RADII FOR ARTERIAL STREETS UP TO 45 MPH SHALL BE DESIGNED PER THE LOW-SPEED URBAN STREETS STANDARDS IN THE MOST RECENT AASHTO EDITION UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. STREETS IN EXCESS OF 45 MPH SHALL USE $e_{aa}=4%$ TABLES IN THE LATEST AASHTO EDITION TO DETERMINE MINIMUM RADII FOR DESIGN SUPER ELEVATION RATES UNLESS APPROVED OTHERWISE BY CITY ENGINEER.
NOTES:

1. FIRE HYDRANT BASE FLANGE SHALL BE SET 0.5' ABOVE THE EDGE OF THE ASPHALT AND INCLUDE INSTALLATION OF GUARD POSTS PER STD. DETAIL 4-4B. AT LOCATIONS OF HYDRANTS AND WATER METER BOXES, DITCH SHALL BE FILLED.

2. ROADWAY SECTION ABOVE IS CONSIDERED MINIMUM DEPTHS. DEVELOPERS MAY BE REQUIRED TO CONDUCT A GEOTECHNICAL ANALYSIS OF SITE SOILS AND HAVE A ROADWAY SECTION DESIGNED BY A LICENSED PROFESSIONAL ENGINEER TO SATISFY THE CITY ROADWAY DESIGN CONDITIONS AT THE DISCRETION OF THE CITY ENGINEER.
NOTES:
1. CONCRETE CURB AND GUTTER - STAB JOINTS EVERY 10 FEET, MASTIC AT PC/PT & CATCH BASINS.
2. CONCRETE SIDEWALK - DUMMY JOINTS EVERY 5 FEET, EXPANSION JOINT EVERY 30 FEET.
3. SEE STD. DETAIL 1-1 FOR HYDRANT AND STREET LIGHT LOCATION.
4. THE MAXIMUM CUL-DE-SAC LENGTH IS 400' AS SHOWN IN DRAWING.
NOTES:

(WITH THE PRIOR APPROVAL OF BOTH THE CITY ENGINEER AND FIRE MARSHALL, AN ALTERNATE TURN AROUND MAY BE USED. APPROVAL WILL BE CONSIDERED ONLY WHEN THE FOLLOWING MINIMUM CRITERIA ARE MET.)

1. MUST BE AN IN-FILL AREA BETWEEN DEVELOPED RESIDENTIAL LOTS WHERE, A FULL Sized CUL-DE-SAC WOULD NOT BE PRACTICAL AS DETERMINED BY THE CITY ENGINEER AND FIRE MARSHAL; OR MUST BE AN IN-FILL AREA BETWEEN LOTS ZONED FOR OTHER THAN RESIDENTIAL USE, WHERE A FULL Sized CUL-DE-SAC WOULD NOT BE PRACTICAL, AS DETERMINED BY THE CITY ENGINEER AND FIRE MARSHAL; AND THE UNDEVELOPED LOT MUST HAVE A MAXIMUM LOT WIDTH OF 180'.

2. THE MAXIMUM LENGTH OF THE DEAD END STREET WILL BE 400'.

3. AN ALTERNATE DESIGN, SIMILAR TO THIS DRAWING, MAY BE SUBMITTED FOR CONSIDERATION OF APPROVAL BY BOTH THE CITY ENGINEER AND FIRE MARSHALL.

4. THE TURN AROUND AREA SHALL BE SIGNED FOR NO PARKING.
NOTES:
1. CONCRETE CURB AND GUTTER REQUIRED ON ONE SIDE ONLY.
2. ALLEYWAY GRADE 0.5% - 10%.
3. ALLEYWAY CROSS SLOPE 2% INTO HILLSIDE.
4. NO PARKING ON EITHER SIDE OF ALLEYWAY. "FIRE LANE, NO PARKING" SIGNS REQUIRED EVERY 400' ON BOTH SIDES OF ROADWAY.
5. STORM DRAINAGE SHALL BE DESIGNED IN ALLEYWAY FOR 25 YR. STORM EVENT, UTILIZING CATCH BASINS, PERCOLATION TRENCHES/SWALES. EMERGENCY OVERFLOW MAY BE REQUIRED.
6. ALLEYWAY SHALL CONNECT TO CITY ROADWAYS - NO DEAD END ALLEYWAYS.
7. ALLEYWAYS ARE PRIVATELY OWNED AND MAINTAINED. CITY OF WEST RICHLAND ACCEPTS NO RESPONSIBILITIES FOR MAINTAINING ALLEYWAYS OR STORM DRAINAGE FACILITIES INSTALLED IN ALLEYWAYS.
8. ALLEYWAYS SHALL HAVE CITY STANDARD DRIVEWAY ENTRANCES WHERE THEY EXIT OFF THE PUBLIC RIGHT OF WAY. (CURB, GUTTER AND SIDEWALK)
NOTES:
1. PROVIDE 1' SHOULDER ON CUT/FILL SLOPE EDGES.

2. FOR PATHWAYS RUNNING PARALLEL TO ROADWAY IN NON-LIMITED ACCESS AREAS, PATHWAY SHALL BE 4" THICK CONCRETE UNLESS APPROVED OTHERWISE BY CITY ENGINEER.

3. SUBGRADE SHALL BE TREATED WITH SOIL RESIDUAL HERBICIDE PRIOR TO PLACEMENT OF ROCK.
NOTES:
1. ALL ROADWAY ACCESSORIES, INCLUDING SIGNS, ARE TO REMAIN IN PLACE AND BE PROTECTED. ONE WAY TRAFFIC IS TO BE MAINTAINED UNLESS OTHERWISE DIRECTED BY THE ENGINEER. CONTRACTOR SHALL INSTALL TEMPORARY LANE STRIPING AS PER SWSS 8-23 WHERE DIRECTED BY CITY ENGINEER. DISTURBED STRIPING SHALL BE REPLACED WITH PAINT, OR PLASTIC AS PREVIOUSLY EXISTED.

2. DO NOT BEGIN STREET CUT UNTIL COMPACTION EQUIPMENT IS ON SITE.

3. DO NOT BEGIN STREET CUT UNTIL WATER (TRUCK OR HOSE) IS ON SITE.

4. WATER SETTLING PERMITTED ONLY WITH APPROVAL OF THE ENGINEER.

5. PERMANENT HOT MIX ASPHALT (HMA) PATCHES SHALL ONLY BE PLACED AND ACCEPTED BETWEEN THE DATES OF APRIL 1ST AND NOVEMBER 1ST. IF A PERMANENT PATCH CANNOT BE PLACED DUE TO THESE PAVING RESTRICTIONS, WEATHER, OR OTHER CONCERNS, A TEMPORARY COLD MIX OR HMA PATCH SHALL BE USED. TEMPORARY PATCHES SHALL BE PLACED IMMEDIATELY AFTER BACKFILLING AND COMPACTION OPERATIONS AND BE CONTINUALLY MAINTAINED BY THE CONTRACTOR OR UTILITY UNTIL PAVING RESTRICTIONS ALLOW A PERMANENT HMA PATCH. ANY DEVIATIONS FROM THE CITY’S STANDARD PRACTICE MUST BE APPROVED BY THE CITY ENGINEER OR STATED OTHERWISE IN THE SPECIAL PROVISIONS OF THE CONTRACT DOCUMENTS.

6. THE DEPTH OF THE ASPHALT PATCH SHALL BE TWO INCHES (3" MIN) DEEP ON ALL STREETS UNLESS OTHERWISE NOTED BY ENGINEER.

7. COMPACTED C.S.T.C. ROCK SHALL EXTEND DOWN TO PIPE BEDDING. LIFTS SHALL BE COMPACTED IN 1 FOOT INCREMENTS AND TESTED AT THE DISCRETION OF THE ENGINEER.

ASPHALT CONCRETE PAVEMENT REQUIREMENTS

1. HOT MIX ASPHALT HMA CL 1/2” OR 3/8” PG 64-28, 91% AASHTO T209 (AS DETERMINED BY CITY ENGINEER)

2. HOT MIX ASPHALT SHALL BE PLACED IN LIFTS NOT TO EXCEED 2" IN DEPTH UNLESS APPROVED OTHERWISE BY CITY ENGINEER.

CUT TO A NEAT EDGE, PAINT ALL JOINTS WITH ASPHALT EMULSION PRIOR TO PATCHING

EXIST. TOP COURSE

EXIST. BASE COURSE

UNDISTURBED EARTH

WIDTH OF TRENCH SECTION SEE STD. DETAIL 4-2 (PIPE BEDDING)

4' MIN. ASPHALT PATCH

HOT MIX ASPHALT (SEE NOTE 6)

5/8" MINUS CRUSHED ROCK WET DOWN AND MECHANICALLY COMPACTED TO 95% AASHTO T180 MAX. DENSITY (SEE NOTE 7)

1' MIN. OVER UNDISTURBED MATERIAL (TYP.)

IF THE PREVIOUSLY CUT EDGE HAS RAVELLED AFTER BACKFILLING, RECUT AS DIRECTED BY ENGINEER TO PROVIDE NEAT EDGE.

EXISTING A.C.P.
NOTES:
1. BENTON REA SHALL BE THE FIRST UTILITY IN THE TRENCH IN ORDER TO ASSURE THE DEEPEST POSSIBLE DEPTH DUE TO THE HIGHER VOLTAGE

2. BOTH CABLE TELEVISION AND TELEPHONE ARE TO RUN CONDUIT TO THE CURB SIDE OF THE TRENCH, ROAD SIDE OF BENTON REA’S EQUIPMENT. THE CITY OF WEST RICHLAND IS TO RUN STREET LIGHT CIRCUITS USING THE SAME ORIENTATION AS THE TELEPHONE AND CABLE TELEVISION

3. PIPE SIZING SHALL BE COORDINATED WITH THE ASSOCIATED UTILITY IF NOT DESIGNATED IN THE PLANS.
NOTES:
1. MONUMENT TO BE SET AT ALL STREET CENTERLINE INTERSECTION, POINTS OF CURVATURE, CHANGE IN BEARING OR AS DESIGNATED IN THE PLANS OR BY CITY ENGINEER.

2. WASHINGTON LICENSED PROFESSIONAL LAND SURVEYOR OR PARTY UNDER THE LICENSED LAND SURVEYOR'S DIRECT SUPERVISION TO REFERENCE MONUMENT LOCATION FOR INSTALLATION AND PUNCH BRASS CAP AFTER INSTALLATION INCLUDING THE PLS NUMBER. PLS NUMBER SHALL BE STAMPED ON THE SOUTHSIDE OF MONUMENT. THE CAP SHALL BE SET IN SUCH A FASHION AS TO INSURE THAT THE PUNCH MARK MAY BE SET WITHIN A MAXIMUM DISTANCE OF 1/2-INCH FROM THE CENTER OF THE CAP. CAP TO BE SUPPLIED AND SET BY CONTRACTOR USING SURVEY CROSS TIES.

NOTES:
1. REQUIRES APPROVAL OF CITY ENGINEER.
2. TOP/BASE COARSE UNDER THE HMA WILL VARY. REFER TO THE PLANS FOR ROADWAY SECTIONS.
3. GUTTER SHALL HAVE STAB JOINTS ON 10' CENTERS.
4. COMMERCIAL CONCRETE, 564 LBS CEMENT / CY. SEE SWSS SECTION 6-02.3(2)B.

SECTION A-A

CONCRETE VALLEY GUTTER

CATEGORIES: STREETS
FILE: SD 2-11.dwg
REVIEWED: AFW
REVISIONS: 05/18
ADOPTED: 02/14
NOTES:
1. CURBING SHALL HAVE FULL STAB JOINTS ON 10' CENTERS.
2. CURBING SHALL HAVE FULL DEPTH 3/4" THICK MASTIC MATERIAL AT POINTS OF TANGENCY ON ALL CURB RETURNS AND AT ALL POINTS OF TERMINUS.
3. SIDEWALK SHALL HAVE CONTROL JOINTS EVERY 5 FEET WITH EVERY 10 FOOT JOINT MATCHING CURB JOINT.
4. SIDEWALK SHALL HAVE 2" THICK MASTIC MATERIAL EVERY 30 FEET, POINTS OF CONNECTION WITH ADA RAMPS, TOP OF DRIVEWAY APPROACHES, AND ANY CONNECTION TO EXISTING SIDEWALK.
5. COMMERCIAL CONCRETE, 564 LBS CEMENT / CY. SEE SWSS SECTION 6-02.3(2)B

TYPICAL SECTION FOR DRIVEWAY DEPRESSED CURB AND GUTTER

TYPICAL SECTION FOR CURB & GUTTER

EXTRUDED CONCRETE CURB

TYPICAL SECTION FOR SIDEWALKS

CURB AND SIDEWALK DETAILS

CATEGORY: STREETS  REVIEWED BY: AFW  ADOPTED: 02/14
FILENAME: SD 2-11A.dwg  REVISED BY: AFW  REVISED: 05/18
NOTE:
1. COMMERCIAL CONCRETE, 564LBS CEMENT/CY. SEE SWSS SECTION 6-02.3(2)B.
NOTES:

1. PEDESTRIAN LANDING AND RAMP SHALL BE CONSTRUCTED PER THIS DWG IN NEW SUBDIVISIONS, SHORT PLATS AND ALL NEW STREET CONSTRUCTION, AND RECONSTRUCTION. LOCATE RAMPS AS DIRECTED BY ENGINEER, TWO EACH CORNER, OR AS DIRECTED.

2. BEVEL THE RAMP TO THE GUTTER FLOW LINE (NO LIP). 1/2" BEVEL RISE FROM FACE OF CURB TO BACK OF CURB.

3. DO NOT PLACE GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES IN FRONT OF THE CURB RAMP OR ON ANY PART OF THE CURB RAMP OR LANDING.

4. DETECTABLE WARNING SURFACE TO BE ARMOR TILE CAST IN PLACE SYSTEM DETECTABLE WARNING TILES, OR AN APPROVED EQUAL.

5. THE CURB RAMP MAXIMUM RUNNING SLOPE EITHER DIRECTION OF THE RAMP LANDING SHALL NOT EXCEED THE MAXIMUM ALLOWABLE SLOPE OF 8.3%. HOWEVER IF THE MAXIMUM ALLOWABLE SLOPE CANNOT BE ACHIEVED IN 15 FEET, THE SIDEWALK SHALL BE INSTALLED AT A CONSISTENT SLOPE FOR THE FIRST 15 FEET IN BOTH DIRECTIONS.

6. MAXIMUM RUNNING SLOPE OF THE RAMP LANDING SHALL NOT EXCEED 2% IN BOTH DIRECTIONS.

7. RAMPS SHALL BE COMMERCIAL CONCRETE, 564 LBS CEMENT / CY (SWSS SECTION 6-02.3(2)(B))
NOTES:

1. PEDESTRIAN LANDING AND RAMP SHALL BE CONSTRUCTED PER THIS DWG IN NEW SUBDIVISIONS, SHORT PLATS AND ALL NEW STREET CONSTRUCTION, AND RECONSTRUCTION. LOCATE RAMPS AS DIRECTED BY ENGINEER, TWO EACH CORNER, OR AS DIRECTED.

