

Design Guidelines
City of Osage Beach
SECTION 6 – ROAD CUT, UTILITY TRENCH AND EXCAVATION PERMIT

(Revised 02 MAY - 2005 - JCB)

OVERVIEW

This guideline pertains to all encroachments into the City of Osage Beach street right-of-ways, street easements and utility easements including: intersections with new roadways to be dedicated to the city, private roadways or parking areas, driveways, trenches for underground utilities such as water or sewer lines and any other underground utility, aerial utility lines, and roadway appurtenances.

PERMITS

- A. A City of Osage Beach Road Cut and Utility Trench Permit is required prior to any encroachments into or over city right-of-ways or easements.
- B. A City of Osage Beach Excavation Permit is required for any excavation of more than 50 cubic yards and/or cut or fill which change existing elevations by more than two feet.

GENERAL

- A. Timely notice of work is required:
 - 1. The applicant shall notify the city Building Official not less than twenty-four (24) hours in advance of any work in the city right-of-way or easements.
 - 2. Additional notice shall be given to the City Building Official by telephone (573-302-2030) four (4) hours prior to actual excavation so that a City Inspector can be dispatched to carry out the required inspection.
 - 3. As a general rule inspections will not be made on weekends or official city holidays. In the case of an emergency good judgment shall rule.
- B. Timely completion of the work is required:
 - 1. Disruption of public access or use shall be minimized to the maximum extent practicable.
 - 2. Work within the city right-of-way or easement shall be done on a continuous basis, i.e.: once work is started it shall be continuous during normal work hours on a continual basis until completed.
 - 3. Leaving open trenches or other excavations for more than forty-eight (48) hours is prohibited.
- C. Traffic control, signs, and barricades:
 - 1. All open trenches or excavations within street right-of-ways or easements shall be provided with appropriate warning signs and barricades.

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2. If street traffic is interfered with appropriate flagman shall be provided.
3. All traffic control activities and devices shall conform to the U. S. Department of Transportation Manual of Uniform Control Devices.
4. If the excavated trench is to remain open or surface repairs to the street not completed prior to darkness appropriate warning lights shall be provided.
5. The applicant shall maintain all traffic control devices for the duration of the work.
6. At least one traffic lane shall be maintained in usable condition at all times.
7. All trenches within the traveled way shall be closed during nighttime hours.
8. No work will be permitted within the city right-of-way or easements over weekends or holiday periods.

INTERSECTIONS, PARKING AREAS, AND DRIVEWAYS

- A. Prior to construction for all proposed intersections with new streets, parking areas and driveways the applicant shall:
 1. Obtain an encroachment permit.
 2. Submit a drawing showing horizontal and vertical alignment of the intersecting facility and all storm drainage facilities.
- B. Intersecting streets and parking areas shall conform to the City of Osage Beach Design Standards for width, alignment, and grade.
 1. Intersecting streets and parking areas shall have curb and gutters.
 2. Streets, parking areas and driveways shall intersect perpendicular to the city street to the maximum extent practicable.
- C. Minimum width for driveway entrances to commercial properties shall be twelve (12) feet for a one-way entrance and twenty-four (24) feet for two-way entrances. Minimum radius for flares shall be fifteen (15) feet.
- D. Driveways for private residences shall be a minimum of ten (10) feet of driving surface exclusive of flares. Minimum radius for flares shall be ten (10) feet.
- E. All entrances into city streets shall be designed and constructed to accommodate storm drainage run-off.
 1. Appropriate catch drains shall be provided to accommodate run-off from or into driveways.
 2. Where roadway ditches exist on the city street appropriate culverts, swales, or slotted drains shall be provided.

UTILITY TRENCHES

- A. Utility trenches traversing under a city roadway.
1. Saw cut all pavement surfaces.
 2. All utility lines, except storm sewer, across city right-of-ways shall be incased in Schedule 40 or SDR 21 PVC sleeve.
 3. The sleeve shall be not less two inches in inside diameter larger than the maximum outside diameter of the widest dimension of the utility duct or pipe to be run through the sleeve.
 4. The minimum depth of cover of the sleeve shall be:
 - a. In accordance with Section 2 - Water Systems for waterlines
 - b. In accordance with Section 3 - Sewerage Design for sanitary sewer
 - c. In accordance with Section 4 - Storm Drainage for storm sewer
 - d. 36 inches below finished pavement grade for all others or as described in this Section.
 5. The maximum depth of cover for all water and sewer lines shall be eight (8) feet unless specifically authorized in writing by the City Engineer.
 6. Select Backfill shall be installed:
 - a. From six inches below the utility to eighteen inches below the finished pavement grade for water, pressure sewer and primary power lines.
 - b. From four inches below the utility to 9 inches below the finished pavement grade for storm sewer and secondary power lines.

Select backfill shall be 95% of maximum density nominal ½ inch minus crushed rock conforming to MoDOT Section 1004, Grade D, Chat, pea-gravel or Osage River Sand. Any material used shall have a PI of six or less.
 6. Concrete Backfill:
 - a. Shall be installed from three inches below finished pavement grade to the top of the Select Backfill.
 - b. The top six inches of the concrete backfill shall be extended not less than twelve inches on each side of the utility trench.
 - c. Shall conform to MDOT Section 501, Concrete.
 - 1) Concrete shall be Class A-1
 - 2) Course aggregate shall be Gradation B
 - 3) Fine aggregate shall be Class A
 - 4) Cement shall be either Type I or III.

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- 5) An accelerator may be used in conformance with MoDOT Section 1054.5.

