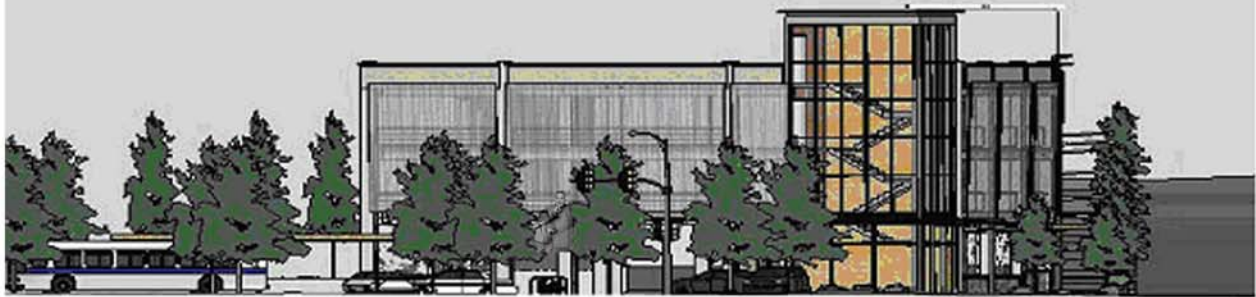


# City and Borough of Juneau



## STANDARD DETAILS

4th Edition  
August 2011



ENGINEERING DEPARTMENT

## City and Borough of Juneau Standard Details 4<sup>th</sup> Edition, Revised

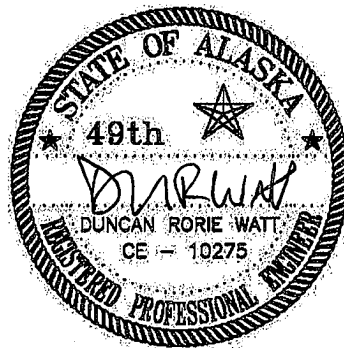
Standard Details are used to standardize the construction of roads, utilities and other public works infrastructure within the City and Borough of Juneau right-of-way. The drawings are produced by the CBJ Engineering Department and published for use by design professionals and contractors.

The City and Borough of Juneau requires adherence to the standards shown in this manual. However, the CBJ Engineering Department will consider alternatives to the Standard Details on a case by case basis, as recommended by design professionals and qualified contractors.

The first edition of this manual was published April 1, 1996, and this document represents the fourth edition. All of the Standards have been revised and adopted in August 2011.

These Standard Details are subject to revision, and will be superseded by subsequent editions of this manual. Also, errata may be issued to make small modifications to the Standards. For information on the edition that is currently in effect and all applicable errata, go to the Engineering Department website at: [www.juneau.org/engineering](http://www.juneau.org/engineering) or contact the Engineering Department at the following address:

City and Borough of Juneau  
**Engineering Department**  
155 South Seward Street  
Juneau, Alaska 99801  
Contracts@ci.juneau.ak.us  
(907) 586-0873



Rorie Watt, P.E.  
Engineering Director  
City and Borough of Juneau  
November 3, 2011

# CBJ STANDARD DETAILS

4<sup>th</sup> Edition

Revised: August 14, 2011

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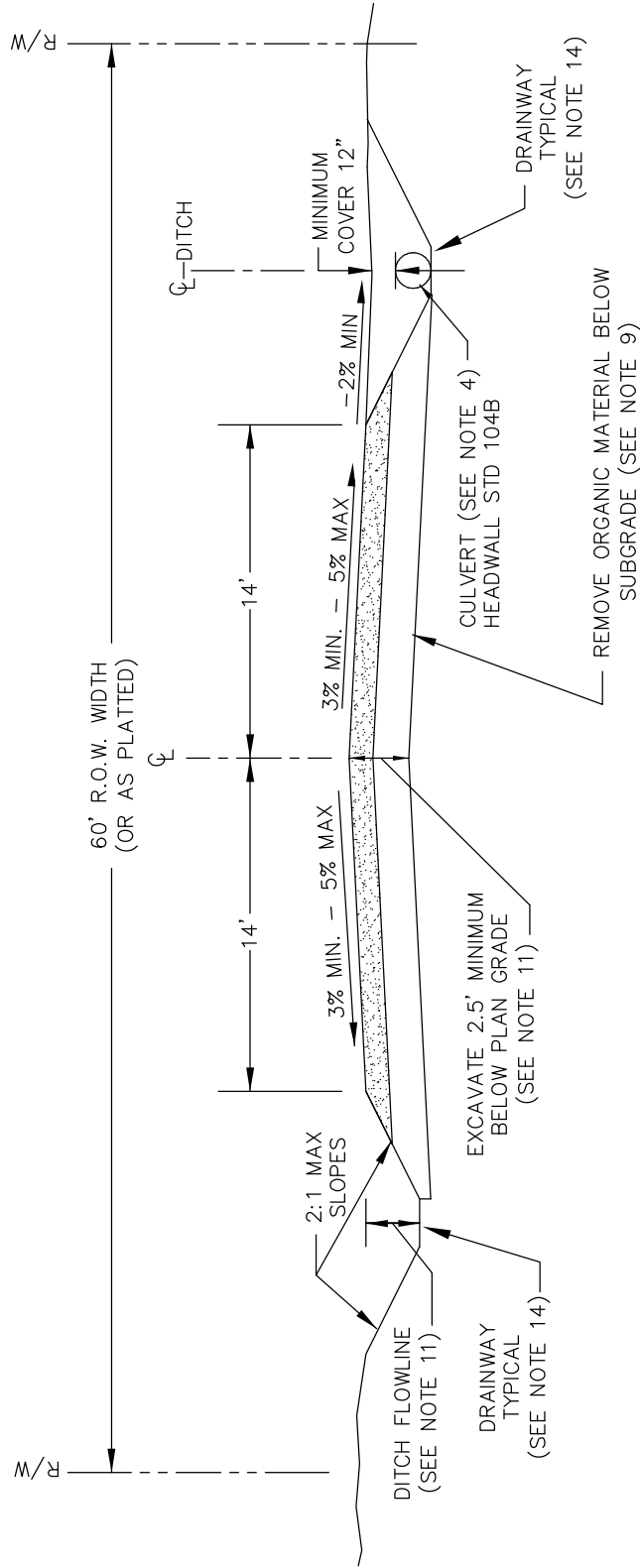
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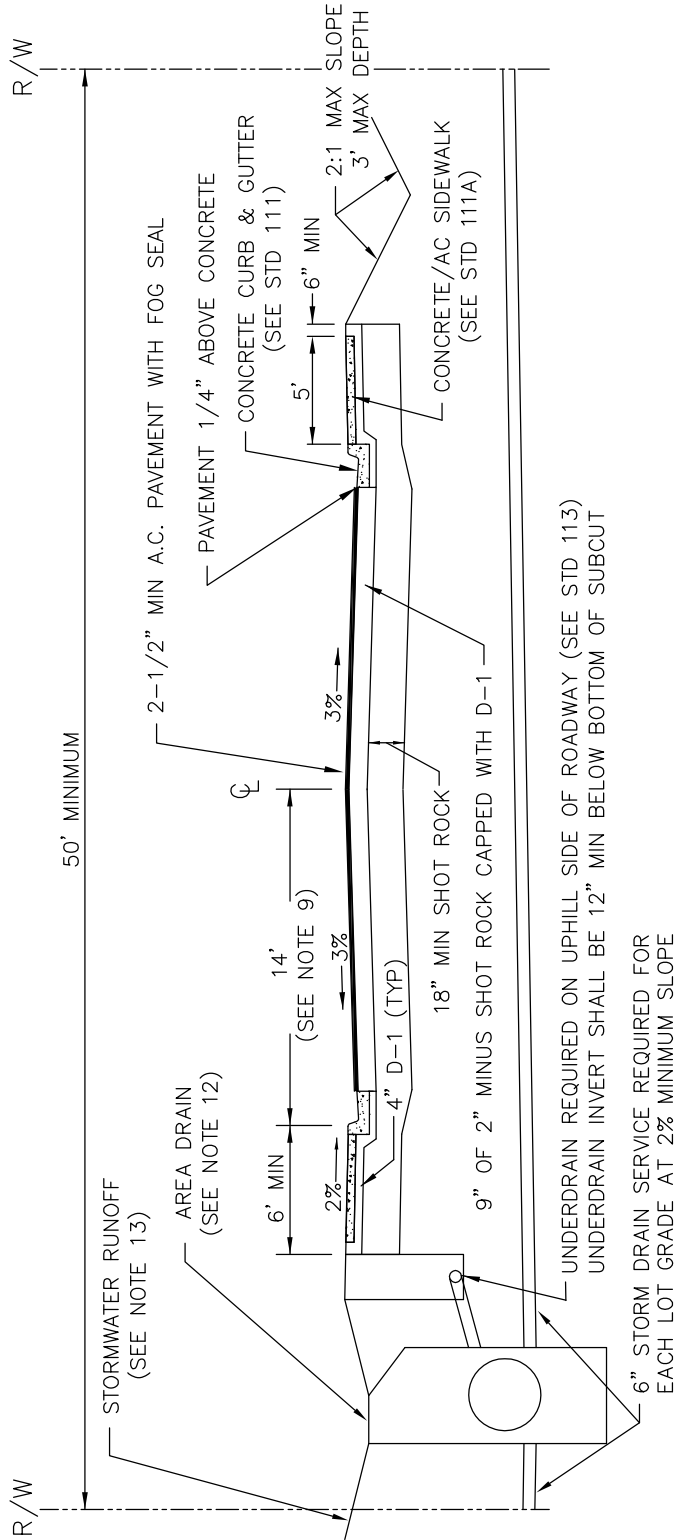
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**NOTES:**