2. BEVEL THE RAMP TO THE GUTTER FLOW LINE (NO LIP). 1/2" BEVEL RISE FROM FACE OF CURB TO BACK OF CURB.

3. DO NOT PLACE GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES IN FRONT OF THE CURB RAMP OR ON ANY PART OF THE CURB RAMP OR LANDING.

4. DETECTABLE WARNING SURFACE TO BE ARMOR TILE CAST IN PLACE SYSTEM DETECTABLE WARNING TILES, OR AN APPROVED EQUAL.

5. THE CURB RAMP MAXIMUM RUNNING SLOPE SHALL NOT EXCEED THE MAXIMUM ALLOWABLE SLOPE OF 8.3%. HOWEVER IF THE MAXIMUM ALLOWABLE SLOPE CANNOT BE ACHIEVED IN 15 FEET, THE SIDEWALK SHALL BE INSTALLED AT A CONSISTENT SLOPE FOR THE FIRST 15 FEET.

6. MAXIMUM RUNNING SLOPE OF THE RAMP LANDING SHALL NOT EXCEED 2% IN BOTH DIRECTIONS.

7. RAMPS SHALL BE COMMERCIAL CONCRETE, 564 LBS CEMENT / CY (SWSS SECTION 6-02.3(2)B)
NOTES:

1. PEDESTRIAN LANDING AND RAMP SHALL BE CONSTRUCTED PER THIS DWG IN NEW SUBDIVISIONS, SHORT PLATS AND ALL NEW STREET CONSTRUCTION, AND RECONSTRUCTION. LOCATE RAMPS AS DIRECTED BY ENGINEER, TWO EACH CORNER, OR AS DIRECTED.

2. BEVEL THE RAMP TO THE GUTTER FLOW LINE (NO LIP). 1/2" BEVEL RISE FROM FACE OF CURB TO BACK OF CURB.

3. DO NOT PLACE GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES IN FRONT OF THE CURB RAMP OR ON ANY PART OF THE CURB RAMP OR LANDING.

4. DETECTABLE WARNING SURFACE TO BE ARMOR TILE CAST IN PLACE SYSTEM DETECTABLE WARNING TILES, OR AN APPROVED EQUAL.

5. THE CURB RAMP MAXIMUM RUNNING SLOPE SHALL NOT EXCEED THE MAXIMUM ALLOWABLE SLOPE OF 8.3%. HOWEVER IF THE MAXIMUM ALLOWABLE SLOPE CANNOT BE ACHIEVED IN 15 FEET, THE SIDEWALK SHALL BE INSTALLED AT A CONSISTENT SLOPE FOR THE FIRST 15 FEET.

6. MAXIMUM RUNNING SLOPE OF THE RAMP LANDING SHALL NOT EXCEED 2% IN BOTH DIRECTIONS.

7. RAMPS SHALL BE COMMERCIAL CONCRETE, 564 LBS CEMENT / CY (SWSS SECTION 6-02.3(2)B).
NOTES:

1. PEDESTRIAN LANDING AND RAMP SHALL BE CONSTRUCTED PER THIS DWG IN NEW SUBDIVISIONS, SHORT PLATS AND ALL NEW STREET CONSTRUCTION, AND RECONSTRUCTION. LOCATE RAMPS AS DIRECTED BY ENGINEER, TWO EACH CORNER, OR AS DIRECTED.

2. BEVEL THE RAMP TO THE GUTTER FLOW LINE (NO LIP). 1/2" BEVEL RISE FROM FACE OF CURB TO BACK OF CURB.

3. DO NOT PLACE GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES IN FRONT OF THE CURB RAMP OR ON ANY PART OF THE CURB RAMP OR LANDING.

4. DETECTABLE WARNING SURFACE TO BE ARMOR TILE CAST IN PLACE SYSTEM DETECTABLE WARNING TILES, OR AN APPROVED EQUAL.

5. THE CURB RAMP MAXIMUM RUNNING SLOPE SHALL NOT EXCEED THE MAXIMUM ALLOWABLE SLOPE OF 8.3%. HOWEVER IF THE MAXIMUM ALLOWABLE SLOPE CANNOT BE ACHIEVED IN 15 FEET, THE SIDEWALK SHALL BE INSTALLED AT A CONSISTENT SLOPE FOR THE FIRST 15 FEET.

6. MAXIMUM RUNNING SLOPE OF THE RAMP LANDING SHALL NOT EXCEED 2% IN BOTH DIRECTIONS.

7. RAMPS SHALL BE COMMERCIAL CONCRETE, 564 LBS CEMENT / CY (SWSS SECTION 6-02.3(2)(B)).
NOTES:

1. THE CURB RAMP MAXIMUM RUNNING SLOPE SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15' TO AVOID CHASING THE SLOPE INDEFINITELY WHEN CONNECTION TO STEEP GRADES.

2. IF CHASING CURB RAMP SLOPES WOULD ENCROACH WITHIN 5 FEET OF PROPERTY LINE, ADA BYPASS DRIVEWAY MUST BE USED (COWR STD DETAIL 2-13B).

3. DRIVEWAY THROAT WIDTHS ARE 20'-2 CAR GARAGE, 30'-3 CAR GARAGE. CURB CUTS FOR DRIVEWAY THROATS CAN BE EXTENDED 5' IF NECESSARY TO LINE UP THE WINGS WITH THE 5' SIDEWALK PANELS AND THE DRIVEWAY IF Poured TO THE OUTSIDE OF THE GARAGE, WITH APPROVAL OF CITY ENGINEER.

4. SIDEWALKS AND DRIVEWAY APPROACHES SHALL BE COMMERCIAL CONCRETE, 564 LBS CEMENT / CY (SWSS SECTION 6-02.3(2)(B)).
NOTES:

1. ADA BYPASS DRIVEWAY SHALL BE USED WHEN STANDARD DRIVEWAY WINGS WOULD TERMINATE WITHIN 5 FEET OF PROPERTY LINE DUE TO CHASING RUNNING SLOPE.

2. DRIVEWAY WING SHALL NOT START OR STOP CLOSER THAN 5 FEET FROM PROPERTY LINE.

3. DRIVEWAY THROAT WIDTHS ARE 20' - 2 CAR GARAGE, 30' - 3 CAR GARAGE. CURB CUTS FOR DRIVEWAY THROATS CAN BE EXTENDED 5' IF NECESSARY TO LINE UP THE WINGS WITH THE 5' SIDEWALK PANELS AND THE DRIVEWAY IF Poured TO THE OUTSIDE OF THE GARAGE, WITH APPROVAL OF CITY ENGINEER.

4. SIDEWALKS AND DRIVEWAY APPROACHES SHALL BE COMMERCIAL CONCRETE, 564 LBS CEMENT / CY (SWISS SECTION 6-02.3(2)(B)).
NOTES:

1. DRIVEWAY WING SHALL NOT START OR STOP CLOSER THAN 5 FEET FROM PROPERTY LINE.

2. DRIVEWAY THROAT WIDTHS ARE 20' - 2 CAR GARAGE; 30' - 3 CAR GARAGE. DRIVEWAY THROAT MAY BE EXTENDED 5' IF NECESSARY TO LINE UP WITH THE 5' SIDEWALK PANELS WITH CITY ENGINEER APPROVAL.

3. SIDEWALKS AND DRIVEWAY APPROACHES SHALL BE COMMERCIAL CONCRETE, 564 LBS CONCRETE / CY (SWSS SECTION 6-02.3(2B).

4. DROP BACK DRIVEWAY WITH SEPARATED SIDEWALK WILL ONLY BE ALLOWED IF FINISHED GRADE OF GARAGE AND BUILDING FOUNDATION IS A MIN. OF 8" ABOVE GUTTER AND APPROVED BY CITY ENGINEER.
NOTES:

1. NEED FOR A CORRUGATED METAL DRAINAGE PIPE WITH BEVELED ENDS SHALL BE ASSESSED BY THE CITY ENGINEER ON A CASE-BY-CASE BASIS.

2. WHEN THERE IS A DITCH 1’ OR LESS IN DEPTH ADJACENT TO THE CITY ROADWAY, DRIVEWAY SHALL MATCH PROFILE OF DITCH FOR THE PURPOSES OF ROADWAY DRAINAGE.

3. FOR CONCRETE APPROACHES AND DRIVEWAYS, EXISTING ASPHALT EDGE SHALL BE CUT TO A CLEAN STRAIGHT EDGE. NO MASTIC SHALL BE INSTALLED WHERE CONCRETE APPROACH TRANSITIONS INTO EDGE OF CITY ROADWAY. HOWEVER, A MASTIC EXPANSION JOINT SHALL BE INSTALLED IN CONCRETE 5’ FROM TRANSITION TO THE ASPHALT IF CONCRETE DRIVEWAY WILL CONTINUE FROM APPROACH. ANY UNDERMINED ASPHALT SHALL BE REQUIRED TO BE SAWCUT MIN. 1’ INTO EXISTING ASPHALT, AND REPLACED WITH CLASS 3/8” HOT MIX ASPHALT.

4. ALL ROADWAY APPROACHES REQUIRE A STREET CUT PERMIT ISSUED BY THE CITY ENGINEER.

5. WHEN DEEMED NECESSARY, THE DRIVEWAY APPROACH MAY BE WIDENED WITH CITY ENGINEER APPROVAL.
END CURB, GUTTER, AND SIDEWALK

1" MIN. DEPTH HMA CL
3/8" PG 64-28 RAMP
W/12:1 MAX. SLOPE

TOP VIEW

SIDE VIEW

CURB BULLNOSE
CHECK PLANS FOR LENGTH OF BULLNOSE.

GUTTER LINE

TOP OF CURB

END CURB, GUTTER AND SIDEWALK

1" MIN. DEPTH HMA CL 3/8" PG 64-28 RAMP W/12:1 MAX. SLOPE

2" MIN. COMP. C.S.T.C.

SIDEWALK HMA RAMP

CATEGORY: STREETS REVIEWED BY: AFW ADOPTED: 02/14
FILENAME: SD 2-14.dwg REVISED BY: AFW REVISED: 05/18
NOTE:

1. ON CITY ADMINISTERED CONTRACTS, DROP BACK SIDEWALK LOCATIONS WILL BE STAKED IN THE FIELD BY THE ENGINEER IN AREAS WHERE A SLOPED YARD TRANSITION IS DETERMINED TO BE UNDESIRABLE.

2. CONCRETE SHALL BE COMMERCIAL CONCRETE, 564 LBS CEMENT / CY (PER SWSS SECTION 6-02.3(2)B)

WHERE CALLED OUT, INSTALL 2" SCH. 40 GALV. POST. POST TO BE POURED IN PLACE. A SEPARATE PAYMENT WILL BE MADE ON CITY ADMINISTERED CONTRACTS.

6"X6"XW1.4XW1.4 WELDED WIRE FABRIC. LEGS OF MESH TO BE EQUAL AND EXTEND DOWN TO 4" FROM BOTTOM OF WALL.

12" MIN. BELOW FINISH GRADE AT WALL.

2" COMPACTED C.S.T.C.

GROUND LINE VARIES 4"

5.0'

POST CAP

GARDFIRE REDAY GREENLINE VARIERS

12" MIN. 30" MAX.

12" MIN. BELOW FINISH GRADE AT WALL.

WELDED WIRE FABRIC. LEGS OF MESH TO BE EQUAL AND EXTEND DOWN TO 4" FROM BOTTOM OF WALL.

NOTE:

1. ON CITY ADMINISTERED CONTRACTS, DROP BACK SIDEWALK LOCATIONS WILL BE STAKED IN THE FIELD BY THE ENGINEER IN AREAS WHERE A SLOPED YARD TRANSITION IS DETERMINED TO BE UNDESIRABLE.

2. CONCRETE SHALL BE COMMERCIAL CONCRETE, 564 LBS CEMENT / CY (PER SWSS SECTION 6-02.3(2)B)
NOTE:

1. On city administered contracts, modified retaining wall locations will be staked in the field by the engineer in areas where a sloped yard transition is determined to be undesirable.

2. Concrete shall be commercial concrete, 564 lbs cement / cy (per SWSS 6-02.3(2)B).
NOTES:

1. CONTRACTOR HAS THE OPTION TO USE (2) 45° BENDS THE SAME SIZE OF THE MAIN LINE INSTEAD OF (4) 22.5° BENDS.

2. CLEANOUT PIPE TO BE SAME SIZE AS MAIN LINE. FOR MAIN LINES LARGER THAN 8" AN ECCENTRIC REDUCER SHALL BE INSTALLED ON MAINLINE FROM MAINLINE SIZE TO 8" AND CLEAN OUT INSTALLED PER THIS DETAIL. REDUCERS SHALL BE GASKETED SDR35 PVC FITTING.

CAST IRON RING & COVER
- DOMESTIC STEEL ONLY

1/8" RAISE - 1/2" WIDE BORDER
3/4" SQUARES SPACED 3/4" RAISED 1/8"
LID SHALL SAY "C.O." "CLEANOUT" OR "SEWER" AND STAMPED "USA"

NEW HMA
INSTALL AND ADJUST CONCRETE COLLAR PER STD. DETAIL 3-4
FIBER JOINT PACKING
STD. CONC. TILE STD. DETAIL 3-4

24" MINIMUM (TYP)
22.5° SDR PVC BEND (TYP) 4 REQUIRED.
UNDISTURBED EARTH
UNDISTURBED EARTH
NATIVE MATERIAL OR IMPORTED BEDDING AS REQUIRED BY CITY ENGINEER

SEE NOTE 2

SEWER CLEANOUT
CATEGORY: SEWER
FILENAME: SD 3-1.dwg

REVIEWED BY: AFW
REVISED BY: AFW
ADOPTED: 02/14
REVISED: 05/18
DRAWING NO. 3-1
NOTES:
1. A RUBBER RING ENTRY COUPLING SHALL BE USED WITH P.V.C. PIPE.
2. ALL MANHOLE JOINTS SHALL BE MADE USING A CONTINUOUS FLEXIBLE RUBBER MANHOLE GASKET.
3. ADJUSTMENTS OVER 2" UTILIZE PRECAST CONCRETE RINGS. GROUT BETWEEN EACH RING AND FRAME AND FINISH GROUT INSIDE. REMOVE ALL WOOD SHIMS.
4. ALL CHANNELIZATION OF MANHOLE BASES SHALL BE COVERED BY A RIGID MATERIAL, SUCH AS PLYWOOD OR HEAVY GAUGE METAL, DURING CONSTRUCTION OF ROAD SURFACES TO PREVENT FOREIGN MATERIALS FROM ENTERING SYSTEM PER 7-05.3 OF CITY SPECIAL PROVISIONS.
5. PRIOR TO INSTALLING NEW SEWER MAIN, THE DOWNHILL STREAM SIDE OF THE NEXT EXISTING MANHOLE SHALL BE PLUGGED TO PREVENT ANY WATER AND/OR DEBRIS FROM ENTERING THE CITY'S SEWER SYSTEM.
6. PROVIDE A MINIMUM 0.1 FOOT IN-OUT DROP FOR STRAIGHT RUNS AND 0.2 FOOT IN-OUT DROP FOR ANGLE RUNS.
7. WHEN CONNECTING TO AN EXISTING MANHOLE, PIPE HOLE TO BE CORE-DRILLED.
8. ALL INLETS AND OUTLETS SHALL BE GROUTED SMOOTH TO INSIDE WALLS.
9. ROTATE MANHOLE SO THAT THE LADDER RUNGS ARE DIRECTLY OVER THE MAIN LINE INLET PIPE.
PRE-CAST BASE

SIDE SEWER. (SEE NOTE 7)

MIN. 4" - MAX. 12" ADJUSTMENT RINGS

2 1/4" MAX.