7. Asphalt Pavement

- a. Shall be installed from the surface to three (3) inches below finished grade.
- b. Asphalt pavement shall conform to MoDOT Section 403; Type 1B
- c. Asphalt cement shall be AC-30
- d. Concrete backfill as specified above maybe utilized in lieu of asphalt pavement with prior permission of the City Engineer.
- e. Finish Tolerance the surface of the finished roadcut shall not exceed ¼ inch below a ten (10) foot straight edge as measured below the straight edge.

B. Utility trenches paralleling under a city roadway or parking area.

1. Saw cut all pavement surfaces.
2. The minimum depth of cover shall be:
 - a. In accordance with Section 2 - Water Systems for waterlines
 - b. In accordance with Section 3 - Sewerage Design for sanitary sewer
 - c. In accordance with Section 4 - Storm Drainage for storm sewer
 - d. **24** inches below finished pavement grade for all others or as described in this Section.
3. Select Backfill shall be installed:
 - a. From six inches below the utility to three (3) inches below the finished pavement grade.
 - b. Select backfill shall be 95% of maximum density nominal ½ inch minus crushed rock conforming to MoDOT Section 1004, Grade D, Chat, pea-gravel or Osage River Sand. Any material used shall have a PI of six or less.
4. Asphalt Pavement
 - a. Shall be installed from the surface to three (3) inches below finished grade.
 - b. Asphalt pavement shall conform to MoDOT Section 403; Type 1B
 - c. Asphalt cement shall be AC-30
 - d. Concrete backfill as specified above maybe utilized in lieu of asphalt pavement with prior permission of the City Engineer.
 - e. Finish Tolerance the surface of the finished roadcut shall not exceed ¼ inch below a ten (10) foot straight edge as measured below the straight edge.

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- C. Utility trenches out of traffic area
1. The minimum depth of cover shall be:
 - a. In accordance with Section 2 - Water Systems for waterlines
 - b. In accordance with Section 3 - Sewerage Design for sanitary sewer
 - c. In accordance with Section 4 - Storm Drainage for storm sewer
 - d. 24 inches below finished pavement grade for all others or as described in this Section.
 3. Select Backfill shall be installed:
 - a. In accordance with Section 2 - Water Systems for waterlines
 - b. In accordance with Section 3 - Sewerage Design for sanitary sewer
 - c. In accordance with Section 4 - Storm Drainage for storm sewer
 - d. 6 inches below the utility line to 12 inches above the utility line for all others.
 4. Backfill shall be granular material or select soil excavated from the trench, free of rocks over ½ inch in least dimension, foreign material or frozen earth.
 - a. Backfill shall be compacted to 95% of optimum density at optimum moisture content.
 - b. The surface shall be graded to smooth flowing lines blending into surrounding slopes.
 5. Restore disturbed surface area to pre-construction condition (seed & mulch, decorative rock, etc.).
- D. Utility trenches more than 150 feet in length shall have an impervious clay or bentonite plug constructed at each terminus or intersection with other trenches to prevent water from following the trench line and creating drainage problems.
- E. Underground Primary Power Trenches. All electrical power of 480 volts AC or more is considered “primary power”.
1. All primary power shall be installed in Schedule 40 PVC conduit, or as approved by the City Engineer.
 2. Primary power trenches shall be a minimum of thirty-six (36) inches in depth.
 3. All primary power shall have a warning barrier of Portland cement concrete backfill a minimum of three (3) inches thick by the width of the trench located three inches above the power duct.

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4. An approved warning tape shall be installed six inches above the concrete barrier.
 5. Where underground primary power crosses city utilities, the primary power shall be a minimum of one-foot below.
 6. Where primary power line parallels a city utility line it shall be separated by a minimum of four feet.
 7. In special circumstances with prior written approval of the City Engineer primary power may be run in the same trench as water or sewer lines, the primary power shall be in conduit and located not less than one-foot below the water or sewer line with the concrete barrier and warning tape in place.
- F. Underground Secondary Power Trenches, all electrical power less than 480 volts.
1. Secondary power trenches shall be a minimum of twenty-four (24) inches of cover in depth.
 2. An approved warning tape shall be installed twelve inches above the duct.
 3. Underground secondary power ducts can be co-located with water or sewer lines if they are placed not less than one foot to the side and at or below the elevation of the water or sewer line.
 4. Where secondary power crosses water or sewer lines, the power shall be in conduit and shall be a minimum of one-foot below water or sewer lines.

ROAD BORES

In all location where the utility is to be installed under a paved area that has been constructed within the previous five (5) years, as determined by the city engineer, a road bore shall be constructed. The minimum depth of the bore shall be thirty-six (36) inches. All bores shall be sleeved as specified above.

AERIAL UTILITIES

- A. Minimum vertical clearance for aerial utilities shall be a minimum of eighteen feet (18 ft. 0 in.) at the lowest point of crossing above the finished pavement grade of any city street.
- B. Utility poles shall not be located less than three (3) feet from the edge of pavement on city streets or parking areas.

ROADWAY APPURTENANCES

- A. Traffic control signs shall be installed in accordance with US Department of Transportation and Federal Highway Administrations Uniform Manual of Traffic Control Devices.
- B. Other signs.

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1. A City of Osage Beach Sign Permit is required for all signs within city right-of-ways or easements except traffic control signs.
- C. No sign shall be installed within three (3) feet of the edge of pavement.
- D. Mailbox.
1. Mailboxes and/or newspaper boxes shall not be located within twelve (12) inches of the edge of pavement on city streets.
 2. If the street has concrete curb and gutter the face of the mailbox shall not protrude into the roadway past the back of the curb.
 3. Mail and newspaper boxes shall be removed within thirty days of cessation of delivery service. If the box is unused and not removed the city will remove it at the owner's expense.
- E. Guard Rail or Crash Barrier
1. Shall only be installed at locations where a severe traffic safety hazard exists and only with the approval of the City Engineer.
 2. Installation shall conform to MoDOT Specifications.