1. MAXIMUM CENTERLINE ROAD GRADE SHALL BE 12%.
2. CENTERLINE ROAD GRADE WITHIN 100' OF INTERSECTIONS SHALL BE A MINIMUM OF -2% FOR 20 FEET AND A MAXIMUM OF 6% FOR 80 FEET MEASURED FROM THE EDGE OF PAVEMENT.
3. MINIMUM LONGITUDINAL DITCH SLOPE SHALL BE 0.5%. DITCHING IN STEEP TERRAIN SHALL BE INSTALLED ON THE UPHILL SIDE OF ROADWAY ONLY OR AS APPROVED BY THE ENGINEER.
4. ALL CULVERTS MUST BE AT LEAST 18" IN DIAMETER AND INSTALLED WITH HEADWALLS (SEE STD 104B).
5. RIGHT OF WAY AND ROADWAY PRISM SHALL BE CLEARED IN ACCORDANCE WITH SECTION 02201 - CLEARING AND GRUBBING.
6. EXCAVATION AND EMBANKMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 02202 - EXCAVATION AND EMBANKMENT.
7. ALL CUT AND FILL SLOPES SHALL BE TOPSOILED IN ACCORDANCE WITH SECTION 02709 - TOPSOIL, AS APPROVED BY THE ENGINEER.
8. ALL CUT AND FILL SLOPES SHALL BE SEEDING IN ACCORDANCE WITH SECTION 02710 - SEEDING AND THE MANUAL OF STORMWATER BEST MANAGEMENT PRACTICES AS APPROVED BY THE ENGINEER.
9. ALL ORGANIC SOILS SHALL BE REMOVED TO A MINIMUM DEPTH OF 5' FROM TOP OF SUBGRADE AND REPLACED WITH NFS MATERIAL WITHIN THE ROADWAY PRISM AS APPROVED BY THE ENGINEER.
10. THE ROADWAY PRISM SHALL BE WIDENED BY 2' WHEN GUARDRAIL IS REQUIRED. (SEE STD. 102B)
11. ROAD PRISM SHALL CONSIST OF 18" SHOT ROCK, 9" 2" MINUS ROCK AND 3" D-1.
12. IF DRAINAGE REQUIRES DITCHES DEEPER THAN 3', STORM DRAIN PIPE AND NECESSARY CATCH BASINS SHALL BE INSTALLED AS APPROVED BY THE ENGINEER.
13. FILTER FABRIC SHALL BE USED AS APPROVED AND/OR REQUIRED BY THE ENGINEER.
14. STORMWATER RUNOFF FROM PRIVATE PROPERTY SHALL BE DIRECTED INTO AN APPROVED DRAINAGE WAY PRIOR TO ENTERING THE ROADWAY PRISM AS APPROVED BY THE ENGINEER.

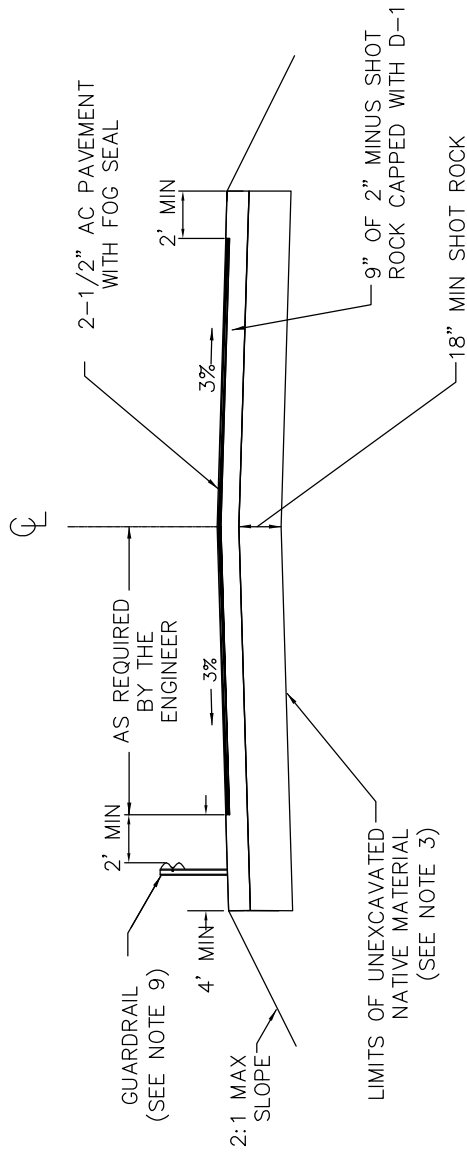
SCALE: NTS	DATE: 12/3/95	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: DRW/STAFF	CHECKED BY: JB/STAFF	GRAVEL SURFACE ROADWAY SECTION OUTSIDE URBAN SERVICE BOUNDARY	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 101	



**NOTES**

1. MAXIMUM ROAD GRADE SHALL BE 12%.
2. CENTERLINE ROAD GRADE WITHIN 100' OF INTERSECTIONS SHALL BE A MINIMUM OF -2% FOR 20' AND A MAXIMUM OF 6% FOR 80', MEASURED FROM EDGE OF PAVEMENT.
3. MINIMUM GRADE FOR CONCRETE GUTTER SHALL BE 0.5%.
4. RIGHT OF WAY AND ROADWAY PRISM SHALL BE CLEARED IN ACCORDANCE WITH SECTION 02201 - CLEARING AND GRUBBING.
5. EXCAVATION AND EMBANKMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 02202 - EXCAVATION AND EMBANKMENT.
6. ALL CUT AND FILL SLOPES SHALL BE SEEDED IN ACCORDANCE WITH SECTION 02710 - SEEDING AND THE MANUAL OF STORMWATER BEST MANAGEMENT PRACTICES AS APPROVED BY THE ENGINEER.
7. ALL CUT AND FILL SLOPES SHALL BE TOPSOILED IN ACCORDANCE WITH SECTION 02709 - TOPSOIL AS APPROVED BY THE ENGINEER.
8. ALL ORGANIC SOILS SHALL BE REMOVED TO A MINIMUM DEPTH OF 5' FROM TOP OF SUBGRADE WITHIN THE ROADWAY PRISM AS APPROVED BY THE ENGINEER.
9. HALFWIDTH SHALL BE 16' ON COLLECTOR STREETS.
10. IF A BIKE LANE IS REQUIRED BY THE ENGINEER, CONSTRUCTION SHALL CONFORM TO AASHTO SPECIFICATIONS.
11. ASPHALT CONCRETE SIDEWALKS MAY BE APPROVED AS DIRECTED BY THE ENGINEER.
12. CATCH BASIN WITH AREA DRAIN TO BE CONSTRUCTED 1 PER LOT OR AS DIRECTED BY THE ENGINEER.
13. STORMWATER RUNOFF FROM PRIVATE PROPERTY SHALL BE DIERECTED INTO AN APPROVED DRAINAGE WAY PRIOR TO ENTERING THE ROADWAY PRISM AS APPROVED BY THE ENGINEER.

SCALE: NTS	DATE: 2/21/97	CITY AND BOROUGH OF JUNEAU, ALASKA MINIMUM PAVED ROADWAY SECTION WITH CURB & GUTTER	
DRAWN BY: JFN	CHECKED BY: JB/STAFF		
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 102A	