6" (TYP)

6" C.S.T.C. BEDDING

PRECAST SECTION PER WSDOT STD DWG. B-15.20-01

8" MIN.

NOTES:
1. A RUBBER RING ENTRY COUPLING SHALL BE USED WITH P.V.C. PIPE.
2. PRE CAST MANHOLE SECTION AND FLAT SLAB COVER SHALL CONFORM TO WSDOT STD DWG B-15.60-01.
3. ALL MANHOLE JOINTS SHALL BE MADE USING A CONTINUOUS FLEXIBLE RUBBER MANHOLE GASKET.
4. ALL CHANNELIZATION OF MANHOLE BASES SHALL BE COVERED BY A RIGID MATERIAL, SUCH AS PLYWOOD OR HEAVY GAUGE METAL SHEETING, DURING CONSTRUCTION OF ROAD SURFACES TO PREVENT FOREIGN MATERIALS FROM ENTERING SYSTEM PER SECTION 7-05.3 OF THE CITY SPECIAL PROVISIONS.
5. PRIOR TO INSTALLING NEW SEWER MAIN, THE DOWNHILL STREAM SIDE OF THE NEXT EXISTING MANHOLE SHALL BE PLUGGED TO PREVENT ANY WATER AND/OR DEBRIS FROM ENTERING THE CITY'S SEWER SYSTEM.
6. ALL INLETS AND OUTLETS SHALL BE GROUTED SMOOTH TO INSIDE WALLS.
7. WHEN CONNECTING TO AN EXISTING MANHOLE, PIPE HOLE TO BE CORE DRILLED.
8. ROTATE MANHOLE SO THAT THE LADDER RUNGS ARE DIRECTLY OVER THE MAIN LINE INLET PIPE.

SECTION A-A

SECTION B-B

SHALLOW MANHOLE DETAIL
(UNDER 5' INVERT TO COVER)

CATEGORY: SEWER
FILENAME: SD 3-2B.dwg
REVIEWED BY: AFW
REVIEWED: 05/18
ADOPTED: 02/14
NOTES:
1. A RUBBER RING ENTRY COUPLING SHALL BE USED WITH P.V.C. PIPE.
2. ALL MANHOLE JOINTS SHALL BE MADE USING A CONTINUOUS FLEXIBLE RUBBER MANHOLE GASKET.
3. ADJUSTMENTS OVER 2" UTILIZE PRECAST CONCRETE RINGS. GROUT BETWEEN EACH RING AND FRAME AND FINISH GROUT INSIDE. REMOVE ALL WOOD SHIMS.
4. ALL CHANNELIZATION OF MANHOLE BASES SHALL BE COVERED BY A RIGID MATERIAL DURING CONSTRUCTION OF ROAD SURFACES TO PREVENT FOREIGN MATERIALS FROM ENTERING SYSTEM PER 7-05.3 OF CITY SPECIAL PROVISIONS.
5. PRIOR TO INSTALLING NEW SEWER MAIN, THE DOWNHILL STREAM SIDE OF THE NEXT EXISTING MANHOLE SHALL BE PLUGGED TO PREVENT ANY WATER AND/OR DEBRIS FROM ENTERING THE CITY'S SEWER SYSTEM.
6. WHEN CONSTRUCTING MANHOLE OVER AN EXISTING MAIN, SUPPORT PIPE(S) WITH CONCRETE. BLOCK AND POUR BASE AS SHOWN. REMOVE TOP 1/2 OF MAIN PIPE AND FORM SIDE CHANNEL(S) AS REQUIRED.
7. PROVIDE A MINIMUM 0.1 FOOT IN-OUT DROP FOR STRAIGHT RUNS AND 0.2 FOOT IN-OUT DROP FOR ANGLE RUNS.
8. WHEN CONNECTING TO AN EXISTING MANHOLE, PIPE HOLE TO BE CORE-DRILLED.
9. ALL INLETS AND OUTLETS SHALL BE GROUTED SMOOTH TO INSIDE WALLS.
10. ROTATE MANHOLE SO THAT THE LADDER RUNGS ARE DIRECTLY OVER THE MAIN LINE INLET PIPE.
NOTES:
1. FRAME AND COVER SHALL BE CAST OR DUCTILE IRON AND SHALL BE STAMPED "USA"
2. COVER WEIGHT-MIN 147 LBS. / FRAME WEIGHT-MIN 210 LBS.
3. MACHINE COVER SEAT & COVER FACE
4. LOADING- 40,000 LBS. HEAVY TRAFFIC LOADING
5. MANHOLE COVERS TO BE LETTERED AS "WATER," "SEWER," OR "STORM" AS REQUIRED BY TYPE OF APPLICATION.
6. ALL FRAME AND COVERS SHALL BE ADJUSTED TO FINISH GRADE. SEE STD. DETAIL 3-4.
INSTALL COMMERCIAL CONCRETE COLLAR. (SEE NOTE 1)

UNDISTURBED MATERIAL

VALVE BOX

ADJUSTMENTS OF 2" OR MORE SHALL BE CONSTRUCTED USING PRE-CAST ADJUSTMENT RINGS. ADJUSTMENTS OF LESS THAN 2" SHALL BE APPROVED SHIMS. WOOD SHIMS ARE NEVER ALLOWED AND SHALL BE REMOVED. GROUT INSIDE ADJUSTMENT TO A SMOOTH FINISH.

MANHOLE FRAME & COVER

CONCRETE COLLAR SHALL BE Poured A MIN. OF 1" BELOW THE LOWEST ADJUSTMENT RING.

INSTALL COMMERCIAL CONCRETE COLLAR. (SEE NOTE 2)

UNDISTURBED MATERIAL

VALVE BOX

WHEN ADJUSTING VALVE BOXES OVER NON-METALLIC WATER LINES, DO NOT DAMAGE TRACER WIRE SHOWN ON STD. DETAIL 4-3

CLEAN-OUT

INSTALL COMMERCIAL CONCRETE COLLAR. (SEE NOTE 2)

UNDISTURBED MATERIAL

FIBER JOINT PACKING

CONCRETE BLOCK OR BRICK

NOTES:
1. INSTALL 3/8" COMMERCIAL HMA. DEPTH SHALL MATCH EXISTING ACP DEPTH BUT NOT LESS THAN 2 INCHES. MATCH WITH EXISTING ACP GRADE AND VALVE BOX. TACK EDGE OF EXISTING ACP AND CONCRETE COLLAR PRIOR TO PLACING HMA.
2. A COMMERCIAL CLASS 3000 MIN CONCRETE COLLAR IS REQUIRED ON ALL INSTALLATIONS. IN UNIMPROVED OR UNPAVED AREAS INSTALL AN 8" THICK COLLAR AS FOLLOWS: 24" DIAM. 8" DEEP FOR VALVE AND CLEANOUT COVERS AND A MIN. 42"X42"X8" DEEP FOR MANHOLE COVERS. HAND MIXING OF CONCRETE IS NOT PERMITTED.
3. DOMESTIC IRON ONLY
NOTES:
1. SELECT NATIVE BACKFILL MATERIAL OR IMPORTED BACKFILL MATERIAL COMPACTED PER SPECIFICATIONS.
2. STAINLESS BANDS WITH CONCRETE SPACER TO MANHOLE (5' MAX. SPACING, 1' MIN).
3. SEE STD DETAIL 3-1 FOR CLEANOUT DETAILS.
4. DROP CONNECTION PIPE DIAMETER AND FITTINGS SHALL BE EQUAL TO OR GREATER THAN THE DIAMETER OF THE SEWER MAIN.
NOTES:

1. INSIDE DROP CONNECTION WILL TYPICALLY NOT BE ALLOWED. WHEN EXTENUATING CIRCUMSTANCES OR UNUSUALLY DEEP SEWER MAINS ARE ENCOUNTERED, THE CITY ENGINEER MAY APPROVE. IF APPROVED, ALL CONSTRUCTION MUST BE COMPLETED PER THIS DETAIL AND AS DIRECTED BY THE ENGINEER.

2. DROP CONNECTION PIPE DIAMETER AND FITTINGS SHALL BE EQUAL TO OR GREATER THAN THE DIAMETER OF THE SEWER SERVICE. PIPE MATERIALS AND FITTINGS SHALL MEET THE CITY REQUIREMENTS FOR SEWER SERVICE LINES.

3. WHEN CONNECTING TO AN EXISTING MANHOLE PIPE HOLE TO BE CORE-DRILLED. WHEN DETERMINING SIZE OF HOLE TO CORE-DRILL TAKE INTO ACCOUNT THE OUTSIDE DIAMETER OF THE BELL OF THE CROSS YOU WILL BE USING. ONE END OF THE CROSS WILL NEED TO BE INSERTED IN THE CORE-DRILLED HOLE FROM INSIDE THE EXISTING MANHOLE.

4. INSTALL A CAP/PLUG CUT 1/2 DIAM. ENSURE ADEQUATE SPACE IS MAINTAINED BETWEEN THE CROSS CAP/PLUG AND THE LADDER RUNGS FOR MANHOLE ACCESSIBILITY.

CENTER CASTING AND LID OVER LADDER RUNGS
NOTES:
1. WHEN MINIMUM HORIZONTAL & VERTICAL SEPARATIONS CANNOT BE MAINTAINED, DEPARTMENT OF HEALTH CRITERIA FOR SEWAGE WORKS DESIGN (ORANGE BOOK) REQUIREMENTS SHALL APPLY.
2. DISTANCES FROM PROPERTY LINES TO EXISTING WATER OR SEWER SERVICE LINES MAY VARY DUE TO FIELD CONDITIONS. WATER SERVICES SHALL TYPICALLY BE INSTALLED WITHIN 5 FEET OF A PROPERTY CORNER AND SEWER SERVICES IN THE MIDDLE OF LOT FRONTAGE. WHenever A NEW WATER/SEWER SERVICE LINE IS INSTALLED IT SHALL NOT BE PLACED ANY CLOSER TO AN EXISTING WATER/SEWER SERVICE LINE THAN AS INDICATED BY THE TRENCH DETAIL WITHOUT WRITTEN PERMISSION BY THE CITY ENGINEER.
3. WATER SERVICES SHALL NOT SHARE A COMMON PROP. CORNER AS A POWER TRANSFORMER UNLESS APPROVED BY CITY ENGINEER.
4. SEWER SERVICE MINIMUM DEPTH WHERE THE SEWER MAIN DEPTH ALLOWS, SEWER SERVICE TO EXISTING BUILDING SHALL BE A MINIMUM 6 FEET BURY WITHIN THE STREET RIGHT-OF-WAY OR 4' BELOW THE LOWEST FLOOR ELEVATION, WHICHEVER IS DEEPER. WHERE THE DEPTH OF THE SEWER MAIN ALLOWS, SEWER SERVICES TO VACANT LOTS SHALL BE AS DEEP AS POSSIBLE OR PRACTICAL TO PROVIDE FULL BASEMENT SERVICE TO THE PROPERTY, TYPICALLY THE INVERT SHALL BE 12 FEET BELOW THE PROPERTY GROUND ELEVATION AT A 25' FRONT SETBACK, PROVIDING HOWEVER, THAT THE MINIMUM DEPTH IN THE RIGHT-OF-WAY EVEN FOR UPHILL LOTS, SHALL BE 6' BURY UNLESS APPROVED BY CITY ENGINEER.
5. THE REQUIREMENTS OF THIS STANDARD DRAWING SHALL BE BINDING UPON ALL PUBLIC OR PRIVATE WATER/SEWER SERVICE LINES THAT CONNECT INTO A CITY WATER OR SEWER MAIN AND IS INTENDED FOR THE SOLE PURPOSE OF PROVIDING PROTECTION FROM CONTAMINATION TO THE POTABLE WATER DISTRIBUTION SYSTEM.
NOTES:
1. INSTALL ALL SEWER SERVICES BENEATH WATER MAIN WHERE POSSIBLE. IF THE SEWER SERVICE MUST CROSS ABOVE THE WATER MAIN ALL JOINTS IN THE SEWER SERVICE SHALL BE A MIN DISTANCE OF 10 FEET FROM THE WATER. THE ENGINEER WILL HAVE TO APPROVE ALL THE CROSSINGS ABOVE THE WATER MAIN.
2. SEWER SERVICES INSTALLED ON NEW SEWER MAINS SHALL BE PVC SEWER WYE'S AND INSTALLED DURING THE INSTALLATION OF THE MAINLINE.
3. WHEN CONNECTING TO AN EXISTING SEWER MAIN, PIPE HOLE TO BE CORE-DRILLED AND COUPON RETAINED. CONNECT TO PVC MAIN WITH A RUBBER GASKETED SEWER SADDLE WYE WITH STAINLESS STEEL HOSE CLAMPS.
4. TAPPED HOLE IN MAIN SHALL BE THE SAME SIZE AS THE SIDE SEWER. THE HOLE SHALL BE CUT OR DRILLED NOT BROKEN OUT.
5. STRAIGHT SADDLE CAN BE USED ON 12" OR LARGER PIPE ONLY.
6. SEWER SADDLES ON MAINLINE MATERIAL OTHER THAN PVC SHALL BE PRE-APPROVED BY CITY ENGINEER.
7. 2" MINIMUM WIDTH GREEN PLASTIC COATED ALUMINUM PIPE LOCATOR RIBBON OVER THE TOP OF THE SEWER SERVICE MARKED "CAUTION BURIED SEWER LINE" CONTINUOUSLY ALONG THE LENGTH OF THE SERVICE SHALL BE PLACED APPROXIMATELY 24" BELOW FINISH GRADE.
NOTES:

1. TAP AND SADDLE SHALL BE PER COWR STANDARD 3-6B.

2. 10' MINIMUM SECTION OF 4" SEWER SERVICE PIPE SHALL BE LAID AT A MIN. 1/4"/FT AT WHICH POINT THE PRESSURE SEWER IS TO BE CONNECTED TO SEWER SERVICE LINE WITH AN ECCENTRIC REDUCER.

3. A SERVICE CLEAN-OUT SHALL BE INSTALLED IN 4" SERVICE LINE JUST DOWNSTREAM OF THE REDUCER.

4. PRIVATE PRESSURE SERVICE LINE SHALL BE OF MATERIAL AND SIZE PER PUMP MANUFACTURES RECOMMENDATIONS. ANY PRESSURE SEWER LINE LARGER THAN 2 INCHES MUST BE APPROVED BY THE CITY ENGINEER.