INSPECTIONS

During the progress of the work each utility line shall be inspected by the Engineering Department prior to trench backfill.

ROADCUT AND UTILITY TRENCH CONSTRUCTION DETAIL DRAWINGS

Construction details and sketches are attached.

END.

WIDTH VARIES
SEE SECTION 5

CITY STREET

BACK OF CURB & GUTTER

90°

EDGE OF PAVEMENT

PRIVATE
DRIVEWAY

WHERE ROADWAY DITCH EXIST
INSTALL CULVERT, SWALE OR
SLOTTED DRAIN AS APPROVED BY
CITY ENGINEER

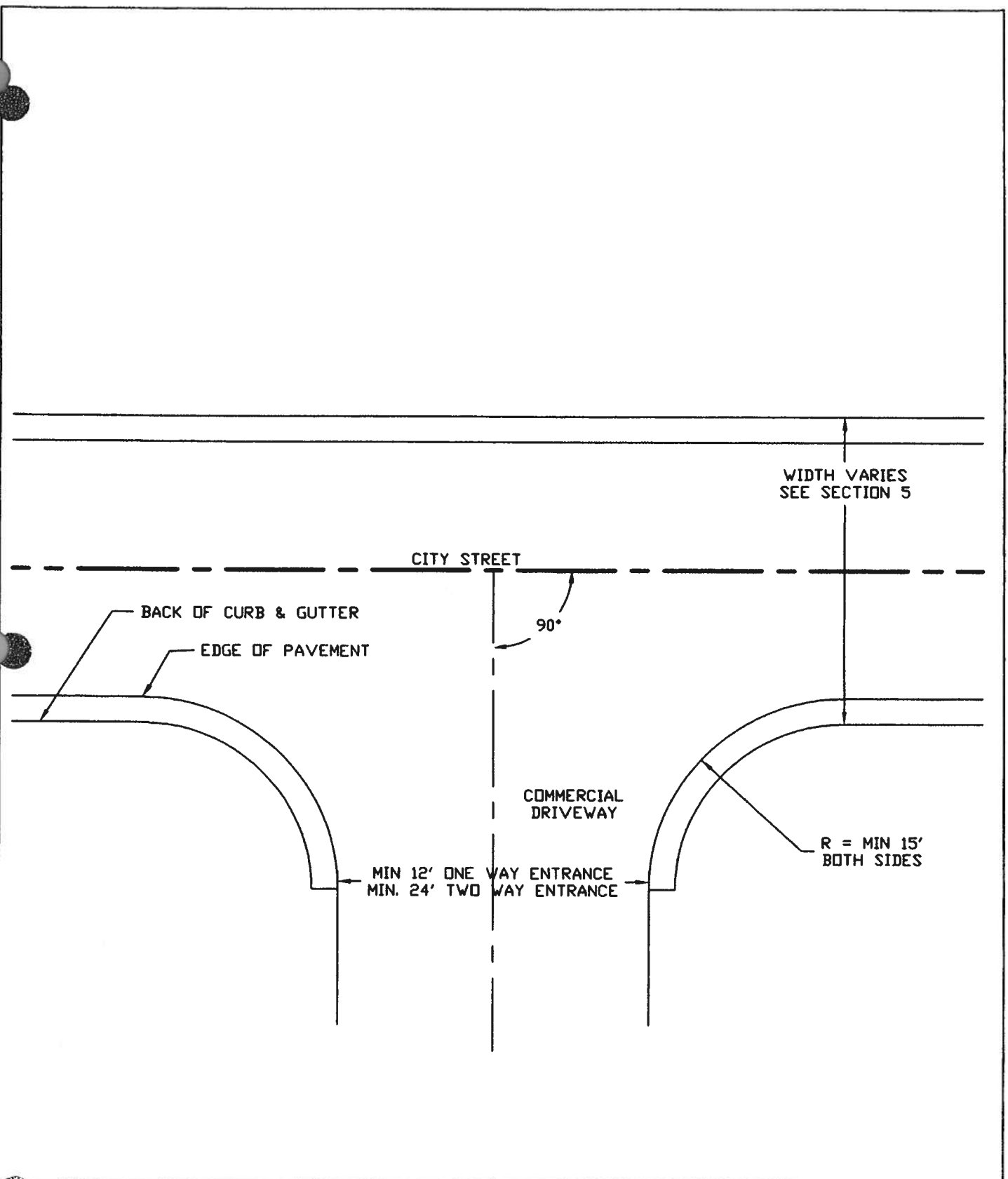
R = 10' MIN.
BOTH SIDES

10' MIN.

