

**NOTES**

1. Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum.
2. For pipe allowances, see **Standard Plan B-10.20**.

| MANHOLE DIMENSION TABLE |                     |                     |                       |                                    |
|-------------------------|---------------------|---------------------|-----------------------|------------------------------------|
| DIAM.                   | MIN. WALL THICKNESS | MIN. BASE THICKNESS | MAXIMUM KNOCKOUT SIZE | MINIMUM DISTANCE BETWEEN KNOCKOUTS |
| 48"                     | 4"                  | 6"                  | 36"                   | 8"                                 |
| 54"                     | 4.5"                | 8"                  | 42"                   | 8"                                 |
| 60"                     | 5"                  | 8"                  | 48"                   | 8"                                 |



NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT UNTIL ELECTRONICALLY SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION. IT IS THE OBLIGATION OF THE ENGINEER TO FILE AT THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION. A COPY MAY BE OBTAINED UPON REQUEST.

**MANHOLE TYPE 1**

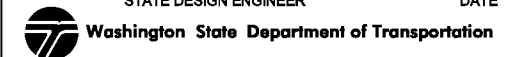
**STANDARD PLAN B-15.20-01**

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

**Pasco Bakotich III** 02-07-12

STATE DESIGN ENGINEER DATE



# SUPPLEMENTAL TO STANDARD PLAN B-15.20-01

## Modify the Standard Plan as follows:

### Notes:

1. Manhole diameter shall be 54" for depths up to 8'. For manhole depths greater than 8', the diameter shall be 60".
2. Steps shall be polypropylene.
3. Delete steps in the cone and adjustment sections. Steps shall begin in the riser section of the manhole.
4. Modify the depth note: replace "8" with "5". Type 1 manholes may be used for manholes between 5' and 8' deep. For manholes less than 5' deep, use a Manhole Type 3, WSDOT Standard Plan B-15.60-02.
5. Tracer wire shall be installed along the top of all pipe entering the structure, then up the wall and attached with a 3' long coil of slack at the top inside of the structure.
6. KOR-N-SEAL Boot Assemblies or approved equal are required for manhole connections. Grout boot flush to manhole wall.
7. Grout all joints inside manhole.
8. The top of the manhole shall be adjusted to grade following paving.
9. Following backfill, vacuum test 50% of the manholes, but not less than one.

### Vacuum Test Procedure (comply with ASTM C1244)

- a. Plug all pipes and securely brace each plug from being drawn into the structure.
- b. Place test head at the top of the manhole in accordance with the manufacturers' recommendations.
- c. Draw a vacuum of 10 inches of mercury. Close the valve on the vacuum line. Measure the time for the vacuum to drop by 1 inch to 9 inches. The manhole passes the test if the time is greater than the time shown in Table 1.
- d. If the manhole fails the test, make repair and retest until it passes.

Table 1 below gives the maximum allowable time loss in seconds for vacuum to drop below 9 inches;

Table 1: Minimum Test Times for Various Manhole Diameters

| <u>Manhole<br/>Depth*</u> | <u>Manhole Diameter in Inches</u> |           |           |           |           |           |           |
|---------------------------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|                           | <u>48</u>                         | <u>54</u> | <u>60</u> | <u>66</u> | <u>72</u> | <u>84</u> | <u>96</u> |
|                           | <b>Test Time** (sec.)</b>         |           |           |           |           |           |           |
| 8' or less                | 20                                | 23        | 26        | 29        | 33        | 38        | 44        |
| 10'                       | 25                                | 29        | 33        | 36        | 41        | 47        | 55        |
| 12'                       | 30                                | 35        | 39        | 43        | 49        | 53        | 66        |
| 14'                       | 35                                | 41        | 48        | 51        | 57        | 62        | 77        |
| 16'                       | 40                                | 46        | 52        | 58        | 67        | 71        | 88        |
| 18'                       | 45                                | 52        | 59        | 65        | 73        | 80        | 99        |
| 20'                       | 50                                | 53        | 65        | 72        | 81        | 89        | 110       |

\*Depth is measured from the top of the manhole to the lowest invert.

\*\*Test times for manhole depths between those shown in this table may be calculated by interpolation.