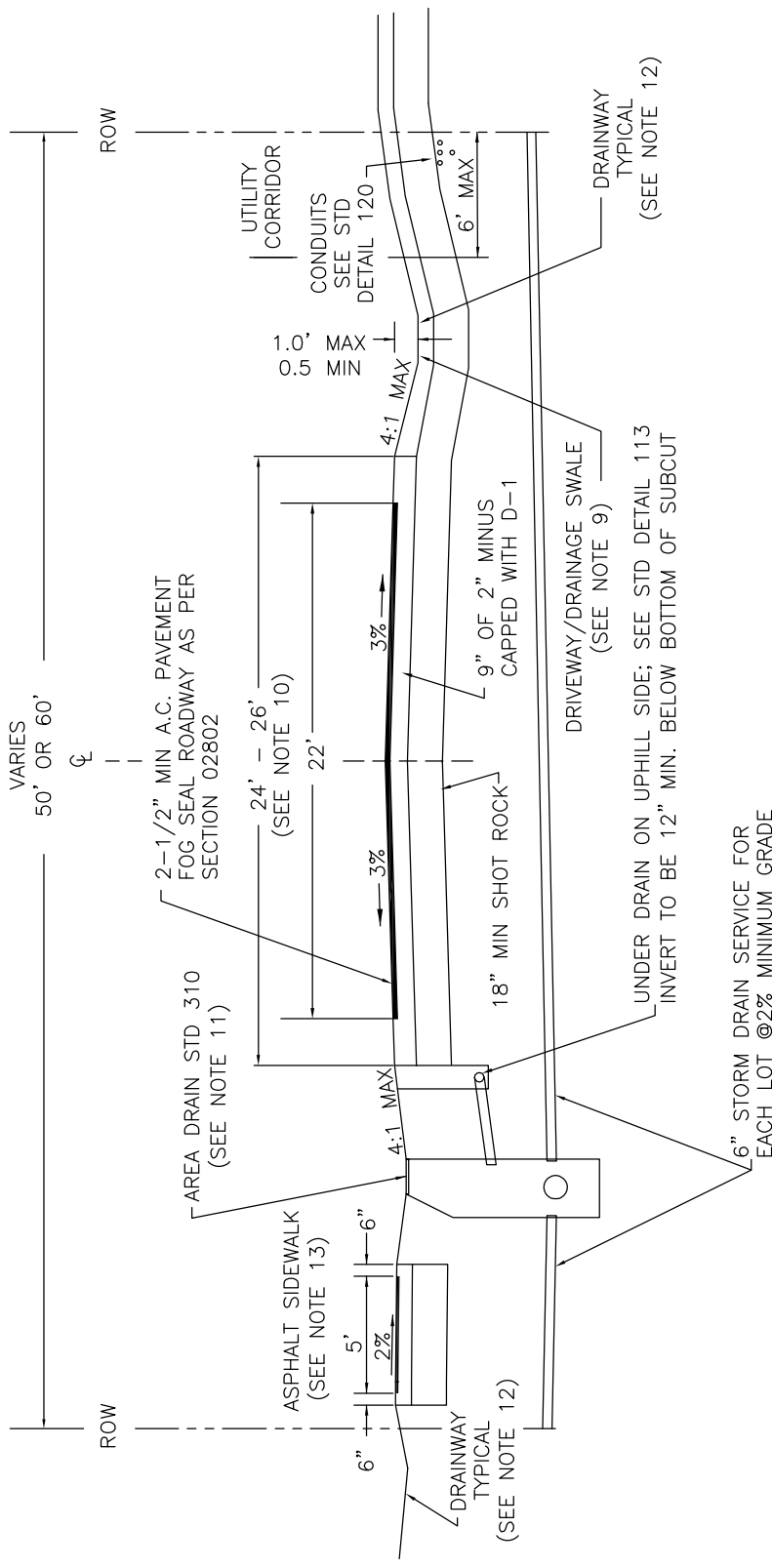


**NOTES**

1. MAXIMUM ROAD GRADE SHALL BE 12%.
2. CENTERLINE ROAD GRADE WITHIN 100' OF INTERSECTIONS SHALL BE A MINIMUM OF -2% FOR 20' AND A MAXIMUM OF 6% FOR 80', MEASURED FROM THE EDGE OF PAVEMENT.
3. ALL ORGANIC MATERIALS SHALL BE REMOVED TO A MINIMUM DEPTH OF 5' FROM TOP OF SUBGRADE WITHIN THE ROADWAY PRISM AND REPLACED WITH NFS MATERIAL AS APPROVED BY THE ENGINEER.
4. RIGHT OF WAY AND ROADWAY PRISM SHALL BE CLEARED IN ACCORDANCE WITH SECTION 02201 - CLEARING & GRUBBING.
5. EXCAVATION AND EMBANKMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 02202 - EXCAVATION AND EMBANKMENT.
6. ALL CUT AND FILL SLOPES SHALL BE SEEDED IN ACCORDANCE WITH SECTION 02710 - SEEDING AND THE MANUAL OF STORMWATER BEST MANAGEMENT PRACTICES AS APPROVED BY THE ENGINEER.
7. STORMWATER BEST MANAGEMENT PRACTICES AS APPROVED BY THE ENGINEER.
8. ALL CUT AND FILL SLOPES SHALL BE TOPSOILED IN ACCORDANCE WITH SECTION 02709 - TOPSOIL AS APPROVED BY THE ENGINEER.
9. GUARDRAIL CONSTRUCTION SHALL CONFORM TO SECTION 02708-GUARD RAIL, CBJ STANDARD SPECIFICATIONS FOR CIVIL ENGINEERING PROJECTS AND SUBDIVISION IMPROVEMENTS, ALASKA DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS, SECTION G AND CBJ STANDARD 110, GUARDRAIL.
10. STORMWATER RUNOFF FROM PRIVATE PROPERTY SHALL BE DIRECTED INTO AN APPROVED DRAINAGE WAY PRIOR TO ENTERING THE ROADWAY PRISM AS APPROVED BY THE ENGINEER.

SCALE: NTS	DATE: 12/3/96	CITY AND BOROUGH OF JUNEAU, ALASKA MINIMUM PAVED ROADWAY SECTION WITH GUARDRAIL	
DRAWN BY: DRW	CHECKED BY: JB/STAFF		
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 102B	

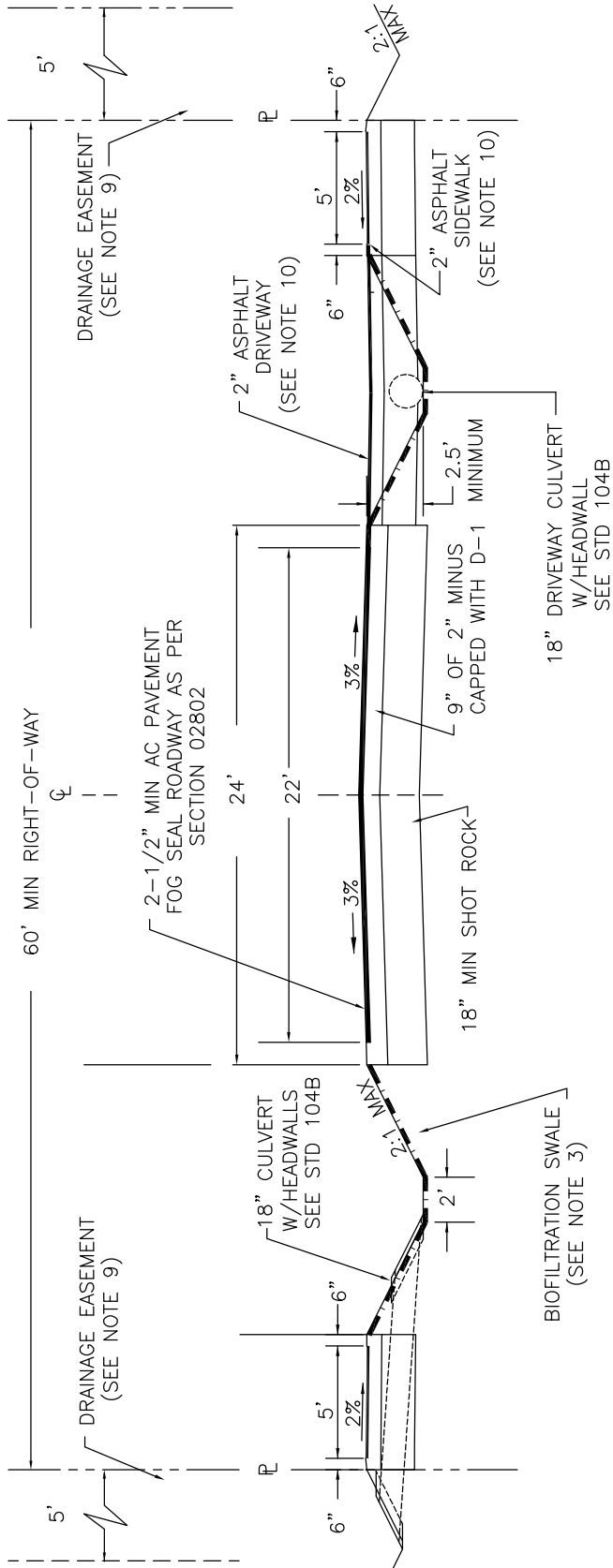




**NOTES**

1. MAXIMUM ROAD GRADE SHALL BE 12%.
2. CENTERLINE ROAD GRADE WITHIN 100' OF INTERSECTIONS SHALL BE -2% FOR 20' AND A MAXIMUM OF 6% FOR 80', MEASURED FROM THE EDGE OF PAVEMENT.
3. MINIMUM GRADE FOR CONCRETE CURB AND GUTTER SHALL BE 0.5%
4. RIGHT OF WAY AND ROADWAY PRISM SHALL BE CLEARED IN ACCORDANCE WITH SECTION 02201 - CLEARING AND GRUBBING.
5. EXCAVATION AND EMBANKMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 02202 - EXCAVATION AND EMBANKMENT
6. ALL CUT AND FILL SLOPES SHALL BE TOPSOILED IN ACCORDANCE WITH SECTION 02709 - TOPSOIL, AS APPROVED BY THE ENGINEER
7. ALL CUT AND FILL SLOPES SHALL BE SEEDED IN ACCORDANCE WITH SECTION 02710 - SEEDING AND THE MANUAL OF STORMWATER BEST MANAGEMENT PRACTICES AS APPROVED BY THE ENGINEER.
8. ALL ORGANIC MATERIALS SHALL BE REMOVED TO A MINIMUM DEPTH OF 5' FROM TOP OF SUBGRADE AND REPLACED WITH NFS MATERIAL WITHIN THE ROADWAY PRISM AS APPROVED BY THE ENGINEER.
9. DRIVEWAY/DRAINAGE SWALE SHALL BE CONSTRUCTED WITH 18"-SHOT ROCK, 6"-2" MINUS, 2"- D-1 TO PROPERTY LINE. DRIVEWAY GRADIENT TO BE 4:1 MAX WITH A DEPTH NO GREATER THAN 1FT.
10. CATCH BASIN WITH AREA DRAIN SHALL BE INSTALLED ONE PER LOT OR AS REQUIRED BY THE ENGINEER.
11. ASPHALT SIDEWALK SHALL BE CONSTRUCTED WITH 18"-SHOT ROCK, 6"-2" MINUS, 2"- D-1, 2" A.C. PAVEMENT.
12. STORMWATER RUNOFF FROM PRIVATE PROPERTY SHALL BE DIRECTED INTO AND APPROVED DRAINAGE WAY PRIOR TO ENTERING THE ROADWAY PRISM AS APPROVED BY THE ENGINEER. RUNOFF TO BE CAPTURED PRIOR TO CROSSING ASPHALT SIDEWALK.