Revised:
October 2004
By:
sh
Checked By:
jb

CITY OF OSAGE BEACH
TYPICAL DETAIL
PRIVATE RESIDENCE ENTRANCE
INTERSECTING CITY STREET

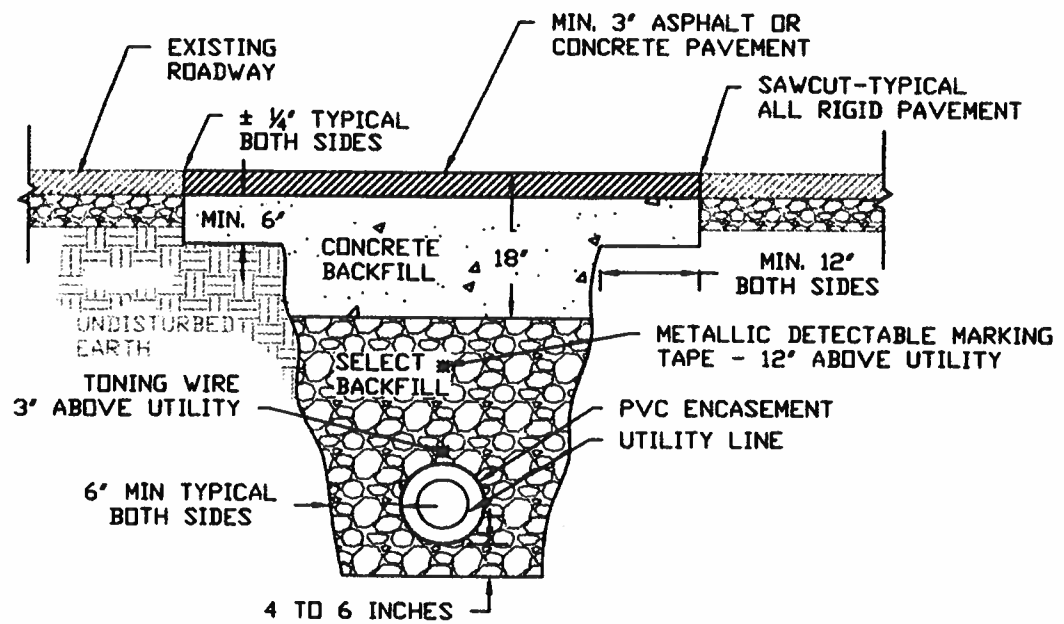
Design Guideline:
SECTION 6
ROAD CUT, UTILITY TRENCH
AND EXCAVATION PERMIT
Drawing No:
VI-1



Revised: October 2004
 By: sh
 Checked By: jlb

CITY OF OSAGE BEACH
 TYPICAL DETAIL
 COMMERCIAL ENTRANCE
 INTERSECTING CITY STREET

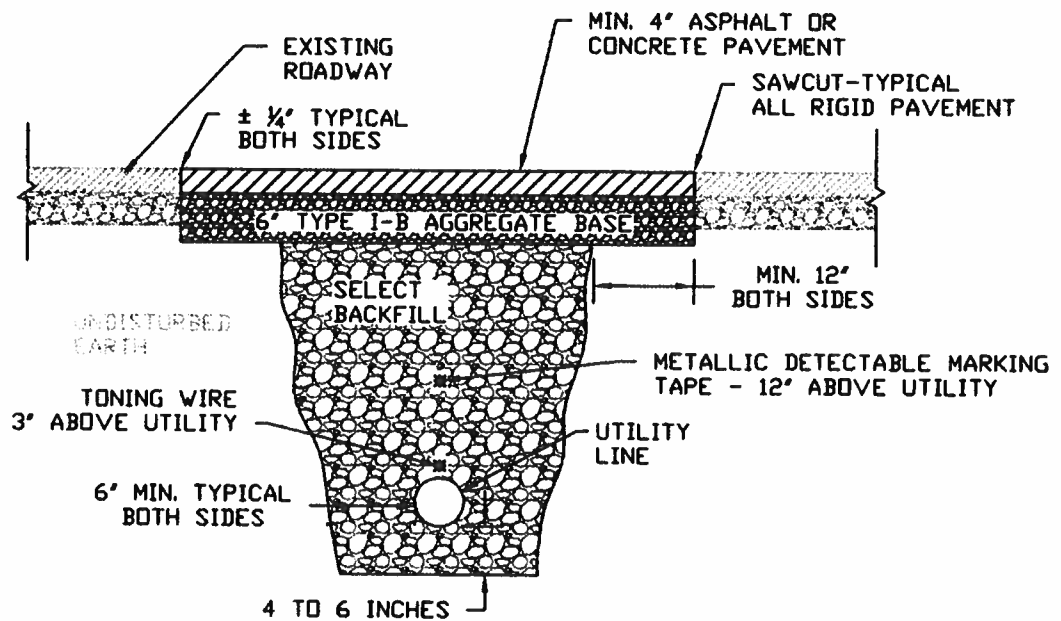
Design Guideline:
 SECTION 6
 ROAD CUT, UTILITY TRENCH
 AND EXCAVATION PERMIT
 Drawing No:
 VI-2



NOTE: SAWCUT SHALL BE CONTINUOUS WITH SMOOTH, TAPERED TRANSITIONS IN WIDTH IN ORDER TO MAINTAIN A CONSISTENT PAVEMENT RESTORATION WIDTH.