5. 2" MINIMUM WIDTH GREEN PLASTIC COATED ALUMINUM PIPE LOCATOR RIBBON OVER THE TOP OF THE PRESSURE SEWER SERVICE MARKED "CAUTION BURIED SEWER LINE" CONTINUOUSLY ALONG THE LENGTH OF THE SEWER SERVICE SHALL BE PLACED APPROXIMATELY 24" BELOW FINISHED GRADE.

6. 12 GAUGE SOLID COOPER WIRE, 600V WITH GREEN UF INSULATION NOMINAL THICKNESS 0.06", WIRE SHALL BE BROUGHT TO SURFACE AT PUMP LOCATION AND CLEAN OUT AT TRANSITION FROM 4" SERVICE LINE.
BEARING AREA AGAINST THE TRENCH WALL

- WATER LINE SIZE
- THRUST BLOCK SIZE

UNDISTURBED EARTH

PIPE BEDDING

NOTES:
1. VALVE, VALVE BOX & COVER SHALL BE PER SECTION 7-12 OF THE SWSS, CITY SPECIAL PROVISIONS AND STD DETAIL 4-3.
2. THE THRUST BLOCK SHALL BE SIZED TO PROVIDE THRUST FOR THE LATERAL WATER LINE. ALL NOTES SHOWN ON STD. DETAIL 4-6A SHALL APPLY.
3. CONTRACTOR TO PROVIDE BLOW-OFF CAP TO CITY WATER CREW. CITY CREW WILL PROVIDE CONTRACTOR WITH A REPLACEMENT CAP WITH WELDED NUT.

2" TEMPORARY BLOW-OFF
(8" OR SMALLER WATER MAIN)

CATEGORY: WATER
FILENAME: SD 4-1A.dwg

REVISED: 05/18

DRAWING NO. 4-1A
UNDISTURBED EARTH
PIPE BEDDING
cap with 4" I.P.
threaded tap
4" resilient seated gate valve with 2"
square operating nut (counter-clockwise opening) see note 4
water line
4" dia. galv. steel nipple (typ)
1/4" drain hole
4" threaded cap with 1/8"
welded nut on top (tightly cap finger tight)
see std. detail 3-4 for adjustments
4" companion flange (10" and larger)
2 c.f. drain rock
install sewer clean out: grind off "sewer" on lid.
3'-0" 2" to top of welded nut.
domestic valve box with cover.
4" threaded cap w/ 1/8" welded nut on top (tightly cap finger tight)
domestic valve box with cover.
2 c.f. drain rock
install sewer clean out: grind off "sewer" on lid.
3'-0" 2" to top of welded nut.
domestic valve box with cover.
4" threaded cap w/ 1/8" welded nut on top (tightly cap finger tight)
domestic valve box with cover.
2 c.f. drain rock
install sewer clean out: grind off "sewer" on lid.
3'-0" 2" to top of welded nut.
domestic valve box with cover.
4" threaded cap w/ 1/8" welded nut on top (tightly cap finger tight)
4" companion flange (10" and larger)
2 c.f. drain rock
install sewer clean out: grind off "sewer" on lid.
3'-0" 2" to top of welded nut.
domestic valve box with cover.
4" threaded cap w/ 1/8" welded nut on top (tightly cap finger tight)
domestic valve box with cover.
2 c.f. drain rock
install sewer clean out: grind off "sewer" on lid.
3'-0" 2" to top of welded nut.
domestic valve box with cover.
4" threaded cap w/ 1/8" welded nut on top (tightly cap finger tight)
domestic valve box with cover.
2 c.f. drain rock
install sewer clean out: grind off "sewer" on lid.
3'-0" 2" to top of welded nut.
domestic valve box with cover.
4" threaded cap w/ 1/8" welded nut on top (tightly cap finger tight)
4" companion flange (10" and larger)
2 c.f. drain rock
install sewer clean out: grind off "sewer" on lid.
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4" companion flange (10" and larger)
2 c.f. drain rock
install sewer clean out: grind off "sewer" on lid.
3'-0" 2" to top of welded nut.
NOTES:

1. PIPE ZONE BEDDING MATERIAL ABOVE THE BOTTOM OF PIPE FOR STORM DRAINAGE PIPE, SANITARY SEWER AND WATER MAINS SHALL BE WELL GRADED EARTH OR SAND FREE FROM ORGANIC MATERIALS, CLAY, FROZEN LUMPS, PAVEMENT DEBRIS, ROOTS, OR MOISTURE IN EXCESS OF THAT PERMITTING REQUIRED COMPACTION. ROCKS OR LUMPS GREATER THAN 1-INCH MAXIMUM SHALL NOT BE USED FOR PIPE ZONE BACKFILL.

2. TRENCH BACKFILL IN NEW ROADWAYS AND OUTSIDE ROAD PRISM SHALL MATCH REQUIREMENTS OF PIPE ZONE BEDDING BUT WITH NO ROCKS OR LUMPS GREATER THAN 6-INCH MAXIMUM SHALL BE USED FOR TRENCH BACKFILL.

3. PIPE BEDDING MATERIAL SHALL BE 5/8" MINUS CRUSHED ROCK FOR SANITARY SEWER PIPES. PIPE BEDDING MATERIAL FOR STORM DRAINAGE PIPE AND WATER MAINS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF NOTE 1.

4. WHEN PIPING IS PLACED IN AN EXISTING ROADWAY PRISM, PIPE ZONE AND TRENCH BACKFILL SHALL BE COMPACTED 5/8" MINUS CRUSHED SURFACING TOP COURSE. SEE STD DETAIL 2-8

5. TRENCH WIDTH "W" SHALL BE 40 INCHES MAXIMUM FOR PIPE 15 INCHES I.D. OR SMALLER AND 1-1/2 TIMES I.D. PLUS 18 INCHES FOR PIPE 18 INCHES OR LARGER.

6. HAND TAMP UNDER PIPE HAUNCHES AND PROVIDE UNIFORM SUPPORT UNDER PIPE BARREL.

7. SEE SWSS AND CITY SPECIAL PROVISIONS 7-08 AND 7-09 FOR INSTALLATION AND COMPACTION REQUIREMENTS.

8. PAVEMENT WIDTH FOR EXCAVATION AND PAVEMENT REPAIR SHALL BE A MIN. OF 4' WIDE. SEE CITY STANDARD DETAIL 2-8.
INSTALL 12 GAUGE SOLID COPPER WIRE 600V WITH BLUE UF INSULATOR NOMINAL THICKNESS 0.060". TRACER WIRE SHALL RUN OUTSIDE BOTTOM BOX AND INSIDE TOP BOX WITH 2' OF EXCESS WIRE AT TOP FOR LOCATING.

TIGHTLY WRAP THE TRACER WIRE UNDER THE VALVE NUT FLANGE AS SHOWN (SAME FOR BUTTERFLY VALVES). DO NOT STRIP INSULATION FROM TRACER WIRE.

SPICE AND JOIN ENDS OF WIRE TOGETHER WITH GEL-PACKS.

DUCT TAPE TRACER WIRE TO C.L. OF PIPE IN 3 LOCATIONS PER STICK OF PIPE APPRX 6' APART. DUCT TAPE SHALL EXTEND FROM SPRING LINE TO SPRING LINE ACROSS THE TOP HALF OF THE PIPE.

VALVE NUT EXTENSION SHALL BE PLACED OVER VALVE NUT AND SHALL NOT BE ATTACHED TOGETHER.

Detectable Warning Tape centered over pipe and equidistant between finish grade and top of pipe.

Centered over pipe and equidistant between finish grade and top of pipe.

2" SQ. STANDARD OPERATING NUT

6"
TABLE A

<table>
<thead>
<tr>
<th>WATER MAIN</th>
<th>THRUST BLOCK SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>2.12 S.F.</td>
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<tr>
<td>8&quot;</td>
<td>3.77 S.F.</td>
</tr>
<tr>
<td>10&quot;</td>
<td>5.89 S.F.</td>
</tr>
<tr>
<td>12&quot;</td>
<td>8.48 S.F.</td>
</tr>
</tbody>
</table>

BEARING AREA AGAINST THE TRENCH WALL

NOTES:
1. HYDRANTS SHALL HAVE 3 PORTS.
2. HYDRANT OPERATING NUTS AND HYDRANT CAPS SHALL BE 1-1/2".
3. HYDRANTS SHALL BE PER SECTION 7-14 OF SWSS AND THE CITY SPECIAL PROVISIONS.
4. ALL JOINTS AND FITTINGS SHALL BE FULLY RESTRAINED FROM MAINLINE TO HYDRANT. SHACKLE RODS NOT ALLOWED.
5. WRAP STORZ ADAPTER WITH BLUE ULINE REFLECTIVE TAPE (MODEL #S-12905)
6. HYDRANTS SHALL BE HOODED UNTIL OPERATIONAL
7. SEE STD. DETAIL 4-4B FOR GUARD POST REQUIREMENTS.

VALUE BOX AND COVER SHALL BE INSTALLED PER DETAIL 4-3 AND SHALL BE STAMPED U.S.A.

HYDRANTS SHALL BE PAINTED OSHA SAFETY YELLOW R/W LINE.

MIN. 3' BUFFER AROUND HYD.

SEE STD. DETAIL 4-4B FOR GUARD POST REQUIREMENTS.

HYDRANTS SHALL BE FULLY RESTRAINED FROM MAINLINE TO HYDRANT. SHACKLE RODS NOT ALLOWED.

PLACE MINIMUM OF 2 C.F. OF 2" MINUS DRAIN ROCK DEPENDING ON UNDISTURBED BEARING AREA AGAINST THE TRENCH WALL.

WEET HOLE SHALL BE PLACED IN CONC. BASE BLOCK SEE NOTE 3 & 4.

TRACER WIRE TO BE SPICED TO MAIN LINE WIRE AND WRAPPED AROUND BASE OF HYDRANT.

COMPACTED BACKFILL PLACE MINIMUM OF 2 C.F. OF 2" MINUS DRAIN ROCK.

DETROTABLE WARNING TAPE BLUE PLASTIC COATED ALUM 18"-24" ABOVE PIPE.
NOTES:

1. WHERE CONCRETE CURBING IS NOT INSTALLED, GUARD POSTS (2 EA. MIN) SHALL BE INSTALLED ON SIDE FACING PAVED SURFACE AND/OR AS DIRECTED BY CITY ENGINEER.

2. GUARD POSTS TO BE PAINTED OSHA SAFETY YELLOW PER SPECIFIED COLOR IN CITY MATERIALS LIST.
WHEN EXISTING WATERLINE REQUIRES THE IN-LINE INSTALLATION OF A VALVE, REDUCER OR FLANGE ADAPTER, THEN ALL CONNECTIONS TO THE TEE OR VALVE SHALL BE FLANGED.

FLXFL REDUCER MAY BE REQUIRED. SEE PLANS
INSTALL THRUST BLOCK. SEE NOTE 4
EXISTING WATER MAIN. SEE NOTE 6.
F.C.A. (ANY MATERIAL) / RFCA (PVC & DI ONLY)

FLXMJ GATE VALVE
NEW WATER MAIN

D.I. FLXFL TEE

CUT-IN TEE

EXISTING WATER MAIN
INSTALL TAP SADDLE SO TEST PORT FACES UP
RESILANT SEATED FLXMJ GATE VALVE

NOTES:
1. CONTRACTOR TO DIG & VERIFY MAIN SIZE AND PIPE PRIOR TO ORDERING MATERIALS.
2. CHLORINATE AND TAG VALVE & FITTINGS PER SECTION 7-09 OF THE SWSS AND CITY SPECIAL PROVISIONS.
3. MATERIALS TO BE ON THE JOB PRIOR TO SCHEDULING SHUTDOWNS OR TAPS.
4. INSTALL THRUST BLOCKS PER STD. DETAIL 4-6A. TEMPORARY THRUST BLOCKING MAY BE REQUIRED.
5. CONTRACTOR WILL COMPLETE TAP PER SECTION 7-12 OF SWSS AND CITY SPECIAL PROVISIONS.
6. ENSURE TAPPING SADDLE IS MIN. 3’ FROM EXISTING BELL AND A MIN. 1’ FROM SPIGOT END INSERTION POINT AT NEXT BELL.
7. VERIFY SADDLE TEST PORT IS FACING UP. TEST SADDLE AND VALVE WITH 15 PSI AIR OR 150 PSI HYDROSTATIC FOR 5 MINUTES.
VERTICAL THRUST BLOCKS

**NOTES:**
1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH WITH COMMERCIAL CONCRETE.
2. KEEP CONCRETE CLEAR OF JOINT AND ACCESSORIES.
3. ABOVE BEARING AREAS AND VOLUMES ARE CALCULATED AT A SOIL BEARING CAPACITY OF 2000 PSF AND A TEST PRESSURE OF 150 PSI.
4. THRUST BLOCKS FOR VERTICAL UPWARD BENDS SHALL BE THE SAME AS FOR HORIZONTAL BENDS.
5. WHEN CALLED FOR ON THE CONSTRUCTION DRAWINGS OR CONTRACT SPECIAL PROVISIONS, VALVES SHALL HAVE CONCRETE RESTRAINT BLOCKS AS SPECIFIED ABOVE UNLESS THE VALVE IS FLANGED TO A TEE, CROSS OR SIMILAR FITTING OR ANOTHER METHOD OF RESTRAINT ACCEPTABLE TO THE ENGINEER IS PROVIDED.