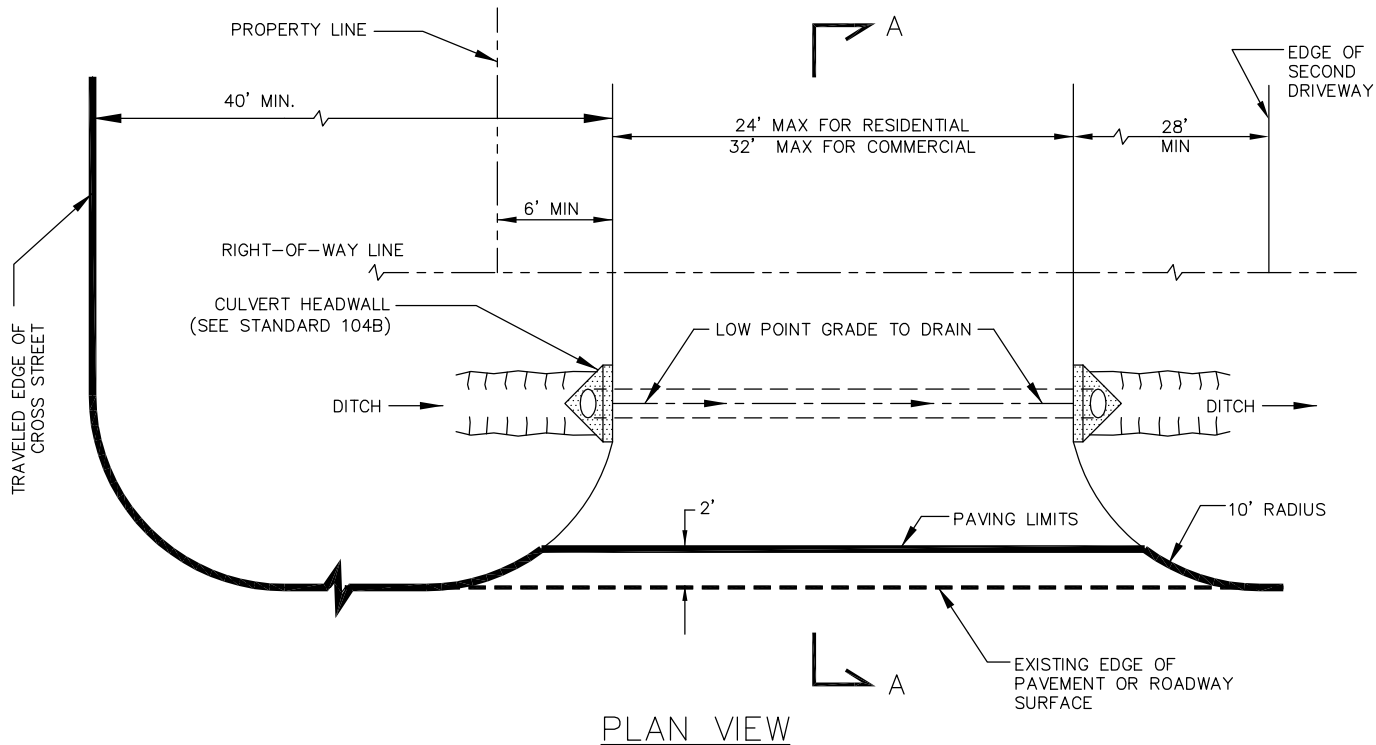
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DRAWN BY: JFN	CHECKED BY: JB/STAFF	LOCAL ACCESS STREET SECTION	
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 102C	



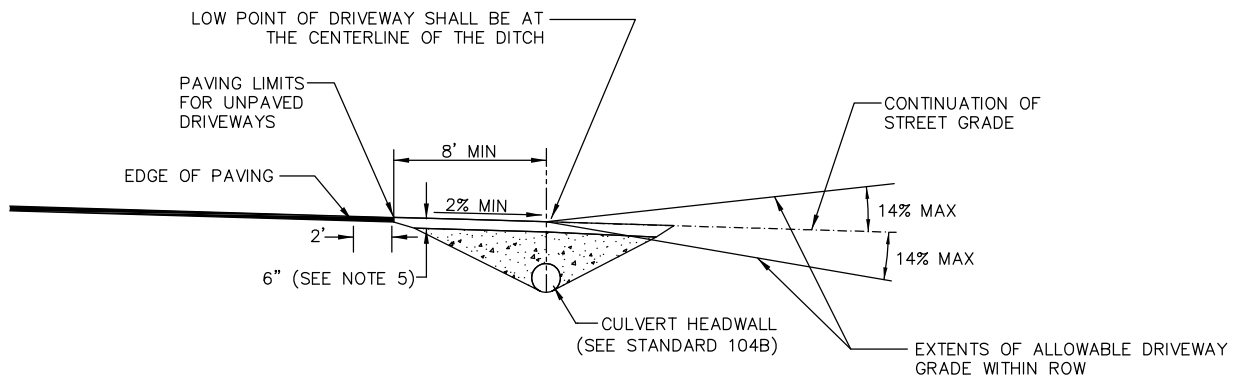
**NOTES**

1. MAXIMUM ROAD GRADE SHALL BE 12%.
2. CENTERLINE ROAD GRADE WITHIN 100' OF INTERSECTIONS SHALL BE A MINIMUM OF -2% FOR 20' AND A MAXIMUM OF 6% FOR 80' MEASURED FROM THE EDGE OF PAVEMENT.
3. BIOFILTRATION SWALES SHALL BE CONSTRUCTED PER THE GUIDELINES SET FORTH IN THE CBJ MANUAL OF STORMWATER BEST MANAGEMENT PRACTICES. UNDERDRAINS AND UNDERGROUND STORMWATER PIPING MAY BE REQUIRED IN ADDITION TO THE SWALES.
4. ALL ORGANIC MATERIALS SHALL BE REMOVED TO A MINIMUM DEPTH OF 5' FROM TOP OF SUBGRADE AND REPLACED WITH NFS MATERIAL WITHIN THE ROADWAY PRISM AS APPROVED BY THE ENGINEER.
5. RIGHT OF WAY AND ROADWAY PRISM SHALL BE CLEARED IN ACCORDANCE WITH SECTION 02201 - CLEARING AND GRUBBING.
6. EXCAVATION AND EMBANKMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 02202 - EXCAVATION AND EMBANKMENT.
7. ALL CUT AND FILL SLOPES SHALL BE SEEDING IN ACCORDANCE WITH SECTION 02710 - SEEDING AND THE MANUAL OF STORMWATER BEST MANAGEMENT PRACTICES AS APPROVED BY THE ENGINEER.
8. ALL CUT AND FILL SLOPES SHALL BE TOPSOILED IN ACCORDANCE WITH SECTION 02709 - TOPSOIL, AS APPROVED BY THE ENGINEER.
9. PRIVATE DRAINAGE EASEMENT SHALL COLLECT ON LOT DRAINAGE TO BE DIRECTED INTO THE BIOFILTRATION SWALE AS APPROVED BY THE ENGINEER.
10. ASPHALT DRIVEWAYS AND SIDEWALK SHALL BE CONSTRUCTED WITH A MINIMUM OF 18"-SHOT ROCK, 6"-2" MINUS, 2"- D-1, 2" A.C. PAVEMENT.

SCALE: NTS	DATE: 8/25/10	CITY AND BOROUGH OF JUNEAU, ALASKA LOCAL ACCESS STREET WITH BIOFILTRATION SWALE	
DRAWN BY: STAFF	CHECKED BY: JB/STAFF		
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 102D	