TRANSVERSE ROAD CROSSING DETAIL

Revised: October 2004 By: sh Checked By: jlb	CITY OF OSAGE BEACH TYPICAL DETAIL UTILITY TRENCH TRAVERSING A CITY ROADWAY	Design Guideline: SECTION 6 ROAD CUT, UTILITY TRENCH AND EXCAVATION PERMIT Drawing No: VI-3
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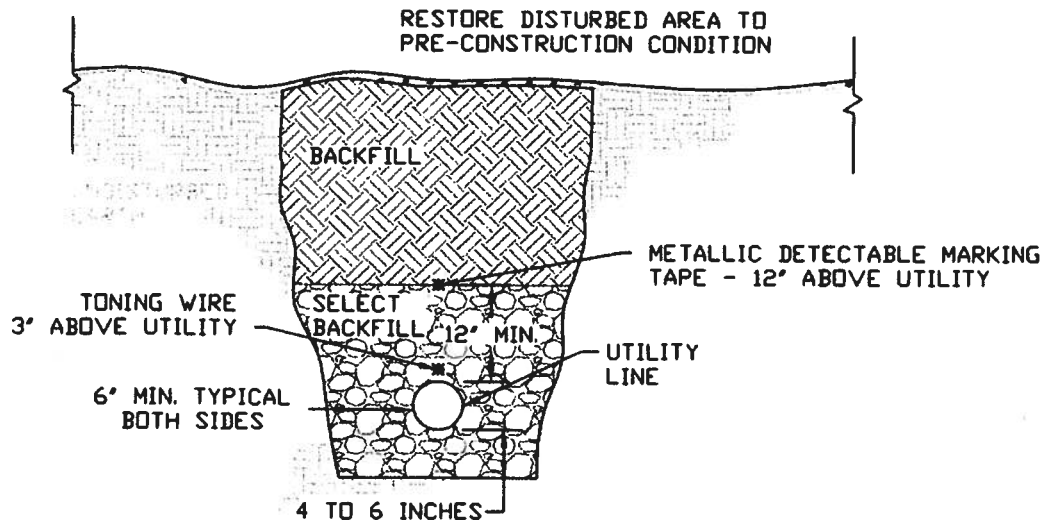
NOTE: SAWCUT SHALL BE CONTINUOUS WITH SMOOTH, TAPERED TRANSITIONS IN WIDTH IN ORDER TO MAINTAIN A CONSISTENT PAVEMENT RESTORATION WIDTH.

Revised:	October 2004
By:	sh
Checked By:	jlb

CITY OF OSAGE BEACH
 TYPICAL DETAIL
 UTILITY TRENCH PARALLELING
 CITY ROADWAY

Design Guideline:	SECTION 6
ROAD CUT, UTILITY TRENCH AND EXCAVATION PERMIT	
Drawing No:	VI-4

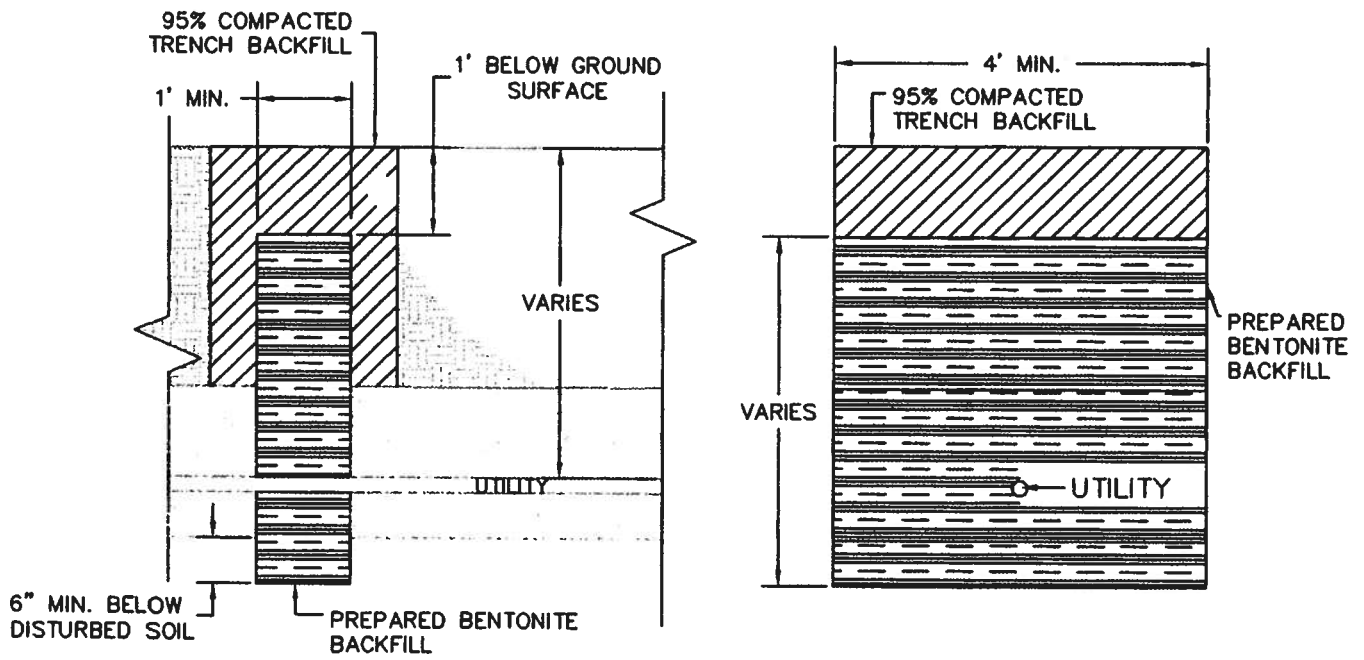
NOTE: THE MINIMUM DEPTH OF COVER VARIES PER UTILITY. REFER TO INDIVIDUAL SECTION FOR COVER REQUIREMENTS.