### THRUST BLOCK DETAILS

**CATEGORY:** WATER  **REVIEWED BY:** AFW  **ADOPTED:** 02/14  
**FILENAME:** SD 4-6A.dwg  **REVISED BY:** AFW  **REVISED:** 05/18

<table>
<thead>
<tr>
<th>Pipe Size in Inches</th>
<th>Tees, Wyes &amp; Dead Ends</th>
<th>90° Bend</th>
<th>45° Bend</th>
<th>11 1/4&quot; Bend</th>
<th>22 1/2° Bend</th>
<th>45° Vertical Bend</th>
<th>11-1/4° Vertical Bend</th>
<th>Restrained Valve (see note 5)</th>
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<td>4 &amp; Smaller</td>
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**DRAWING NO.** 4-6A

**THRUST BLOCK DETAILS**

**CATEGORY:**  **REVIEWED BY:**  **ADOPTED:**  
**FILENAME:**  **REVISED BY:**  **REVISED:**
NOTES:

1. THE LENGTH OF RODS "L" SHALL BE 10 FEET MINIMUM OR AS DIRECTED BY THE ENGINEER.

2. CONCRETE SHALL BE COMMERCIAL CLASS 3000

<table>
<thead>
<tr>
<th>PIPE DIAMETER</th>
<th>RODS REQUIRED</th>
<th>DIMENSIONS</th>
<th>A</th>
<th>B</th>
<th>C</th>
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</table>

MINIMUM BEARING AREA OF THRUST BLOCK IN SQ. FEET (BASED ON 2,000 P.S.F. SOIL BEARING CAP)
REstrained pipe length (feet)

Tee branch and length each side of bend

<table>
<thead>
<tr>
<th>Pipe Diameter</th>
<th>Type of Fittings</th>
<th>90° Bend</th>
<th>45° Bend</th>
<th>22 1/2° Bend</th>
<th>11-1/4° Vertical Bend</th>
<th>Dead End Valve or plug, and fire Hyd.</th>
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<tbody>
<tr>
<td>STATIC PSI</td>
<td>150 200</td>
<td>150 200</td>
<td>150 200</td>
<td>150 200</td>
<td>150 200</td>
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<tr>
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<td>49 65</td>
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<td>8&quot; P.V.C.</td>
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<td>12&quot; P.V.C.</td>
<td>118 158</td>
<td>48 64</td>
<td>20 26</td>
<td>10 13 5 6</td>
<td>120 159</td>
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<tr>
<td>12&quot; D.I.P.</td>
<td>88 118</td>
<td>42 56</td>
<td>18 23</td>
<td>8 11 4 6</td>
<td>90 119</td>
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<tr>
<td>16&quot; D.I.P.</td>
<td>113 152</td>
<td>52 71</td>
<td>22 30</td>
<td>11 14 5 2</td>
<td>T.B. T.B.</td>
<td></td>
</tr>
<tr>
<td>20&quot; D.I.P.</td>
<td>137 184</td>
<td>84 105</td>
<td>26 35</td>
<td>13 17 6 8</td>
<td>T.B. T.B.</td>
<td></td>
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<tr>
<td>24&quot; D.I.P.</td>
<td>161 216</td>
<td>116 198</td>
<td>30 41</td>
<td>15 20 7 10</td>
<td>T.B. T.B.</td>
<td></td>
</tr>
<tr>
<td>30&quot; D.I.P.</td>
<td>149 260</td>
<td>116 198</td>
<td>30 41</td>
<td>15 20 7 10</td>
<td>T.B. T.B.</td>
<td></td>
</tr>
<tr>
<td>36&quot; D.I.P.</td>
<td>223 300</td>
<td>100 132</td>
<td>41 55</td>
<td>20 26 10 13</td>
<td>T.B. T.B.</td>
<td></td>
</tr>
</tbody>
</table>

"T.B." denotes: Thrust block.

NOTES:
1. For design formulas, calculations and additional information, the table is based on the restraint calculations found at www.romac.com/restraint/index.htm. The restrained pipe length applies to conditions where a concrete thrust block is not used.
2. If polyethylene wrapped D.I.P. is specified, independent calculations are required. Do not use the above table, which is for standard D.I.P. only.
3. Every joint within the designated restraint length must be restrained. If the required restraint length is shorter than a single stick of pipe being used, only the fitting connection requires restraint. The restraint length given in the table, is the required length on each side of the bend, or on the tee branch as applicable.
4. Thrust blocks are required for all connections to AC pipe and when an AC pipe connection is located anywhere within the designated restraint length.
5. Thrust blocks are required if the designated restraint length cannot be obtained. Special attention needs to be given to dead end stubs and fire hydrant installations. If the length of the feeder pipe, from the main line tee to the end cap, or hydrant, is less than the designated dead end restraint length, thrust blocks are required at both the tee and at the end cap, or hydrant, when the specified conditions allow the use of mechanical restraints, the restraint length requirements for both the tee and the end cap, or hydrants must be met.
6. Approved methods of restrained pipe shall be:
   A) For PVC pipe, series 2000PV Megalug restraints and for slip joints, series 1500TD bell restraint harness, or approved equal.
   B) For ductile iron pipe, series 1100 Megalug restraints and for slip joints, series 1500 restraint harness through 12 inch, or series 1700 restraint harness for larger pipe, or approved equal.
NOTES:
1. VALVE SIZE AND TYPE TO BE SPECIFIED BY THE DESIGN ENGINEER AND APPROVED BY THE CITY ENGINEER.
2. RISER SHALL BE PROTECTED FROM VEHICULAR OR PEDESTRIAN TRAFFIC AS APPROVED BY THE CITY ENGINEER.
3. PAINT GUARD POST(S) SAFETY YELLOW.
4. EXACT LOCATION OF GUARD POST(S) TO BE DETERMINED IN FIELD BY THE CITY ENGINEER.
NOTES:

1. ENGINEERING INSPECTOR WILL INSPECT TO THE BACK FLOW DEVICE OUTSIDE OF THE BUILDING, OR TO THE FLANGE ABOVE THE BUILDING FLOOR.

2. CITY STANDARD VALVE AND VALVE BOX REQUIRED AT CONNECTION TO CITY MAIN LINE. CITY ENGINEER MAY DELETE MAINLINE VALVE WHEN DISTANCE TO THE BUILDING IS LESS THAN 15 FEET.

3. SINGLE SOFT SEAT CHECK VALVE REQUIRED WHEN THE DISTANCE (LENGTH) FROM THE MAIN TO THE FLANGE ABOVE THE FLOOR IS GREATER THAN 15 FT.

4. FIRE DEPT. APPROVED POST INDICATOR (P.I.) VALVE REQUIRED A MINIMUM OF 10 FEET FROM THE CITY MAIN LINE ISOLATION VALVE.

5. INSTALL APPROVED CROSS CONNECTION DETECTION ASSEMBLY PER CITY CROSS CONNECTION SPECIALIST. (LOCATION VARIES). METER SHALL BE COMPATIBLE WITH NEPTUNE RADIO SYSTEM.

6. FITTINGS AND PIPE WITHIN THE BUILDING LIMITS, AND TO A MINIMUM 5 FEET OUTSIDE OF THE BUILDING, SHALL BE AWWA CAST OR DUCTILE IRON.

7. JOINT TO BE FLANGED, OR FLANGE ADAPTER, EXCEPT MJ JOINT MAY BE USED WHEN BEND IS SHACKLED TO A RETAINER GLAND LOCATED A MINIMUM OF 5 FEET OUTSIDE OF THE BUILDING.

8. ALL FIRE LINE PIPING SHALL BE INSTALLED BY A "U" LISTED CONTRACTOR.

9. CONDUIT FOR FIRE ALARM SYSTEM SHALL BE RUN FROM POST INDICATOR VALVE TO BUILDING. SIZING SHALL BE DETERMINED BUILDING FIRE ENGINEER.

10. REMOTE FIRE DEPARTMENT CONNECTION (FDC) LOCATION WILL BE DETERMINED BY FIRE ENGINEER AND APPROVED BY THE CITY FIRE MARSHAL. FDC'S ATTACHED TO BUILDING IS NOT ALLOWED. FDC MUST BE LOCATED WITHIN 50 FEET OF AN FIRE HYDRANT, BE PAINTED RED AND HAVE KNOX BRAND LOCKS ON EACH INTAKE OPENING.

11. ALTERNATE MJ FITTING MAY BE USED PROVIDED THAT 250 PSI RATED STEEL TIE RODS ARE UTILIZED TO BELOW FLOOR FITTING. USE 2 RODS FOR 4"-6" PIPE, 3 RODS FOR 8", AND 4 RODS FOR 10"+. FOLLOWING ASSEMBLY, COAT ALL ROD ASSEMBLIES WITH BITUMASTIC SEALANT.

12. FLANGE ADAPTER TO BE 250 PSI RATED DUCTILE "UNION FLANGE" AS MFG. BY UNION FOUNDRY CO., UNIFLANGE OR EQUAL.

13. CONSTRUCT A THRUST BLOCK ON THE 90° BEND UNDER THE FLOOR SIZED FOR THE SIZE OF PIPE AND TYPE OF FILL. SIZE TO BE 1.34 TIMES THAT CALLED FOR IN STD. DETAIL 4-6A.

14. AFTER SATISFACTORY HEALTH SAMPLES, ALL FIRE LINE INSTALLATIONS SHALL BE TESTED AT 200 PSI FOR 2 HOURS, WITH NO LOSS.

15. CONTRACTOR TO PROVIDE PITOT TUBE FOR MEASURING FLOW DURING FLUSHING, IF A REDUCED SIZE FLUSH PIPE IS USED. THE CONTRACTOR IS RESPONSIBLE TO CONTROL ALL FLUSH WATER.

16. FIRE ENGINEER MAY SUBMIT A FIRE DESIGN FOR REVIEW AND APPROVAL THAT VARIES FROM THESE REQUIREMENTS.
NOTES:
1. COPPER MAY BE SUBSTITUTED WITH POLYETHYLENE PRESSURE PIPE P.R. 200 PSI-SDR 9, MEETING REQ.S OF ASTM D 2737 AND AWWA C901 WITH COPPER TUBE SIZE OD. INSULATED #12 GAUGE TRACER WIRE IS REQUIRED WITH ALL POLY PIPE INSTALLATION.
2. ALL BENDS TO BE A MINIMUM OF ONE FOOT FROM ALL SERVICE LINE FITTINGS.
3. ALL SETTERS SHALL BE BROUGHT TO THE CITY MAINTENANCE SHOP FOR ADJUSTMENTS.
4. METER BOX INSTALLED ELEVATION SAME AS BACK OF SIDEWALK.
5. TAPS SHALL BE 18-INCHES APART WHEN STAGGERED ON EITHER SIDE OF THE MAIN. TAPS MUST BE 36-INHES APART WHEN ON SAME SIDE OF MAIN.
6. METER BOXES INSTALLED IN TRAFFIC AREAS WHERE NOT PROTECTED BY CURB AND GUTTER, SHALL REQUIRE AN APPROVED CAST IRON TRAFFIC RATED LID WITH NO CIRCULAR CUT OUT FOR METER READING DEVICE.
**PLAN VIEW**

DOUBLE STRAP SADDLE W/ IP THREAD
CORP STOP IP X QUICK OR PACK JOINT

1" SERVICE PIPE, INSTALL TRACER WIRE IF POLY PIPE IS USED.

**NOTES:**
1. MINIMUM SERVICE PIPE IS 1".
2. SERVICE TAPS ON PVC MAINS SHALL BE 18" APART IF STAGGERED ON OPPOSITE SIDES OF THE MAIN. IF SAME SIDE, SHALL BE 36" APART. NO SERVICE TAP SHALL BE WITHIN 3' OF PIPE BELL.
3. SEE SWSS AND CITY SPECIAL PROVISIONS 7-15 AND STD DETAIL 4-9 FOR ADDITIONAL INFORMATION AND SPECIFICATIONS.
4. ALL BENDS TO BE A MINIMUM OF ONE FOOT FROM ALL SERVICE LINE FITTINGS.

**PROFILE VIEW**

STAMP CURB WITH "W"

42" MIN. COVER

36" MIN. COVER

6" MAX.

VERTICAL EXPANSION LOOP

BEDDING: 2" MIN. UNDER PIPE, 4" MIN. OVER PIPE.

**NOTE:**
1. TAP AT 1:00 OR 11:00 FOR D.I. STEEL OR A.C. MAINS SEE STD. DETAIL 4-26A FOR SERVICE FROM PVC MAINS.

1" TAP FOR D.I. STEEL AND A.C. WATER MAINS

**CATEGORY:** WATER | REVIEWED BY: AFW | ADOPTED: 02/14
**FILENAME:** SD 4-10.dwg | REVISED BY: AFW | REVISED: 05/18
**DRAWING NO.:** 4-10
NOTES:
1. METER BOX SHALL BE A RAVEN MODEL OR MID STATES 17X30-18 OR 17X30-12 W/ WHITE INTERIOR. LID SHALL BE CAST IRON WITH READING ACCESS LID MARKED "WATER". NO CIRCULAR HOLE FOR METER READING DEVICE SHALL BE IN LID.
2. METER BOX INSTALLED ELEVATION SHALL BE SAME AS BACK OF SIDEWALK.
3. FORD 70 SERIES COPPER SETTER WITH NO BYPASS FOR A 1 1/2-INCH OR 2-INCH FLANGED METER. (BALL VALVE INLET AND ANGLE CHECK VALVE OUTLET) 1 1/2": VBH 76-24-11-66 2":VBH 77-24-44-77.
4. 2" POLYETHYLENE PIPE WITH TRACER WIRE (2" PIPE IS REQUIRED FOR BOTH 1.5" AND 2" SERVICES).
5. CONTRACTOR TO INSTALL GROUND CONTACT PRESSURE TREATED 2"x4"x6' MARKER POST. SET TOP 3' ABOVE FINISH GRADE, PAINTED BLUE, USING EXTERIOR GRADE PAINT.
6. WHEN INSTALLING 1 1/2" SERVICE, INSTALL FORD C84-67 TRANSITION FITTING FROM 2" POLY SERVICE LINE TO 1 1/2" SETTER.
7. 2" TAPPING SADDLE STYLE FORD FC202 EPOXY COATED SINGLE STAINLESS STEEL STRAP WITH IP THREAD WITH 2-INCH BALLCORP STOP.
8. TAPS SHALL BE 18-INCHES APART WHEN STAGGERED ON EITHER SIDE OF THE MAIN. TAPS MUST BE 36-INCHES APART WHEN ON SAME SIDE OF MAIN.
9. LOCATE WIRE-CONNECT TO METALLIC MAIN LINE OR MAIN LINE LOCATE WIRE AND TERMINATE AT METER LOCATION. WIRE SHALL BE INSULATED #12 GAGE.
10. SEPARATE METER BOXES A MINIMUM OF 3'-0" APART WHEN STRADDLING A PROPERTY LINE.
11. ADDITIONAL FEE WILL APPLY AT TIME OF SERVICE IF 1 1/2" METER IS REQUESTED IN 2" WATER SETTER DUE TO ADDITIONAL FITTING COSTS.

1 1/2" OR 2" SERVICE SHALL BE CENTERED IN TRENCH.
CONNECT TRACER WIRE AT THE MAIN LINE AND INSTALL NEW WIRE TO THE METER SETTER.
INSTALL SELF-TAPPING MACHINE SCREW @ 4 LOC. 5" FROM CL OF BOX.
SEE NOTE 4.

TYP. SIDEWALK OR FUTURE SIDEWALK

15" MINIMUM
17" MAXIMUM
COVER

CONNECT TRACER WIRE AT THE MAIN LINE AND INSTALL NEW WIRE TO THE METER SETTER.

PLACE BEDDING MATERIAL UP TO 6" UNDER THE METER

FLOOR

FLOW

18" MIN OR TO BACK OF EASEMENT

95% COMPACTED TRENCH BOTTOM. DO NOT OVER EXCAVATE. BEDDING MINIMUM 2" UNDER, 4" OVER SERVICE. PIPE

1 1/2" OR 2" SERVICE
SHALL BE CENTERED IN TRENCH

CONNECT TRACER WIRE AT THE MAIN LINE AND INSTALL NEW WIRE TO THE METER SETTER.
NOTES:
1. MUST BE ON THE LATEST DEPARTMENT OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
2. MAY BE INSTALLED BELOW GROUND IN AN APPROVED VAULT.
3. A CITY OF WEST RICHLAND CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
4. FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.
5. RISERS AND ALL PIPE IN BOX TO BE SCH 40 PVC MINIMUM.
6. A LADDER IS REQUIRED IF ACCESS OPENING TO FLOOR EXCEEDS 36".