PLAN VIEW

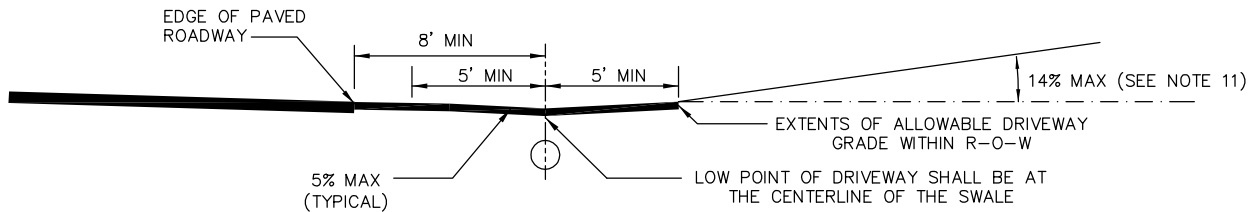
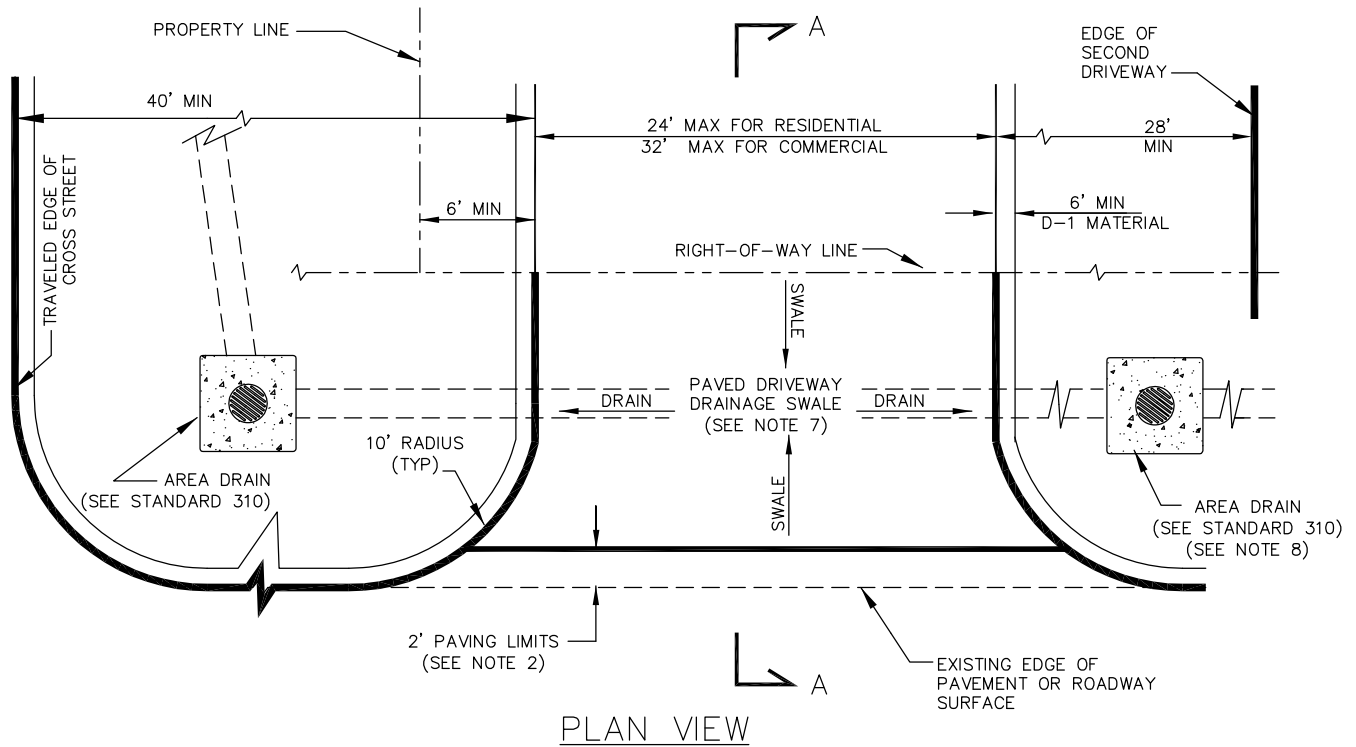


SECTION A-A

NOTES:

1. CULVERT MUST SLOPE TO MATCH FLOWLINE OF THE DITCH OR AS APPROVED BY THE ENGINEER.
2. COMBINED DRIVEWAYS ARE ALLOWED WHEN APPROVED BY THE CBJ PLANNING COMMISSION FOR SUBDIVISIONS OR CONDITIONAL USE. COMBINED ZERO LOT LINE PROPERTIES' DRIVEWAYS SHALL NOT EXCEED 32' IN WIDTH.
3. PAVING LIMIT FOR DRIVEWAYS SHALL BE 2' FROM THE EDGE OF ROADWAY OR AS APPROVED BY THE ENGINEER.
4. DRIVEWAY SHALL BE GRADED TO DRAIN INTO DITCH.
5. ON PAVED DRIVEWAYS, EXTEND HEADWALL TO MEET PAVING. ON UNPAVED DRIVEWAYS TOP OF HEADWALL SHALL BE A MINIMUM OF 6" BELOW THE DRIVEWAY SURFACE.
6. SUBBASE MATERIAL AND DEPTH WITHIN THE ROW SHALL CONFORM TO STANDARD 102C.
7. IF THERE IS A CURB BOX/WATER VALVE IN DRIVEWAY REFER TO STANDARD 419 FOR CURB BOX ELEVATION AND THAW WIRE.
8. STANDARD CULVERT DIAMETER IS A MINIMUM OF 18" WITH A MIN OF 12" COVER TO FINISHED SURFACE. 12" CULVERTS MAY BE ALLOWED AT THE DISCRETION OF ENGINEER.

SCALE: NTS	DATE: 7/5/95	CITY AND BOROUGH OF JUNEAU, ALASKA DRIVEWAY FOR STREETS WITHOUT CURB & GUTTER	
DRAWN BY: DRW	CHECKED BY: JB/STAFF		
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 103A	

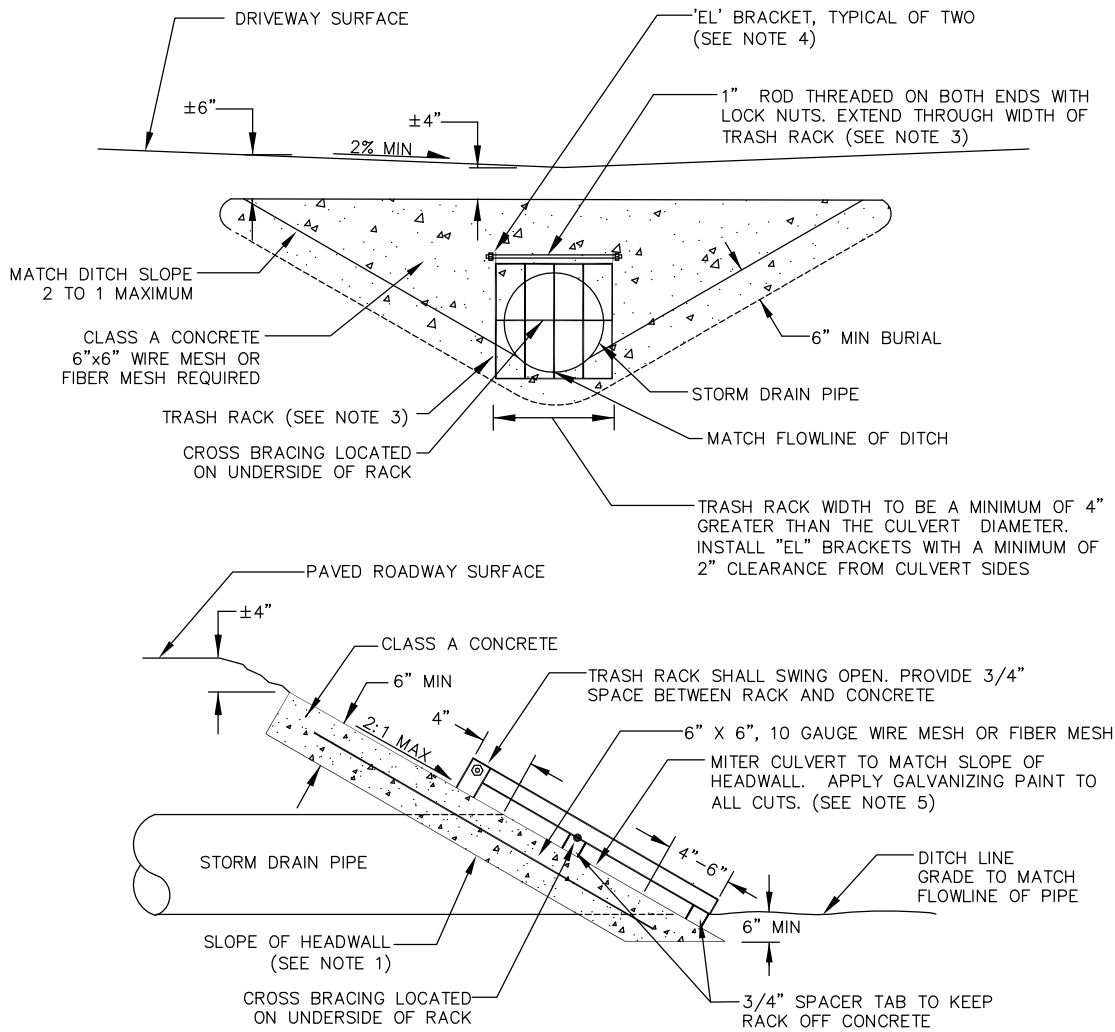


SECTION A-A

NOTES:

1. COMBINED DRIVEWAYS ARE ALLOWED WHEN APPROVED BY THE CBJ PLANNING COMMISSION FOR SUBDIVISIONS OR CONDITIONAL USE. COMBINED ZERO LOT LINE PROPERTIES' DRIVEWAYS SHALL NOT EXCEED 32' IN WIDTH.
2. PAVING LIMIT FOR DRIVEWAYS SHALL BE 2' FROM THE EDGE OF ROADWAY OR AS APPROVED BY THE ENGINEER.
3. DRIVEWAY SHALL BE GRADED TO DRAIN INTO DITCH.
4. ON PAVED DRIVEWAYS, EXTEND HEADWALL TO MEET PAVING. ON UNPAVED DRIVEWAYS TOP OF HEADWALL SHALL BE A MINIMUM OF 6" BELOW THE DRIVEWAY SURFACE.
5. SUBBASE MATERIAL AND DEPTH WITHIN THE RIGHT-OF-WAY SHALL CONFORM TO STANDARD 102C.
6. IF THERE IS A CURB BOX MARKING A WATER VALVE IN DRIVEWAY REFER TO STANDARD 419 FOR CURB BOX ELEVATION AND THAW WIRE.
7. THE SUM OF THE ALGEBRAIC GRADE CHANGE SHALL BE NO GREATER THAN 10% FOR A MINIMUM OF 5 FEET EACH DIRECTION FROM THE LOW POINT OF THE DRIVEWAY.
8. AREA DRAINS ARE REQUIRED BETWEEN EACH DRIVEWAY UNLESS APPROVED BY THE ENGINEER. A MAXIMUM OF TWO DRIVEWAYS BETWEEN AREA DRAINS.
9. 14% MAXIMUM DRIVEWAY GRADE UNLESS OTHERWISE APPROVED BY THE CAPITAL CITY FIRE DEPARTMENT AND THE ENGINEER.
10. FOR ROADWAYS WITH SIDEWALKS MATCH STANDARD DETAIL 105 FOR DRIVEWAY ALIGNMENT.