Revised: October 2004
 By: sh
 Checked By: jlb

CITY OF OSAGE BEACH
 TYPICAL DETAIL
 UTILITY TRENCH OUT OF TRAFFIC
 AREA

Design Guideline:
 SECTION 6
 ROAD CUT, UTILITY TRENCH
 AND EXCAVATION PERMIT
 Drawing No:
 VI-5



Date Revised: October 2004

By: sh

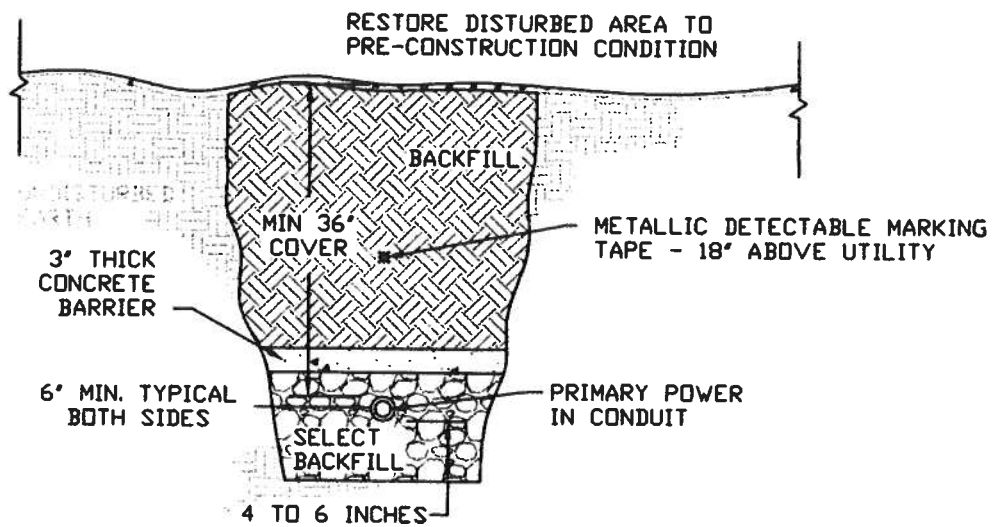
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CITY OF OSAGE BEACH
TYPICAL DETAIL
BENTONITE PLUG

Design Guideline:
SECTION 6

ROADS, STREETS AND
PARKING AREAS

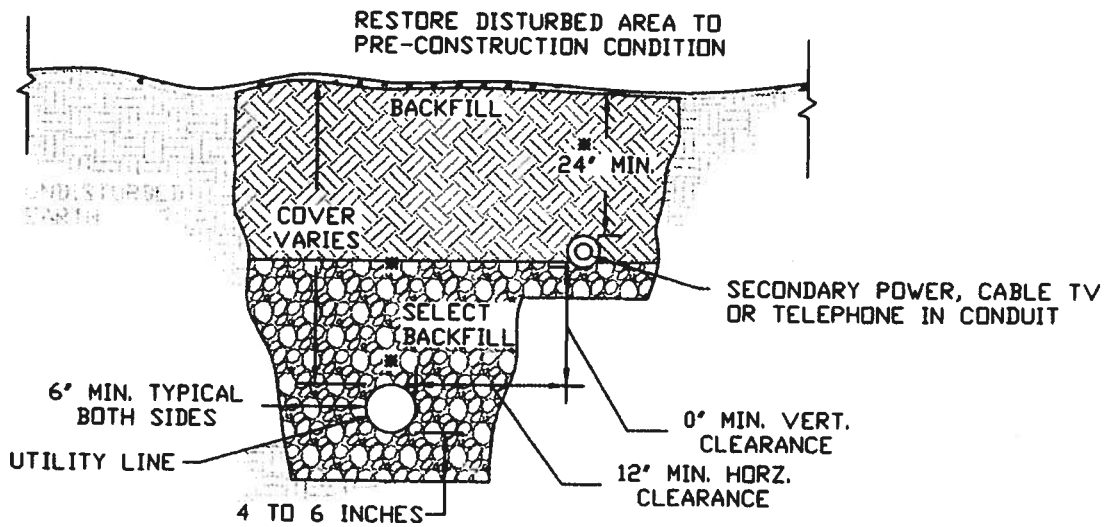
Drawing No:
VI-6



Date Revised: October 2004
 By: sh
 Checked By: jb

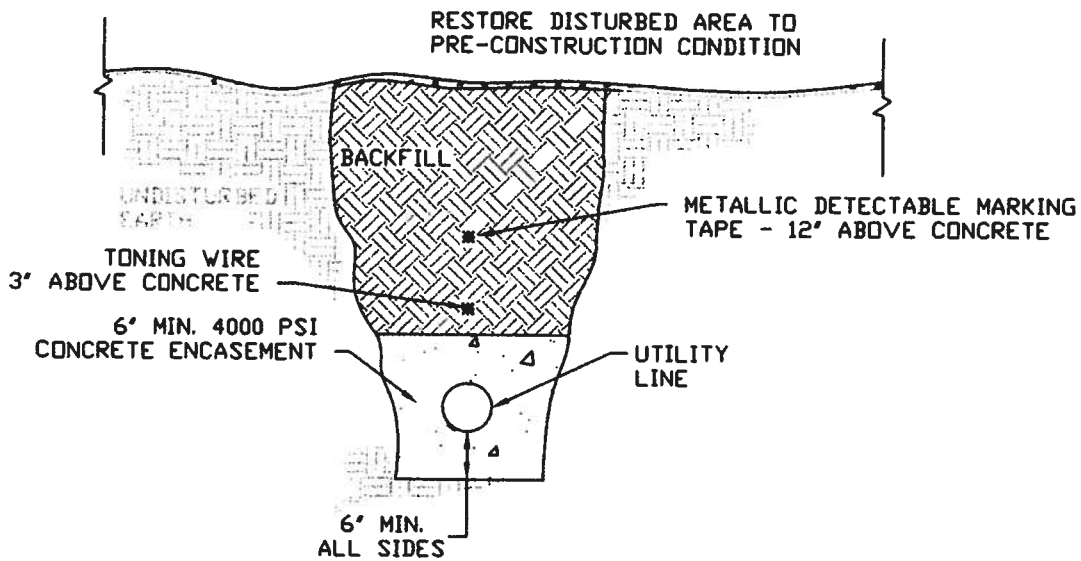
CITY OF OSAGE BEACH
 TYPICAL DETAIL
 PRIMARY POWER TRENCH

Design Guideline:
 SECTION 6
 ROAD CUT, UTILITY TRENCH
 AND EXCAVATION PERMIT
 Drawing No:
 VI-7