DOUBLE CHECK VALVE ASSEMBLY INSTALLATION FOR ASSEMBLIES 3/4" TO 1"

CATEGORY: WATER REVIEWED BY: AFW DATE: 07/14
FILENAME: SD 4-12.dwg REVISED BY: AFW REVISED: 05/18
NOTES:

1. REDUCED PRESSURE BACKFLOW ASSEMBLIES (RPBA) SHALL COMPLY WITH CURRENT STANDARDS AND SPECIFICATIONS FROM THE DEPARTMENT OF HEALTH (DOH) AND BE ON THE APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.

2. THE BACKFLOW ASSEMBLY SHALL BE APPROVED BY CITY CROSS CONNECTION SPECIALIST AND SHALL BE INSTALLED A MINIMUM OF 12" ABOVE GROUND.

3. PROPERTY OWNERS ARE RESPONSIBLE FOR PROTECTING CHECK VALVE ASSEMBLIES FROM FREEZING AND FOR ANNUAL MAINTENANCE AND TESTING OF THESE ASSEMBLIES FOR PROPER FUNCTION BY A CERTIFIED TESTER.

4. ENCLOSURES USED TO PROTECT ASSEMBLIES FROM FREEZING, OR DAMAGE, MUST PROVIDE ADEQUATE CLEARANCE FOR TESTING AND MAINTENANCE. 12" MINIMUM FOR NON TEST SIDES AND 24" MINIMUM FOR TEST SIDES.

5. ADEQUATE DRAINAGE FROM THE ASSEMBLY MUST BE PROVIDED. IDEALLY DRAINS SHALL RUN TO EXTERIOR OF BUILDING AS SHOWN. IF CONNECTING DRAINS TO CITY SEWER, GARAGE FLOOR DRAINS REQUIRE OIL / SAND SEPARATORS WITH DRAINS CONFORMING TO CURRENT GOVERNING PLUMBING CODES.

6. IRRIGATION SYSTEMS CONNECTED TO POTABLE WATER SOURCES SHALL COMPLY WITH THE CITY'S CURRENT CROSS CONNECTION CONTROL PROGRAM AND THE DOH STANDARDS AND SPECIFICATIONS. THE CITY CROSS CONNECTION SPECIALIST MUST APPROVE ALL CONNECTIONS AND BACKFLOW ASSEMBLIES, PRIOR TO USE.

7. INSTALLATION OF IRRIGATION SYSTEMS REQUIRES AN UNDERGROUND SPRINKLER INSTALLATION PERMIT FROM THE CITY TO BE FILED WITH THE CITY CROSS CONNECTION SPECIALIST PRIOR TO INSTALLATION.

8. ELECTRICAL CONNECTION TO BOOSTER PUMP SHALL MEET CURRENT GOVERNING ELECTRICAL CODES.

9. PIPE MATERIAL SHALL CONFORM TO THE CURRENT GOVERNING EDITION OF THE UNIFORM PLUMBING CODE (UPC) FOR ALL WATER LINES AND DRAIN LINES COMPRISING THE BOOSTER PUMP SYSTEM.

10. DETAIL IS TO BE USED AS A GENERAL DEPICTION OF A BOOSTER PUMP SETUP. VARIATIONS MAY BE ACCEPTED WITH APPROVAL FROM PUBLIC WORKS AND BUILDING DEPARTMENTS.
NOTES:
1. PIPE JOINTS TO BE RESTRAINED PER APPROVAL OF CITY ENGINEER.
2. FOR PIPES 12" & SMALLER, 2 SPACERS PER JOINT OF 13' SEWER. 4 SPACERS PER JOINT OF 18' OR 20' WATER
3. MINIMUM 3/8" STEEL. THICKER CASINGS MAY BE REQUIRED BY THE RAILROAD OR IRRIGATION UTILITY.
4. CASING SPACERS SHALL BE MANUFACTURED GALVANIZED, OR STAINLESS STEEL OR POLYETHYLENE, SIZED FOR THE TYPE OF PIPE & CASING SIZE.
5. CASING TO BE SIZED TO PROVIDE MINIMUM 2 INCH CLEAR FOR THE TYPE OF JOINT APPROVED BY THE CITY ENGINEER.
6. PIPE JOINTS WITHIN CASING TO BE RESTRAINED JOINT AS APPROVED BY THE ENGINEER.
NOTES:

1. MIN. PIPE BURY TO BE 18", SEE PIPE SPECIFICATIONS FOR ADDED REQUIREMENTS. MAXIMUM NUMBER AND SIZE OF PIPE CONNECTING INTO CATCH BASIN SHALL NOT EXCEED 3-10" PIPES (SEE NOTE 5).

2. FILTER FABRIC BAG TO BE INSTALLED UNDER GRATE. REMOVE ONLY WHEN DIRECTED BY ENGINEER.

3. PRECAST CATCH BASIN SHALL CONFORM TO CITY SPECIAL PROVISIONS.

4. 1:2 GROUT BETWEEN CATCH BASIN RING AND CONCRETE TILE, BOTH INSIDE AND OUTSIDE. ADJUSTMENTS 2" AND GREATER TO BE MADE WITH PRECAST CONCRETE RINGS.

5. WIRE REINFORCED PRECAST CATCH BASIN SHALL BE REQUIRED WHEN 3-12" PIPES ARE TO BE CONNECTED.

6. INSTALL ADS 90° BEND WITH TAPERED END FOR OIL/WATER SEPARATION IN LAST CATCH BASIN BEFORE DISCHARGE TO DRYWELL STRUCTURE OR POND OR INSTALLED PER CITY ENGINEER DIRECTION. STORM PIPE SHALL BE STUBBED INTO CATCH BASIN 2 INCHES AND A STAINLESS STEEL 3/8" DIAMETER LAG SCREW 1-1/2" LONG WITH A 1/2" SOCKET FIT HEX HEAD SHALL BE USED TO ANCHOR ADS 90 TO STORM PIPE.
DOMESTIC VANED STYLE SINGLE DIRECTIONAL FLOW

SECTION A-A

SECTION B-B

DOMESTIC VANED STYLE BI-DIRECTIONAL FLOW

SECTION A-A

SECTION B-B

NOTES:
1. RECTANGULAR VANED STYLE GRATE. USE AT CONTINUOUS GRADE LOCATIONS
2. RECTANGULAR BI-DIRECTIONAL VANED STYLE GRATE. USE AT CURB LOW POINTS
3. FRAME AND GRATES SHALL BE DOMESTIC

DOMESTIC FRAME ABLE TO ACCOMODATE A 20"X24" GRATE AND DESIGNED TO BE USED IN CONJUNCTION WITH A 24" DIAM CATCH BASIN.

CATCH BASIN FRAME AND GRATE

CATEGORY: STORM REVIEWED BY: AFW ADOPTED: 02/14
FILENAME: SD 5-2.dwg REVISED BY: AFW REVISED: 05/18

DRAWING NO. 5-2
NOTES:

1. ALL MANHOLE JOINTS SHALL BE MADE USING A CONTINUOUS FLEXIBLE RUBBER MANHOLE GASKET, OR FULL BED GROUT JOINT.

2. ADJUSTMENTS OVER 2" UTILIZE PRECAST CONCRETE RINGS. GROUT BETWEEN EACH RING AND FRAME AND FINISH GROUT INSIDE. REMOVE ALL WOOD SHIMS.

3. ALL INLETS AND OUTLETS SHALL BE GROUTED SMOOTH TO INSIDE WALLS.

4. INSTALL LADDER TO AVOID CONFLICT WITH INLET AND OUTLET PIPES AND ROTATE CONE SECTION ACCORDINGLY.

5. WHEN PLANS CALL FOR CHANNELIZED BASE, REFER TO STD DETAIL 3-2A. TRUNK LINE STORM SYSTEMS SHALL HAVE CHANNELIZED BASES UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.
NOTES:

1. CONTRACTOR TO FIELD VERIFY CATCH BASIN INLET ELEVATIONS DUE TO POSSIBLE EXISTING UTILITY CONFLICTS.
2. CATCH BASINS SHALL BE IN ACCORDANCE WITH STD. DETAIL 5-1.
3. INSTALL REMOVEABLE ADS 90 DEG. BEND W/TAPPED END SECTION SECURE WITH A STAINLESS STEEL 3/8" DIAMETER LAG SCREW, 1-1/2" LONG WITH 1/2" SOCKET HEAD.
4. ADJUSTMENTS 2" AND GREATER TO BE MADE WITH PRECAST CONCRETE RINGS.
5. SEE CONSTRUCTION PLANS FOR EXACT LOCATION AND PIPE SIZES.
6. PLACE 1:2 GROUT BETWEEN C.B. RINGS AND CONCRETE TILE, BOTH INSIDE AND OUTSIDE.
7. SEE CITY SPECIAL PROVISION 7-05 FOR ADDITIONAL INFORMATION REGARDING PERCOLATION TRENCHES.
DRAINFIELD ENVELOPE

CATCH BASIN AS PER CITY OF WEST RICHLAND STD. DETAIL 5-1 TO BE PAID FOR AS SEPARATE BID ITEM.

FRAME & GRATE CITY OF WEST RICHLAND STD. DETAIL 5-2

NOTES:

1. PRECAST CONCRETE ADJ. RINGS 18'' TO 24'' TO WITHIN 2'' OF CASTING. GROUT INSIDE OF RINGS TO A SMOOTH FINISH.

2. WHEN INSTALLED IN EXISTING ROADWAY, ALL BACKFILL ABOVE THE CONCRETE CAP TO BE 5/8'' MINUS CRUSHED ROCK 98% MIN. DENSITY. ROCK BACKFILL NOT REQUIRED IF DRYWELL IS INSTALLED IN CONJUNCTION WITH NEW STREET CONSTRUCTION AND IS IN THE ROADWAY.

3. RINGS, CASTING, LIFTHOLES AND PIPE INLETS INTO CATCH BASIN AND DRYWELL SHALL BE GROUTED INSIDE & OUT.

4" COMMERCIAL CONCRETE CAP. CAP TO BE BELOW OUTLET PIPE AND NO PERFORATIONS TO BE ABOVE CONCRETE CAP.

TRAFFIC BEARING H-20 LOAD RATED FLAT LID

PERFORATED M.H. SECTION

24" MIN., 36" MAX. WIDTH UNDER HMA

1.25" - 4" MIX OF WASHED ROUND RIVER ROCK (OR) ANGULAR BASALT GRAVEL BACKFILL PER CITY REQUIREMENTS.

SOIL FILTRATION FABRIC

REINFORCED PRECAST BASE

PERVIOUS STRATA

UNDISTURBED SOIL

9' MIN. DEEPEN AS REQUIRED TO PENETRATE PERVIOUS STRATA.

24" M.H. RING & SOLID COVER CITY OF WEST RICHLAND STD. DETAIL 3-3 WORD "STORM" OR "DRAIN" STAMPED ON COVER ACCESS TO LINE UP WITH FLAT TOP ACCESS. ADJUSTMENT PER STD. DETAIL 3-4.
CATCH BASIN AS PER CITY OF WEST RICHLAND STD. DETAIL 5-1 TO BE PAID FOR AS SEPERATE BID ITEM

FRAME & GRATE CITY OF WEST RICHLAND STD. DETAIL 5-2

NOTES:

1. PRECAST CONCRETE ADJ. RINGS 18" TO 24" TO WITHIN 2" OF CASTING. GROUT INSIDE OF RINGS TO A SMOOTH FINISH.

2. WHEN INSTALLED IN EXISTING ROADWAY, ALL BACKFILL ABOVE THE CONCRETE CAP TO BE 5/8" MINUS CRUSHED ROCK 98% MIN. DENSITY. ROCK BACKFILL NOT REQUIRED IF DRYWELL IS INSTALLED IN CONJUNCTION WITH NEW STREET CONSTRUCTION AND IS IN THE ROADWAY.

3. RINGS, CASTING, LIFTHOLES AND PIPE INLETS INTO CATCH BASIN AND DRYWELL SHALL BE GROUTED INSIDE & OUT.

---

PLAN VIEW

24" M.H. RING & SOLID COVER CITY OF WEST RICHLAND STD. DETAIL 3-3 WORD "STORM" OR "DRAIN" STAMPED ON COVER ACCESS TO LINE UP WITH FLAT TOP ACCESS. ADJUSTMENT PER STD. DETAIL 3-4.

10" MIN. STORM DRAIN PIPE FROM CATCH BASIN

5' MIN.

5'-8" (TYP.)

4" WIDE ECCENTRIC CONE

CONC. ANCHOR

12" MIN.

4" COMMERCIAL CONCRETE CAP. CAP TO BE BELOW OUTLET PIPE AND NO PERFORATIONS TO BE ABOVE CONCRETE CAP.

TRAFFIC BEARING H-20 LOAD RATED FLAT LID

PERFORATED M.H. SECTION

24" MIN., 36" MAX. WIDTH UNDER HMA

1.25" - 4" MIX OF WASHED ROUND RIVER ROCK

SOIL FILTRATION FABRIC

REINFORCED PRECAST BASE

PERVIOUS STRATA

UNDISTURBED SOIL

PROFILE VIEW

5' MIN.

DEEPEN AS REQUIRED TO PENETRATE PERVERIOUS STRATA.

5" MIN

72" MIN

48" MIN

6"

8"

18"

24" MIN

4" WIDE ECCENTRIC CONE

CONC. ANCHOR

12" MIN.

4" COMMERCIAL CONCRETE CAP. CAP TO BE BELOW OUTLET PIPE AND NO PERFORATIONS TO BE ABOVE CONCRETE CAP.

TRAFFIC BEARING H-20 LOAD RATED FLAT LID

PERFORATED M.H. SECTION

24" MIN., 36" MAX. WIDTH UNDER HMA

1.25" - 4" MIX OF WASHED ROUND RIVER ROCK

SOIL FILTRATION FABRIC

REINFORCED PRECAST BASE

PERVIOUS STRATA

UNDISTURBED SOIL

PROFILE VIEW

5' MIN.

DEEPEN AS REQUIRED TO PENETRATE PERVERIOUS STRATA.

5" MIN

72" MIN

48" MIN

6"

8"

18"

24" MIN

4" WIDE ECCENTRIC CONE

CONC. ANCHOR

12" MIN.

4" COMMERCIAL CONCRETE CAP. CAP TO BE BELOW OUTLET PIPE AND NO PERFORATIONS TO BE ABOVE CONCRETE CAP.

TRAFFIC BEARING H-20 LOAD RATED FLAT LID

PERFORATED M.H. SECTION

24" MIN., 36" MAX. WIDTH UNDER HMA

1.25" - 4" MIX OF WASHED ROUND RIVER ROCK

SOIL FILTRATION FABRIC

REINFORCED PRECAST BASE

PERVIOUS STRATA

UNDISTURBED SOIL

PROFILE VIEW

5' MIN.

DEEPEN AS REQUIRED TO PENETRATE PERVERIOUS STRATA.

5" MIN

72" MIN

48" MIN

6"

8"

18"

24" MIN

4" WIDE ECCENTRIC CONE

CONC. ANCHOR

12" MIN.

4" COMMERCIAL CONCRETE CAP. CAP TO BE BELOW OUTLET PIPE AND NO PERFORATIONS TO BE ABOVE CONCRETE CAP.