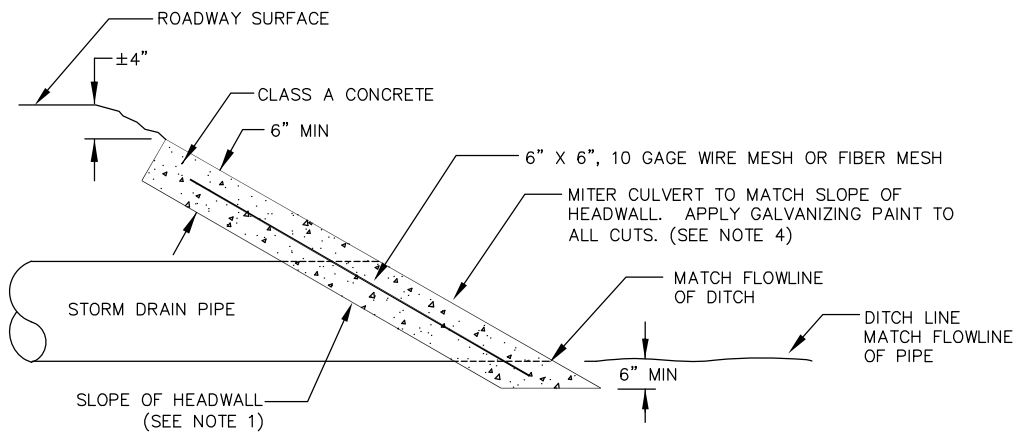
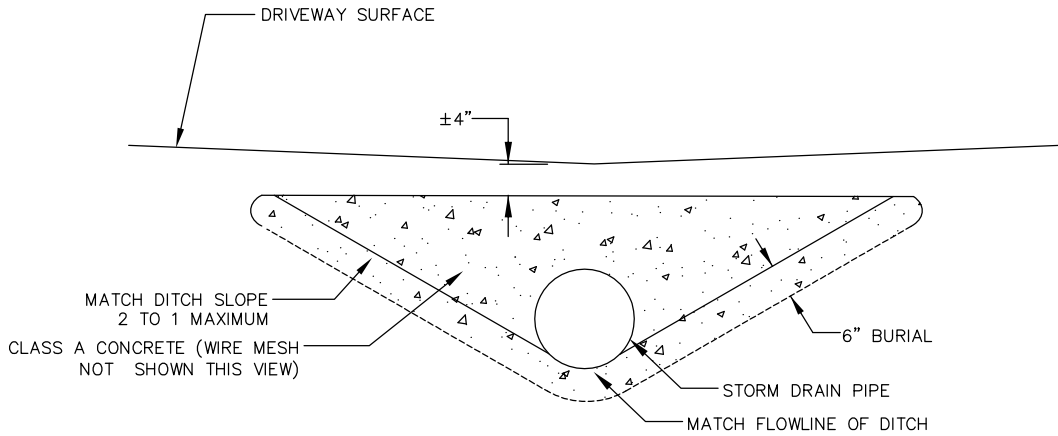
SCALE: NTS	DATE: 7/5/95	CITY AND BOROUGH OF JUNEAU, ALASKA DRIVEWAY FOR STREETS WITH AREA DRAINS	
DRAWN BY: DRW/STAFF	CHECKED BY: JB/STAFF		
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 103B	



**NOTES:**

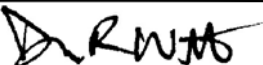
1. SLOPE OF HEADWALL SHALL BE 2:1 OR FLATTER AND SHALL BE DETERMINED BY THE ENGINEER.
2. TRASH RACKS SHALL BE REQUIRED ON HEADWALLS AT UP STREAM ENDS OF CULVERTS ENTERING CLOSED STORM DRAIN SYSTEMS.
3. GRATE, 'EL' AND THREADED ROD SHALL BE CONSTRUCTED OF FLAT BARS OF EITHER 6061 ALUMINUM OR HOT DIPPED GALVANIZED STEEL.
4. INSTALL 'EL' BRACKETS A MINIMUM OF 2" INTO WET CONCRETE.
5. IF CORRUGATED PLASTIC PIPE IS USED, EMPTY WATER FROM CORRUGATIONS ON MITERED ENDS AND THEN COMPLETELY FILL VOIDS WITH CONCRETE GROUT.
6. NO HEADWALLS ARE TO BE CONSTRUCTED WITHIN ADOT RIGHT-OF-WAY UNLESS DIRECTED BY THE ENGINEER.

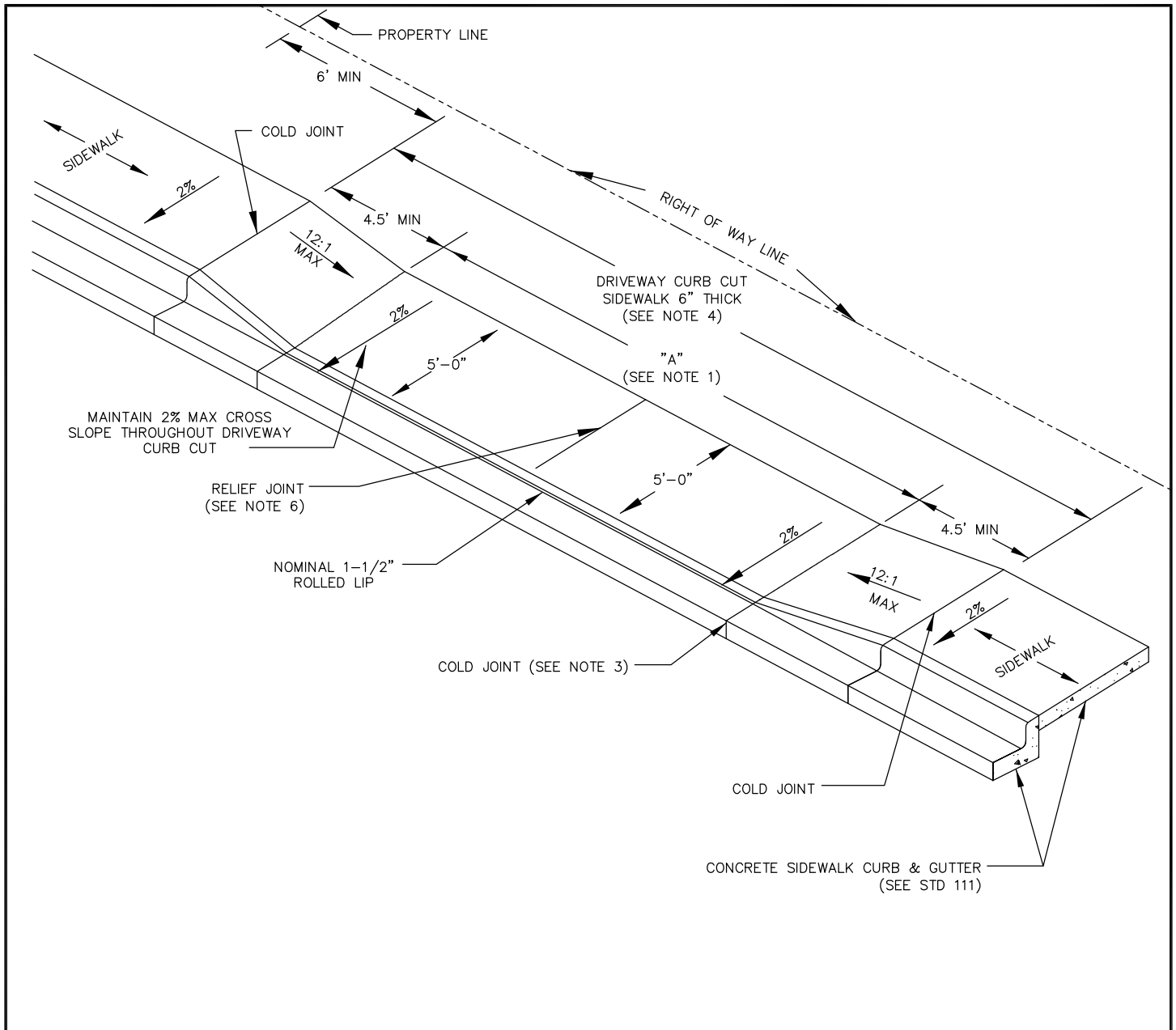
SCALE: NTS	DATE: 12/3/96	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: DRW	CHECKED BY: JB/STAFF	CULVERT HEADWALL WITH HINGED TRASH RACK	
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 104A	



**NOTES:**

1. SLOPE OF HEADWALL SHALL BE 2:1 OR FLATTER AND SHALL BE DETERMINED BY THE ENGINEER.
2. TRASH RACKS SHALL BE REQUIRED ON HEADWALLS AT UP STREAM ENDS OF CULVERTS ENTERING CLOSED STORM DRAIN SYSTEMS. SEE STANDARD 104A.
3. NO HEADWALLS ARE TO BE CONSTRUCTED WITHIN ADOT RIGHT-OF-WAYS UNLESS DIRECTED BY THE ENGINEER.
4. IF CORRUGATED PLASTIC PIPE IS USED, EMPTY WATER FROM CORRUGATIONS ON MITERED ENDS AND THE COMPLETELY FILL VOIDS WITH CONCRETE.