- NOTES:
1. WARNING TAPE TO BE PLACED 12' ABOVE BOTH UTILITIES.
 2. TONING WIRE TO BE PLACED 3' ABOVE WATER/SEWER UTILITY ONLY.
 3. DETAIL IS FOR OUT OF TRAFFIC AREAS. IF UTILITIES ARE LOCATED WITHIN THE CITY STREET BACKFILL SHALL BE AS DETAILED IN TRAVERSING OR PARALLELING CITY ROADWAY WHICH EVER MAY APPLY.

e Revised October 2004	CITY OF OSAGE BEACH TYPICAL DETAIL WATER & SEWER IN SAME TRENCH AS SECONDARY POWER	Design Guideline: SECTION 6
By: sh		ROAD CUT, UTILITY TRENCH AND EXCAVATION PERMIT
Checked By: jb		Drawing No: VI-8



- NOTES:
1. BLOCK PIPE TO PROVIDE MINIMUM CLEARANCE INDICATED.
 2. INSTALL TIE DOWNS TO PREVENT FLOATING.
 3. MINIMUM DEPTH OF COVER VARIES PER UTILITY. REFER TO INDIVIDUAL SECTION FOR COVER REQUIREMENTS.
 4. DETAIL IS FOR OUT OF TRAFFIC AREAS. IF UTILITY IS LOCATED WITHIN THE CITY STREET BACKFILL SHALL BE AS DETAILED IN TRAVERSING OR PARALLELING CITY ROADWAY WHICH EVER MAY APPLY.

Revised: October 2004

By: sh

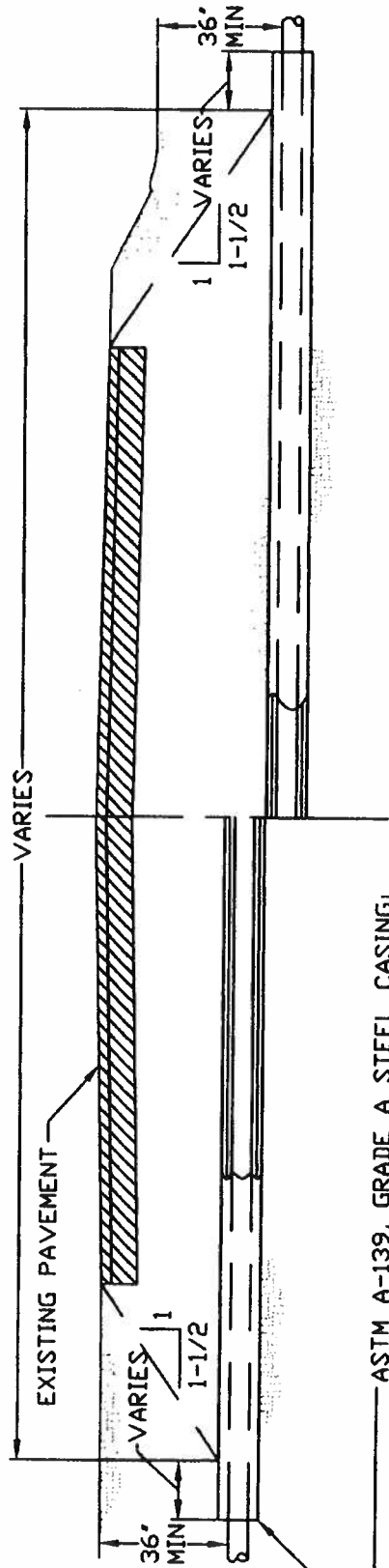
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CITY OF OSAGE BEACH
TYPICAL DETAIL
CONCRETE ENCASEMENT