TRAFFIC BEARING H-20 LOAD RATED FLAT LID

PERFORATED M.H. SECTION

24" MIN., 36" MAX. WIDTH UNDER HMA

1.25" - 4" MIX OF WASHED ROUND RIVER ROCK

SOIL FILTRATION FABRIC

REINFORCED PRECAST BASE

PERVIOUS STRATA

UNDISTURBED SOIL

PROFILE VIEW

5' MIN.

DEEPEN AS REQUIRED TO PENETRATE PERVERIOUS STRATA.

5" MIN

72" MIN

48" MIN

6"

8"

18"

24" MIN

4" WIDE ECCENTRIC CONE

CONC. ANCHOR

12" MIN.
NOTES:

1. POLE SHAFT - HOT ROLLED COMMERCIAL QUALITY CARBON STEEL WITH 55,000 P.S.I. MINIMUM YIELD STRENGTH. LINEAR TAPER - 0.14"/FT.

2. ARM CONNECTION - ARM SIMPLEX IS FORMED HOT ROLLED COMMERCIAL QUALITY CARBON STEEL AND POLE SIMPLEX IS ASTM DESIGNATION: A27 GRADE 65-35

3. CAST IRON POLE TOP CAP - ASTM DESIGNATION: A48 CLASS 30 - SECURED IN PLATE WITH 3 SET SCREWS (PLATED SCREWS).

4. ARM SHAFTS - 2-3/8" O.D. X 0.121" WALL MINIMUM STEEL TUBING - 36,000 P.S.I. MINIMUM YIELD STRENGTH (UNLESS OTHERWISE NOTED).

5. POLE AND ARM GALVANIZED TO ASTM DESIGNATION: A123.

6. ACCESSORIES GALVANIZED TO ASTM DESIGNATION: A153.

7. ALL THREADED FASTENERS TO BE GALVANIZED UNLESS OTHERWISE NOTED.

8. "J"-BOX SHOWN FOR CLARITY, LOCATE AT 90 DEGREES FROM SHOWN POSITION.

9. INSTALL WIRE BETWEEN "J"-BOX AND POLE IN CARFLEX OR EQUAL LIQUID TIGHT FLEXIBLE NON-METALIC CONDUIT.

10. POLE TO BE INSTALLED OFFSET PARALLEL TO CURB/STREET FROM PROPERTY PINS (WHEN PRESENT)
LUMINAIRE REQUIREMENTS:

<table>
<thead>
<tr>
<th>STREET WIDTH*</th>
<th>STREET LIGHT STANDARD</th>
<th>GENERAL STREET CLASSIFICATION</th>
<th>LAMP WATTAGE (NOT TO EXCEED)</th>
<th>LIGHT DISTRIBUTION</th>
<th>CONTROLS (SEE NOTE 3)</th>
<th>DELIVERED LUMENS (MINIMUM)</th>
<th>MAXIMUM POLE SPACING</th>
</tr>
</thead>
<tbody>
<tr>
<td>70'</td>
<td>TYPE I 35.0'</td>
<td>5-LANE ARTERIAL HIGH DENSITY COMMERCIAL</td>
<td>220</td>
<td>TYPE III</td>
<td>VE²</td>
<td>18,600</td>
<td>125'</td>
</tr>
<tr>
<td>70'</td>
<td>TYPE I 35.0'</td>
<td>5-LANE ARTERIAL</td>
<td>110 220 (XING)</td>
<td>TYPE III</td>
<td>VE²</td>
<td>9300 18,600</td>
<td>150'</td>
</tr>
<tr>
<td>58'</td>
<td>TYPE I 35.0'</td>
<td>4-LANE ARTERIAL</td>
<td>110 220 (XING)</td>
<td>TYPE III</td>
<td>VE²</td>
<td>9300 18,600</td>
<td>200'</td>
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<tr>
<td>46'</td>
<td>TYPE II 30-6'</td>
<td>3-LANE COLLECTOR/ARTERIAL</td>
<td>110</td>
<td>TYPE II</td>
<td>VE²</td>
<td>9300</td>
<td>200'</td>
</tr>
<tr>
<td>32-36'</td>
<td>TYPE II 30-6'</td>
<td>RESIDENTIAL</td>
<td>50 110 (XING)</td>
<td>TYPE II</td>
<td>VE²</td>
<td>4200 9300</td>
<td>300'</td>
</tr>
</tbody>
</table>

* MEASURED FROM FACE OF CURB TO FACE OF CURB OR EDGE OF PAVEMENT TO EDGE OF PAVEMENT.

NOTES:

1. LUMINAIRES SHALL BE LED (LIGHT-EMITTING-DIODE) AND MANUFACTURED BY AEL (AMERICAN ELECTRIC LIGHTING)

<table>
<thead>
<tr>
<th>WATTS (NTE)</th>
<th>MANUFACTURE</th>
<th>MODEL/SERIES</th>
<th>PERFORMANCE PACKAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 W</td>
<td>AEL</td>
<td>ATBO</td>
<td>20BLEDE70, 20B CHIPS, 700 mA DRIVER</td>
</tr>
<tr>
<td>110 W</td>
<td>AEL</td>
<td>ATBO</td>
<td>30BLEDE10, 30B CHIPS, 1000 mA DRIVER</td>
</tr>
<tr>
<td>220 W</td>
<td>AEL</td>
<td>ATB2</td>
<td>60BLEDE10, 60B CHIPS, 1000 mA DRIVER</td>
</tr>
</tbody>
</table>

2. LUMINAIRES SHALL HAVE THE FOLLOWING CHARACTERISTICS:
   - CAPABLE OF USING MULTI-VOLT 120-277V, 60 Hz POWER SOURCE
   - ROADWAY DISTRIBUTION AS STATED ABOVE, IP66 RATED LIGHT ENGINES WITH 0% UPLIGHTING.
   - PROVIDE CORRELATED COLOR TEMPERATURE (CCT) OF 4000K, 70 CRI MINIMUM.
   - EXPECTED LIFE: LED LIGHT ENGINE RATED > 100,000 HOURS AT 25°C, L70
   - EXPECTED LIFE (DRIVER): 100,000 HOURS AT 25° AMBIENT
   - EQUIPPED WITH DIMMABLE DRIVER COMPATIBLE WITH ROAM SMART CONTROLS SYSTEM.
   - HOUSING SHALL BE DIE CAST ALUMINUM, POLYESTER POWDER COATED, AND GRAY IN COLOR.
   - NEMA 5 OR 7 PIN PHOTOCONTROL RECEPTACLE
   - NEMA LABEL PER ANSI C136.15-2011
   - SHALL HAVE TOOL-LESS ENTRY. TOOL-LESS NEMA PHOTOCONTROL RECEPTACLE, TERMINAL BLOCK, QUICK DISCONNECTS, AND BUBBLE LEVEL INSIDE ELECTRICAL COMPARTMENT FOR EASY LEVELING AT INSTALLATION.

3. PHOTO ELECTRIC CONTROL PER EACH LUMINAIRES SHALL BE PLUG IN TYPE AND MUST BE ACUITY BRANDS ROAM REN 127 DV1, WITH 0-10V DIMMING AND COMPATIBLE WITH ROAM/VIEW DIMMING CONTROLS. PROGRAMING OF PHOTOCCELL SHALL BE PERFORMED BY THE CITY AFTER INSTALLATION.

4. LUMINAIRES SHALL BE PACKAGED IN CONTAINERS WHICH WILL PREVENT SHIPPING AND HANDLING DAMAGE. EACH CONTAINER SHALL BE MARKED WITH THE MANUFACTURER'S NAME, NAME OF ITEM, WATTAGE AND CATALOG NUMBER

5. LUMINAIRES SHALL HAVE A MINIMUM OF A 10 YEAR WARRANTY. LUMINAIRES IN SERVICE FOR LESS THAN ONE YEAR ARE UNDER THE WARRANTY OF THE CONTRACTOR AND SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT HIS EXPENSE.

6. SEE CITY OF WEST RICHLAND STANDARD DETAIL 6-1 FOR POLE AND MAST ARM REQUIREMENTS.

7. SPACING TO BE STAGGERED OPPOSITE SIDES OF THE STREETS. ALL INTERSECTION SHALL HAVE MINIMUM (1) LIGHT. ADDITIONAL LIGHTING MAY BE REQUIRED BY THE CITY ENGINEER AT INTERSECTIONS AS WELL OTHER LOCATIONS ALONG ANY GIVEN ROADWAY.
TRANSFORMER

ALTERNATE COMMERCIAL DISCONNECT LOCATION WHEN PAVED ACCESS IS PROVIDED.

DISCONNECT MAX 5' BACK OF WALK. SEE COWR STD. DETAIL 6-4 FOR RESIDENTIAL DISCONNECT LOCATION.

SEE COWR STD. DETAIL 6-4 FOR RESIDENTIAL DISCONNECT LOCATION.

ALTERNATE COMMERCIAL DISCONNECT LOCATION, WHEN PAVED VEHICLE ACCESS IS PROVIDED.

CONTRACTOR TO INSTALL 2" CONDUIT (POWER SOURCE TO DISCONNECT) & WIRE IN ACCORDANCE WITH COWR STD. DETAIL 6-5

CONTRACTOR TO FURNISH TO THE BENTON R.E.A. 2" SCH. 80 P.V.C. CONDUIT AND GALVANIZED WEATHER HEAD AND WIRING CONDUCTORS FROM THE TOP OF GALVANIZED WEATHERHEAD TO THE POWER SOURCE.

NOTES:

1. ALL MATERIALS AND CONSTRUCTION TO CONFORM TO SECTION 8-20 OF THE SWSS AND CITY SPECIAL PROVISIONS.

2. AN IN-LINE, FUSED, WATERTIGHT ELECTRICAL DISCONNECT KIT SHALL BE INSTALLED IN THE JUNCTION BOX FOR EVERY CONDUCTOR ABOVE GROUND POTENTIAL.

3. PROVIDE ADDITIONAL CONDUCTOR LENGTH IN ALL JUNCTION BOXES EQUAL TO A LOOP HAVING A DIAMETER OF 1 FOOT.

4. CONTRACTOR SHALL PLACE 4" OF 5/8" MINUS CRUSHED ROCK IN BOTTOM OF JUNCTION BOX AFTER INSTALLING CONDUIT AND WIRING.

5. THE CONTRACTOR SHALL BE REQUIRED TO SECURE, AT HIS OWN EXPENSE, FROM THE CITY AND FROM THE STATE OF WASHINGTON ELECTRICAL INSPECTION DEPT., ALL INSPECTION PERMITS REQUIRED TO CONSTRUCT THE LIGHTING SYSTEM.

TYPICAL STREET LIGHT CIRCUIT

CATEGORY: LIGHTING REVIEWED BY: AFW ADOPTED: 06/14
FILENAME: SD 6-3.dwg REvised BY: AFW REVISED: 05/18
DRAWING NO. 6-3
NOTES:

1. THE CONTRACTOR SHALL BE REQUIRED TO SECURE, AT HIS OWN EXPENSE, FROM THE CITY OF WEST RICHLAND AND THE STATE OF WASHINGTON ELECTRICAL INSPECTION DEPT. ALL INSPECTION PERMITS REQUIRED TO CONSTRUCT THE LIGHTING SYSTEM. CONTACT BENTON R.E.A. TO VERIFY POWER SOURCE.

2. SEE SECTION 8-20 IN CITY SPECIAL PROVISIONS FOR WIRE SIZE AND CIRCUIT REQUIREMENTS.

3. SEE STANDARD DETAIL 6-3 FOR COMMERCIAL DISCONNECT LOCATION.

4. DISCONNECTS IN RESIDENTIAL SUBDIVISIONS SHALL BE LOCATED WITHIN 3 FT. OF PHONE AND CABLE TV PEDISTALS BUT NOT CONFLICT WITH ACCESS TO THE BENTON R.E.A. TRANSFORMER.

5. CONTRACTOR TO DRILL OUT "ON" POSITION ON LOCKING PLATE.

FUSED SERVICE SINGLE CIRCUIT SAFETY DISCONNECT SWITCH 8-7/8"W X 8-3/4"D X 12-3/4"L
GENERAL ELECTRIC MODEL TG 3222 RH OR EQUAL IN A NEMA 3R ENCLOSURE W/ A 30 AMP FUSE.
FOR TWO TO FOUR CIRCUIT USE SQUARE D 8 CIRCUIT ENCLOSURE WITH LOCK OFF CLIPS INSTALLED. ATTACH TO STEEL PLATE.

BENTON R.E.A. TRANSFORMER (POLE MOUNTED)

CONTRACTOR TO FURNISH LIGHTING CONDUCTORS TO POWER SOURCE (INSTALLATION BY B.R.E.A.).

CONTRACTOR TO INSTALL 2" SCH. 80 P.V.C. CONDUIT. CONTACT B.R.E.A. FOR LOCATION.

2" P.V.C. SCH. 80 CONDUIT TO B.R.E.A. POLE INSTALLATION.

24" RADIUS SWEEP MIN.

2" P.V.C. SCH. 80 CONDUIT TO BENTON R.E.A. TRANSFORMER (POLE MOUNTED).

CONTRACTOR TO INSTALL 2" SCH. 80 P.V.C. CONDUIT. CONTACT B.R.E.A. FOR LOCATION.

2" P.V.C. SCH. 80 CONDUIT TO BENTON R.E.A. TRANSFORMER (POLE MOUNTED).

PAD MOUNT TRANSFORMER

FUSED SAFETY DISCONNECT SINGLE AND MULTI-LIGHT CIRCUIT

CATEGORY: CATEGORY REVIEWED BY: AFW ADOPTED: 02/12
FILENAME: SD 6-4.dwg REVISED BY: AFW REVISED: 05/18

DRAWING NO.
NOTES:
1. TRENCH DEPTH SHALL PROVIDE A MINIMUM COVER OF 24" OVER TOP OF CONDUIT. TELEPHONE AND POWER TO BE MIN. 30" AT NON CURBED STREET CROSSINGS OR AS REQUIRED BY THE PERMIT.
2. MINIMUM ONE-WAY TRAFFIC TO BE MAINTAINED.
3. ALL ROADWAY APPURTEANCES TO BE PROTECTED AND ROAD SIGNS LEFT AS FOUND.
4. PAVEMENT REPAIR TO BE MADE WITHIN 24 HOURS OF TRENCH BACKFILL.
5. PATCH TO BE HMA 3/8" PG 64-28. H.M.A. SHALL BE A MINIMUM OF 2" DEPTH AND PLACED IN LIFTS NOT TO EXCEED 2" IN DEPTH.
6. PERMIT REQUIRED ON ALL PROJECTS NOT CONTRACT ADMINISTERED BY THE CITY PUBLIC WORKS DEPARTMENT.
NOTE:

1. A TOTAL OF FOUR 90° BENDS, OR AN EQUIVALENT OF 360° MAXIMUM IS PERMITTED IN A CONDUIT RUN PER NEC SECTION 347-14. SINCE EACH "J" BOX REQUIRES ONE 90° BEND TO ENTER THE BOTTOM OF THE BOX, A MAXIMUM OF TWO ADDITIONAL 90° BENDS CAN BE INSTALLED BETWEEN BOXES OR NO MORE THAN 180°

2. EXACT CONDUIT LOCATION IN THE UTILITY EASEMENT SHALL BE COORDINATED WITH THE CITY FRANCHISED UTILITIES TO ENSURE NO CONFLICTS ARE CREATED.