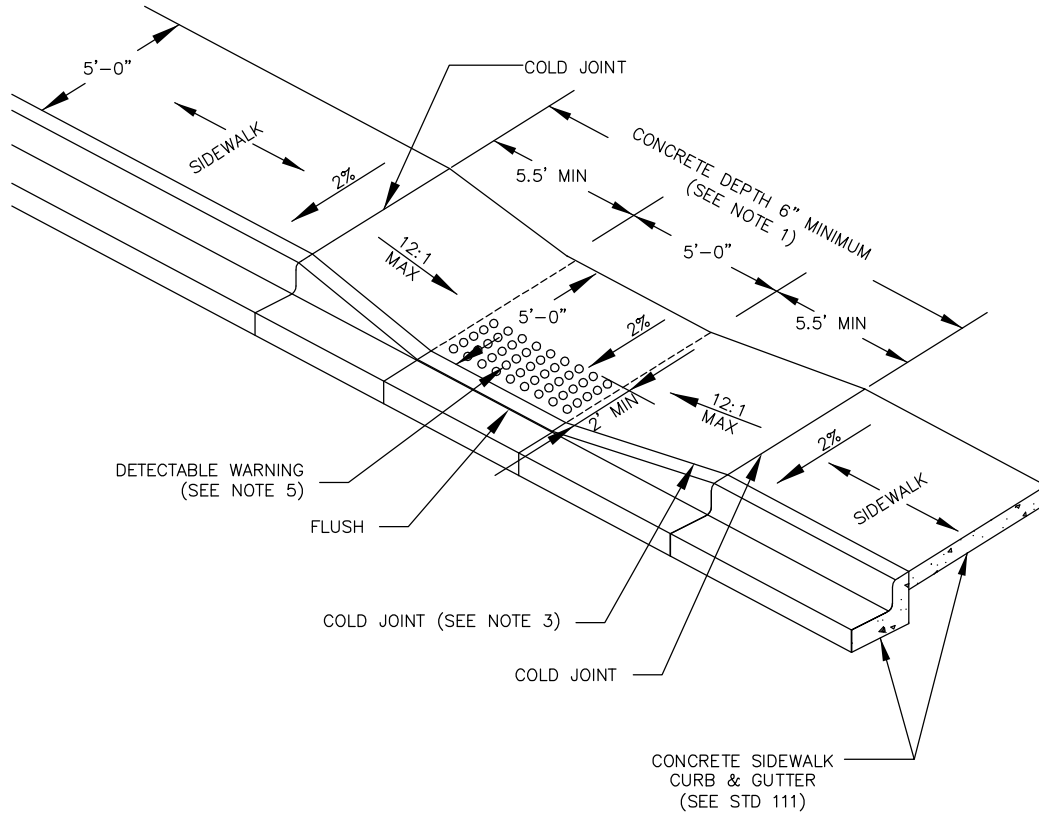
SCALE: NTS	DATE: 12/3/96	CITY AND BOROUGH OF JUNEAU, ALASKA CULVERT HEADWALL WITHOUT HINGED TRASH RACK	
DRAWN BY: JFN	CHECKED BY: JB/STAFF		
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 104B	



**NOTES**

1. "A" EQUALS WIDTH OF DRIVEWAY AT PROPERTY LINE. MAXIMUM WIDTH SHALL BE 24' FOR SINGLE FAMILY RESIDENCES AND 32' FOR COMMERCIAL FACILITIES OR COMBINED DRIVEWAYS. DRIVEWAYS MAY NOT BE CONSTRUCTED WITHIN 6' OF THE PROPERTY LINE OR 40' FROM THE EDGE OF PAVEMENT AT INTERSECTIONS.
2. ALL CONCRETE SHALL MEET THE REQUIREMENTS OF STANDARD SPECIFICATION 03303 - SIDEWALK CURB AND GUTTER. THE CURING COMPOUND CONCRETE INTERNATIONAL CORPORATION ASHFORD FORMULA OR APPROVED EQUAL SHALL BE APPLIED PER THE MANUFACTURER'S RECOMMENDATIONS.
3. COLD JOINT REQUIRED BETWEEN SIDEWALK AND DRIVEWAY AND BETWEEN SIDEWALK AND CURB.
4. ALL CONCRETE WITHIN THE DRIVEWAY CURB CUT SHALL BE A MINIMUM 6" THICK AND SHALL BE POURED ON A 4" BASE OF D-1 COMPACTED TO 95% OF ITS MAXIMUM DENSITY.
5. 6"x 6" #10 GAUGE WIRE MESH REINFORCEMENT INSTALLED AT MID-DEPTH OR #4 REBAR SPACED APPROPRIATELY MAY BE SUBSTITUTED FOR FIBER MESH REINFORCED CONCRETE. ALL STEEL MUST HAVE A MINIMUM OF 2" OF CONCRETE COVER.
6. RELIEF JOINT REQUIRED IF "A" IS GREATER THAN 15'.

<b>SCALE:</b> NTS	<b>DATE:</b> 5/5/99	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>	
<b>DRAWN BY:</b> TAD	<b>CHECKED BY:</b> JB/STAFF	<b>DRIVEWAY CURB CUT</b>	
<b>APPROVED BY:</b> 		<b>REVISED:</b> 8/14/2011	<b>STANDARD 105</b>

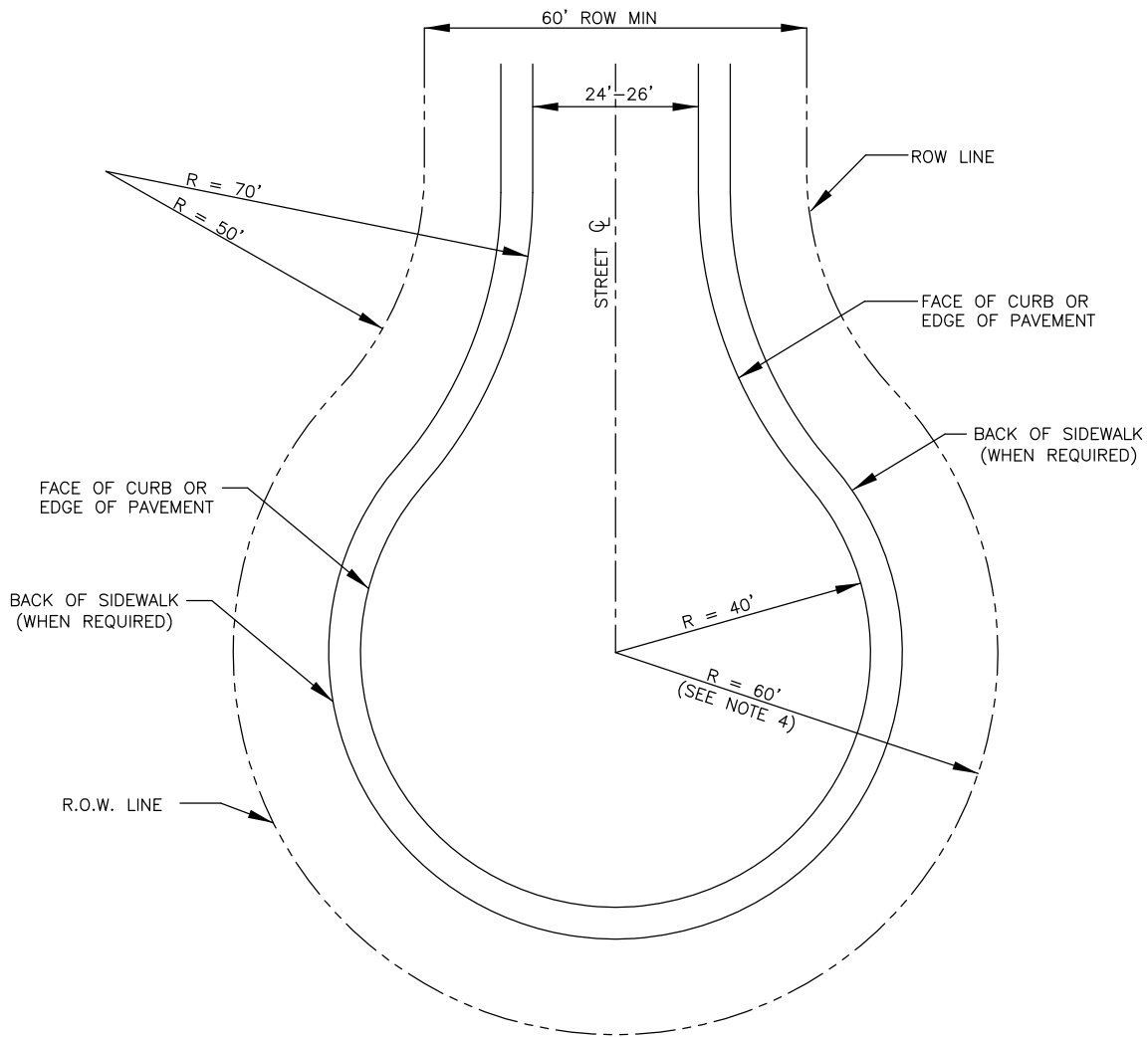


**NOTES:**

1. CONCRETE INTERNATIONAL CORPORATION ASHFORD FORMULA OR APPROVED EQUAL SHALL BE APPLIED AS A CURING COMPOUND. APPLICATION SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATIONS.
2. COLD JOINT REQUIRED BETWEEN SIDEWALK, CURB AND RAMP.
3. WIRE MESH IN CONCRETE, 4" COMPACTED D-1 BASE AND 24" ADDITIONAL NON-FROST SUSCEPTIBLE MATERIAL AS SHOWN IN GENERAL SIDEWALK STANDARD 111A ARE REQUIRED FOR CURB RAMPS. FIBER REINFORCING MAY BE ALLOWED PER THE ENGINEER.
4. MINIMUM THICKNESS ON ALL CONCRETE IS 6" WITHIN THE RAMP AND TRANSITIONS.
5. DETECTABLE WARNING, YELLOW TRUNCATED DOMES, FULL LENGTH OF CURBCUT, 2' WIDE.