Design Guideline:
SECTION 6

ROAD CUT, UTILITY TRENCH
AND EXCAVATION PERMIT

Drawing No:
VI-9



EXISTING PAVEMENT

VARIES

36" MIN

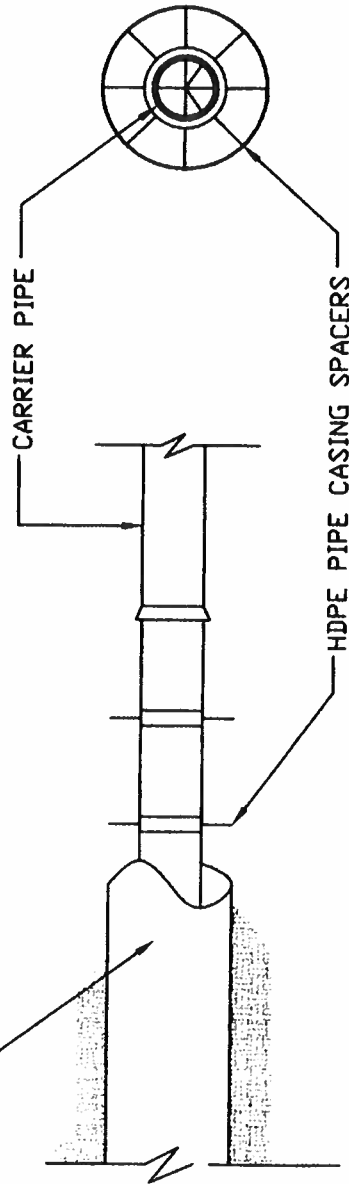
VARIES

1-1/2

1

ASTM A-139, GRADE A STEEL CASING,
0.188" MIN. WALL THICKNESS

NOTE:
CASING SHALL BE SIMULTANEOUSLY
INSTALLED W/BORING OPERATION.
ALL TRENCHES AND OTHER AREAS
DISTURBED DURING CONSTRUCTION
SHALL BE COMPACTED, FERTILIZED,
SEEDED AND MULCHED. EACH END
OF CASING SHALL BE SEALED
W/BRICK AND MORTAR BULKHEAD OR
OTHER ENGINEER APPROVED METHOD.
ANNULAR SPACE BETWEEN CARRIER
PIPE & CASING TO BE SAND FILLED.



NO SCALE

Date Revised: October 2004

By: sh

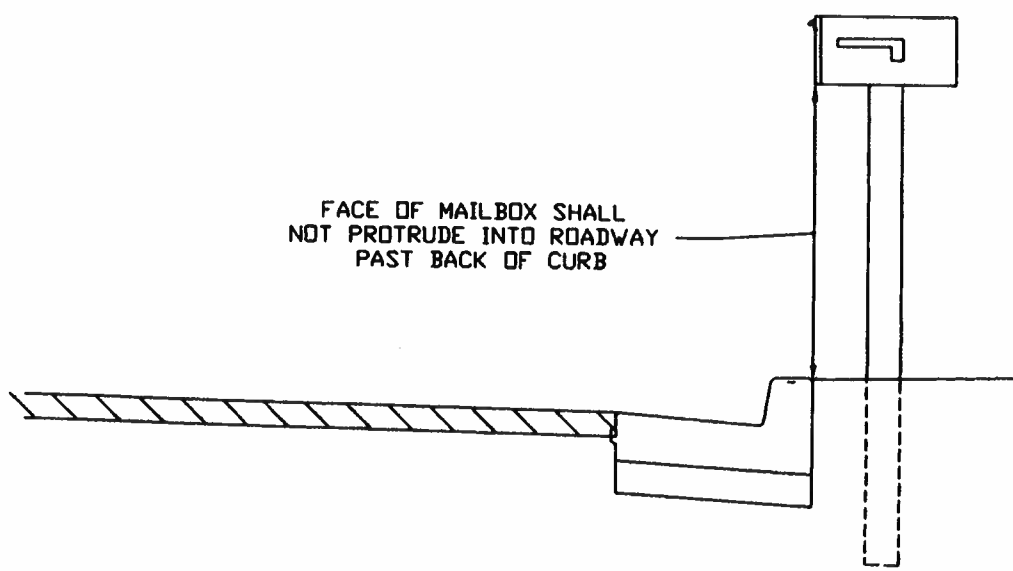
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Design Guideline:
SECTION 6

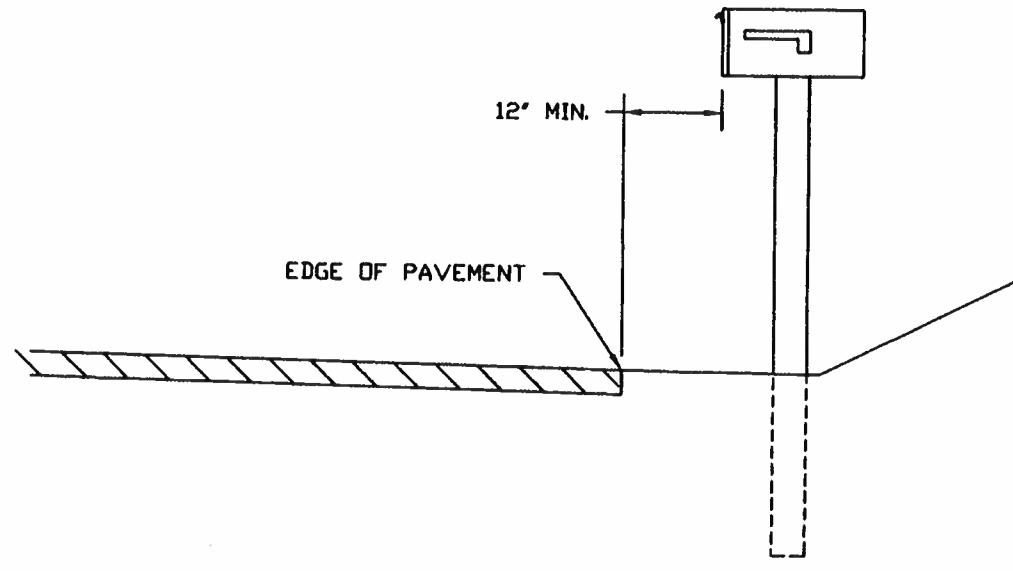
ROAD CUT, UTILITY TRENCH
AND EXCAVATION PERMIT

Drawing No:
VI-10

CITY OF OSAGE BEACH
TYPICAL DETAIL
HIGHWAY CROSSING BORE/ENCASEMENT



FACE OF MAILBOX SHALL NOT PROTRUDE INTO ROADWAY PAST BACK OF CURB



12' MIN.

EDGE OF PAVEMENT

Revised: October 2004
By: sh
Checked By: jb

CITY OF OSAGE BEACH
TYPICAL DETAIL
MAILBOX LOCATION

Design Guideline: SECTION 6
ROAD CUT, UTILITY TRENCH AND EXCAVATION PERMIT
Drawing No: VI-11