3. DEPTH OF CONDUIT SHALL SATISFY N.E.C. REQUIREMENTS.
FUSED, WATERTIGHT, QUICK DISCONNECT GROUND WIRE TO BE COLOR-CODED GREEN CONDUCTOR LOOP MIN. 12".

MINIMUM OF 4 INCHES OF 5/8" GRAVEL TO BE PLACED IN BOTTOM OF J-BOX AFTER INSTALLING THE CONDUIT AND WIRING.

CUT CONDUITS 4" TO 6" MAXIMUM ABOVE 5/8" MINUS ROCK

J-BOX SHALL BE INSTALLED FLUSH WITH SIDEWALK OR LANDSCAPING, BUT SHALL NOT BE PLACED WHERE DRAINAGE WILL COLLECT IN OR NEAR.

J-BOX SHALL BE INSTALLED 1.5'-2.5' FROM LIGHT STANDARD. SEE C.O.W.R. STANDARD DETAIL 6-1.

NOTES:
1. ALL MATERIALS AND CONSTRUCTION TO CONFORM TO SWSS, CITY OF WEST RICHLAND STANDARD SPECIAL PROVISIONS, AND CITY APPROVED MATERIALS LIST.

2. ALL BACKFILL TO BE COMPACTED TO MINIMUM OF 95% OF MAXIMUM DENSITY OR AS REQUIRED TO PRECLUDE FUTURE SETTLEMENT.
NOTES:

1. POSTS SHALL BE TELESPAR BRAND SQUARE TUBING OR APPROVED EQUAL. SIGN POST MUST BE BREAK AWAY AND ACCEPTABLE PER NCHRP 350.

2. POSTS SHALL BE COLD ROLLED STEEL WITH PERFORATIONS OF .4375 INCH DIAMETER ON ONE INCH CENTERS ON ALL FOUR SIDES.

3. POSTS SHALL EMPLOY A YIELDING BREAKAWAY SYSTEM CONSISTING OF A BASE POST AND SIGN POST.

4. ALL FASTENINGS OF TUBING JOINTS AND CONNECTIONS SHALL UTILIZE A MINIMUM OF TWO DRIVE RIVETS UNLESS OTHERWISE SPECIFIED.

5. GALVANIZED COATING SHALL CONFORM TO A.S.T.M. SPECIFICATION A-525, DES. G-90.

6. BASE POST MUST BE DRIVEN WITH A MECHANICAL DRIVER OR Poured IN CONCRETE.

7. IF CONCRETE IS USED WRAP SLEEVE WITH DUCT TAPE TO ALLOW FOR REINSTALLATION.
NOTES:
1. REFLECTORIZED WHITE LETTERS AND NUMBERS ON REFLECTIVE GREEN BACKGROUND. LETTERS ARE TO BE HIGHWAY GOTHIC, SERIES "C". LETTERS AND SPACING TO BE PER THE STATE OF WASHINGTON SIGN FABRICATION MANUAL.
2. LETTERS, NUMBERS, AND BACKGROUND ARE TO BE 3M SCOTCHLITE REFLECTIVE DIAMOND GRADE VIP SERIES 981.
3. EXTRUDED ALUMINUM PLATE 6061-P61 WITH ALODINE FINISH.
4. STREET NAME SIGNS SHALL BE INSTALLED ON THE SIGN POST OR STREET LIGHT STANDARD BY MEANS APPROVED BY THE CITY ENGINEER.
NOTES:
1. EDGE OF SIGN TO BE EVEN WITH BACK OF SIDEWALK.
2. SIGNS TO BE INSTALLED BACK OF SIDEWALK UNLESS OTHERWISE NOTED ON PLANS.
3. SIGNS SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND SHALL BE
   THE STANDARD SIZE AND LETTERING APPROPRIATE FOR URBAN AREAS UNLESS OTHERWISE NOTED.
4. ALL SIGN PLAQUES SHALL BE MADE OF ALUMINUM HAVING A MINIMUM THICKNESS OF 0.10 INCHES.
5. BOLTS, NUTS AND METAL WASHERS SHALL BE GALVANIZED OR CADMIUM PLATE STEEL.
6. POSTS SHALL CONFORM TO CITY OF WEST RICHLAND STD. DETAIL 7-1.
7. REFLECTIVE SHEETING SHALL BE AS A MINIMUM 3-M HIGH INTENSITY GRADE UNLESS A HIGHER GRADE IS SPECIFIED OR
   DIRECTED BY THE TRAFFIC ENGINEER.
8. ALL SIGNS AND PLACEMENT MUST HAVE APPROVAL OF THE CITY ENGINEER.
9. ALL MOUNTING HARDWARE FOR STREET LIGHT POLES MUST BE BAND-IT OR APPROVED EQUAL. THE HARDWARE REQUIRED IS
   3/4" X 0.030 STAINLESS STEEL BANDS, 3/4" STAINLESS STEEL EAR LOCK, BUCKLES, STAINLESS STEEL FLARED LEG BRACKETS
   WITH ONE BOLT AND METAL FENDERS WASHER.

MID-BLOCK INSTALLATION

SIGN ASSEMBLY

TYPICAL SIGN INSTALLATION
NOTES:
1. REFLECTORIZED 3M HIGH INTENSITY OR DIAMOND GRADE RED SHEETING OR CITY ENGINEER APPROVED EQUAL.
2. ONE-TENTH GAUGE ALUMINUM PLATE.
3. POST SHALL BE AS PER CITY OF WEST RICHLAND STANDARD DETAIL 7-1 EXCEPT 6 FT. SIGN POSTS MAY BE USED.
4. THE NUMBER OF SIGNS REQUIRED FOR ANY STREET SHALL BE DETERMINED BY THE CITY ENGINEER.
5. SIGNS ARE TO BE INSTALLED IN THE CENTER OF TRAVEL AND/OR PARKING LANE.
ALL CHANGES MUST BE APPROVED BY CITY ENGINEER
** ALSO ACCEPTABLE

FLAGGER AHEAD

BE PREPARED TO STOP

VARIIES FROM 50'-200'

T = TAPER LENGTH S = SIGN SPACING

<table>
<thead>
<tr>
<th>SPEED LIMIT</th>
<th>*S</th>
<th>*T</th>
<th>*1/2T</th>
<th>*1/3T</th>
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* SPACING MAY NEED TO BE ADJUSTED SLIGHTLY PER FIELD CONDITIONS

\* = CONES

MAX. CONE SPACING = SPEED LIMIT IN FEET

ALL CHANGES MUST BE APPROVED BY CITY ENGINEER

TYPICAL LANE CLOSURE 2 LANE ROADWAY

CATEGORY: CATEGORY REVIEWED BY: AFW ADOPTED: 02/14
FILENAME: SD 7-6.dwg REVISED BY: AFW REVISED: 05/18
DRAWING NO.: 7-6

West Richland
ROAD CONSTRUCTION AHEAD

WORK ZONE

ARROW BOARD (OPTIONAL)

BUFFER

T= TAPER LENGTH S= SIGN SPACING

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<th>SPEED LIMIT</th>
<th>*S</th>
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* SPACING MAY NEED TO BE ADJUSTED SLIGHTLY PER FIELD CONDITIONS

= CONES

MAX. CONE SPACING = SPEED LIMIT IN FEET

*USE OF FLAGGERS REQUIRE ADDITIONAL SIGNING (NOT SHOWN)

ALL CHANGES MUST BE APPROVED BY CITY ENGINEER

TYPICAL 1-LANE CLOSURE ON A 4-LANE ROADWAY

WITH OR WITHOUT 2-WAY TURN LANE

FILENAMES: SD 7-7.dwg
REVISED BY: AFW
REVISED: 05/18
DRAWING NO. 7-7
A typical left lane closure for a 4-lane roadway is depicted on the diagram. The construction area is marked with road signs indicating "Road Construction Ahead" and "Left Lane Closed Ahead." A work zone is shown with a buffer zone and an arrow board (optional) to guide traffic.

A table is also included, summarizing the taper length (T) and sign spacing (S) for different speed limits. The table gives the following information:

<table>
<thead>
<tr>
<th>Speed Limit</th>
<th>S (ft)</th>
<th>T (ft)</th>
<th>1/2T (ft)</th>
<th>1/3T (ft)</th>
<th>Buffer (ft)</th>
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</tbody>
</table>

* Spacing may need to be adjusted slightly per field conditions.

Max. cone spacing = speed limit in feet.

Additional notes on the diagram indicate that the use of flaggers requires additional signing (not shown). All changes must be approved by the City Engineer.
ALL CHANGES MUST BE APPROVED BY THE TRAFFIC ENGINEER

<table>
<thead>
<tr>
<th>SPEED LIMIT</th>
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*SPACING MAY NEED TO BE ADJUSTED SLIGHTLY PER FIELD CONDITIONS

- = CONES
MAX. CONE SPACING = SPEED LIMIT IN FEET

*USE OF FLAGGERS REQUIRE ADDITIONAL SIGNING (NOT SHOWN)

TYPICAL DOUBLE LANE CLOSURE
INSIDE 4-LANE ROADWAY

CATEGORY: CATEGORY | REVIEWED BY: AFW | ADOPTED: 02/14
FILENAME: SD 7-9.dwg | REVISED BY: AFW | REVISED: 05/18
DRAWING NO.: 7-9
TYPICAL 2-LANE CLOSURE ON A 4-LANE ROADWAY

ALL CHANGES MUST BE APPROVED BY THE TRAFFIC ENGINEER

T = TAPER LENGTH   S = SIGN SPACING

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* SPACING MAY NEED TO BE ADJUSTED SLIGHTLY PER FIELD CONDITIONS

= CONES

MAX. CONE SPACING = SPEED LIMIT IN FEET

*USE OF FLAGGERS REQUIRE ADDITIONAL SIGNING (NOT SHOWN)
ALL CHANGES MUST BE APPROVED BY THE TRAFFIC ENGINEER

ROAD CONSTRUCTION AHEAD

LEFT LANE CLOSED AHEAD

BUFFER

WORK ZONE

ARROW BOARDS (OPTIONAL)

TAPER LENGTH S = SIGN SPACING

<table>
<thead>
<tr>
<th>SPEED LIMIT</th>
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* SPACING MAY NEED TO BE ADJUSTED SLIGHTLY PER FIELD CONDITIONS

* = CONES

MAX. CONE SPACING = SPEED LIMIT IN FEET

*USE OF FLAGGERS REQUIRE ADDITIONAL SIGNING (NOT SHOWN)

TYPICAL 3-LANE CLOSURE INSIDE A 5-LANE ROADWAY

CATEGORY: SD 7-11.dwg
REVIEWED BY: AFW
REvised: 05/18
DRAWING NO.: 7-11
ALL CHANGES MUST BE APPROVED BY THE TRAFFIC ENGINEER

ROAD CONSTRUCTION AHEAD

2-S

1/2 T

ARROW BOARD (REQUIRED)

WORK ZONE

BUFFER

1/2 T

T

S

S

S

S

ROAD CONSTRUCTION AHEAD

T = TAPER LENGTH
S = SIGN SPACING

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*SPACING MAY NEED TO BE ADJUSTED SLIGHTLY PER FIELD CONDITIONS

= CONES

MAX. CONE SPACING = SPEED LIMIT IN FEET

USE OF FLAGGERS REQUIRE ADDITIONAL SIGNING (NOT SHOWN)

TYPICAL 2-LANE CLOSURE ON A 5-LANE ROADWAY
ALL CHANGES MUST BE APPROVED BY THE TRAFFIC ENGINEER

TYPICAL 3-LANE CLOSURE
OUTSIDE 5-LANE ROADWAY

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MAX. CONE SPACING = SPEED LIMIT IN FEET

*USE OF FLAGGERS REQUIRE ADDITIONAL SIGNING (NOT SHOWN)
ALL CHANGES MUST BE APPROVED BY THE TRAFFIC ENGINEER

T = TAPER LENGTH  S = SIGN SPACING

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* SPACING MAY NEED TO BE ADJUSTED SLIGHTLY PER FIELD CONDITIONS

= CONES

MAX. CONE SPACING = SPEED LIMIT IN FEET

INSIDE LANE CLOSURE NEAR SIDE OF INTERSECTION

CATEGORY: SD 7-14.dwg
FILENAME: REVIEWED BY: AFW
REVIEWED: 05/18
DRAWING NO. 05/18

TOTAL WORK ZONE

ARROW BOARD (OPTIONAL)

BUFFER

LEFT LANE CLOSED AHEAD

ROAD CONSTRUCTION AHEAD

AFW 02/17

05/18

7-14
All changes must be approved by the City Engineer.

**T = Taper Length**

<table>
<thead>
<tr>
<th>Speed Limit</th>
<th>S (feet)</th>
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*Spacing may need to be adjusted slightly per field conditions.

* = Cones

Max. cone spacing = speed limit in feet
ALL CHANGES MUST BE APPROVED BY THE CITY ENGINEER

T = TAPER LENGTH  S = SIGN SPACING

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* SPACING MAY NEED TO BE ADJUSTED SLIGHTLY PER FIELD CONDITIONS

= CONES

MAX. CONE SPACING = SPEED LIMIT IN FEET

TYPICAL 1-LANE CLOSURE ON A 3-LANE ROADWAY

CATEGORY: SD 7-16.dwg  REVIEWED BY: AFW  ADOPTED: 02/14

FILENAME: REVISED BY: AFW  REVISED: 05/18

DRAWING NO.
NOTES:
1. NIGHT WORK REQUIRES ADDITIONAL ROADWAY LIGHTING AT FLAGGING STATIONS, REFER TO WSDOT STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS.
2. BUFFER VEHICLE, STRATEGICALLY LOCATED MAY SHIELD THE WORK ZONE IF NECESSARY FOR SAFETY.
3. EACH ROUNDABOUT LOCATION IS UNIQUE AND THE TRAFFIC CONTROL MUST BE DEVELOPED TO MEET THE SPECIFIC CONDITIONS OF THE LOCATION AND OPERATION.
4. IF THE WORK AND ALL WORK VEHICLES ARE OFF OF THE TRAVEL LANES AND ISLAND APRON, A SINGLE ROAD WORK AHEAD SIGN IS ALL THAT IS REQUIRED.
5. ADDITIONAL SIGNING IN CENTER ISLAND MAY BE NECESSARY TO ASSIST TRAFFIC MOVEMENT.

T= TAPER LENGTH S= SIGN SPACING

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* SPACING MAY NEED TO BE ADJUSTED SLIGHTLY PER FIELD CONDITIONS

MAX. CONE SPACING = SPEED LIMIT IN FEET

TAPER LENGTH AND SIGN SPACING (TYP) FOR ALL 4 LEGS OF R.A.B.