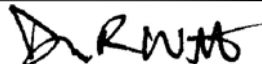
SCALE: NTS	DATE: 4/11/00	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: TAD	CHECKED BY: JB/STAFF	ACCESSIBLE SIDEWALK RAMP	
APPROVED BY: <i>[Signature]</i>	REVISED: 8/14/2011	STANDARD 106	

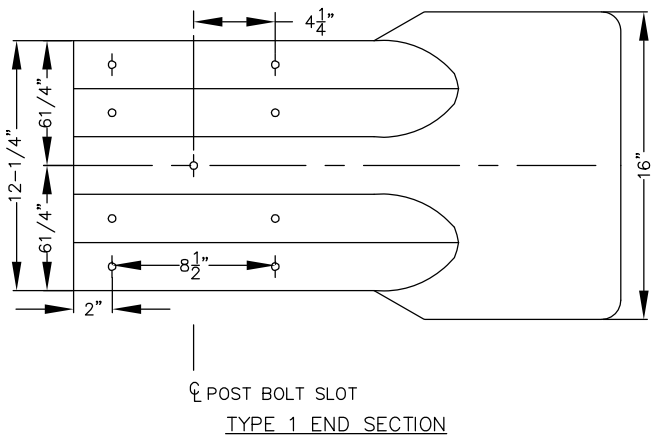
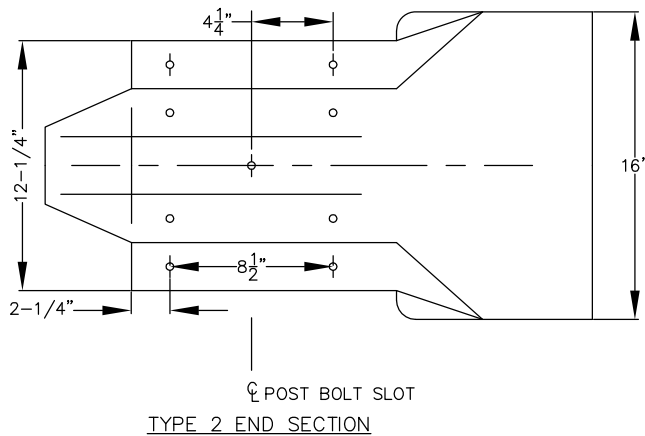
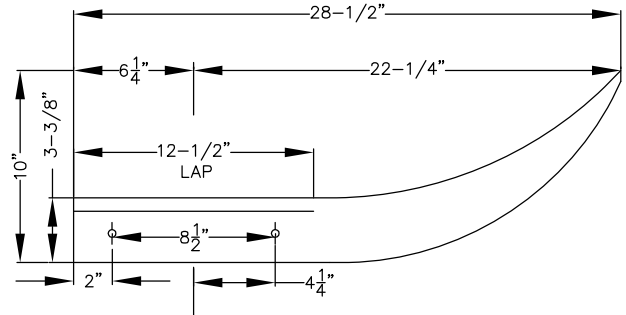
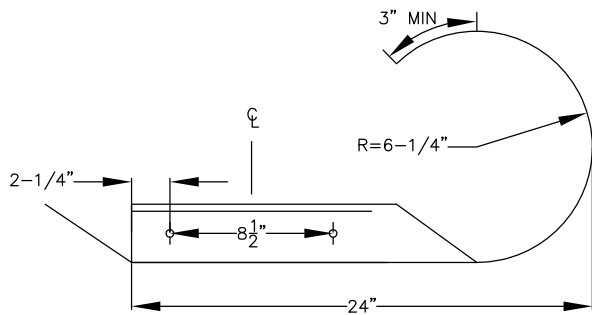
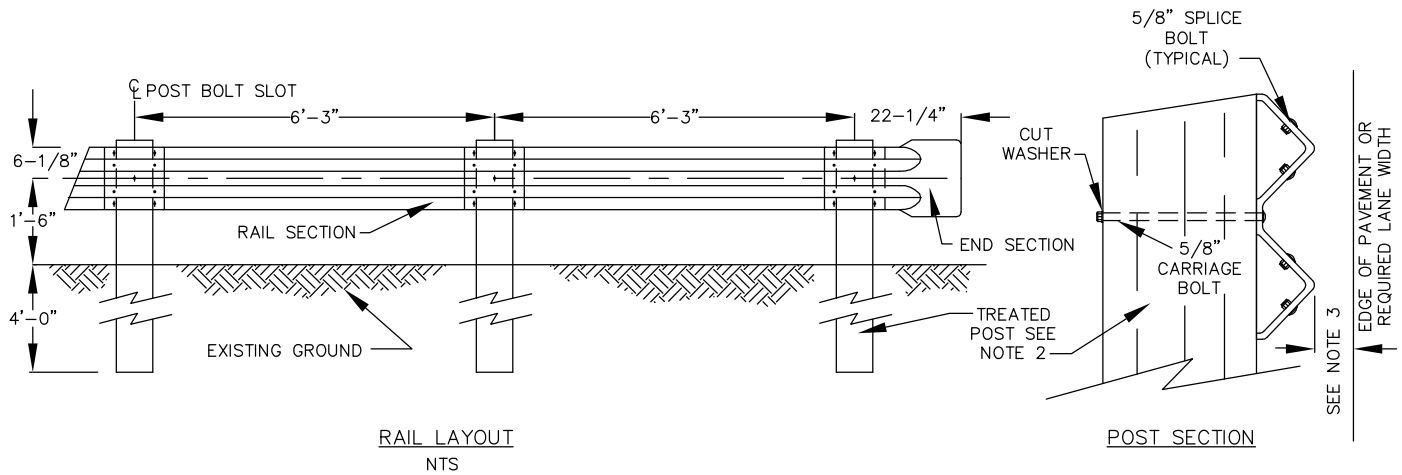




**NOTES:**

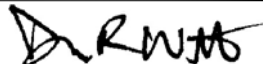
1. WHEN CURB AND GUTTER IS NOT REQUIRED, THE RADIUS TO THE EDGE OF PAVEMENT SHALL NOT BE LESS THAN 40 FEET.
2. THE DISTANCE FROM THE RADIUS POINT TO THE CENTERLINE OF THE NEAREST INTERSECTION SHALL NOT BE LESS THAN 150 FEET.
3. CROWN GRADE SHALL BE 3% FOR ASPHALTED STREETS, AND BETWEEN 3% TO 5% FOR GRAVEL STREETS AS DETERMINED BY THE ENGINEER.
4. WHEN CURB, GUTTER AND SIDEWALK ARE CONSTRUCTED, THE RADIUS OF THE CUL-DE-SAC RIGHT OF WAY MAY BE REDUCED TO 50'.
5. UTILITY PEDESTALS AND ELECTRICAL TRANSFORMERS MAY REQUIRE EASEMENTS TO BE PLATTED BEYOND THE RIGHT OF WAY LINE.
6. CONSTRUCTION SPECIFICATIONS SHALL BE IN ACCORDANCE WITH STANDARD DETAILS.
7. TOTAL GRADE ACROSS THE CUL-DE-SAC IS NOT TO EXCEED 5%.

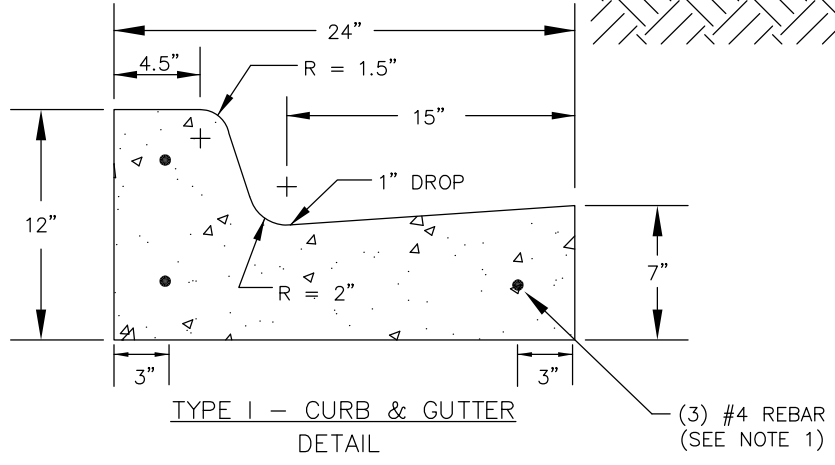
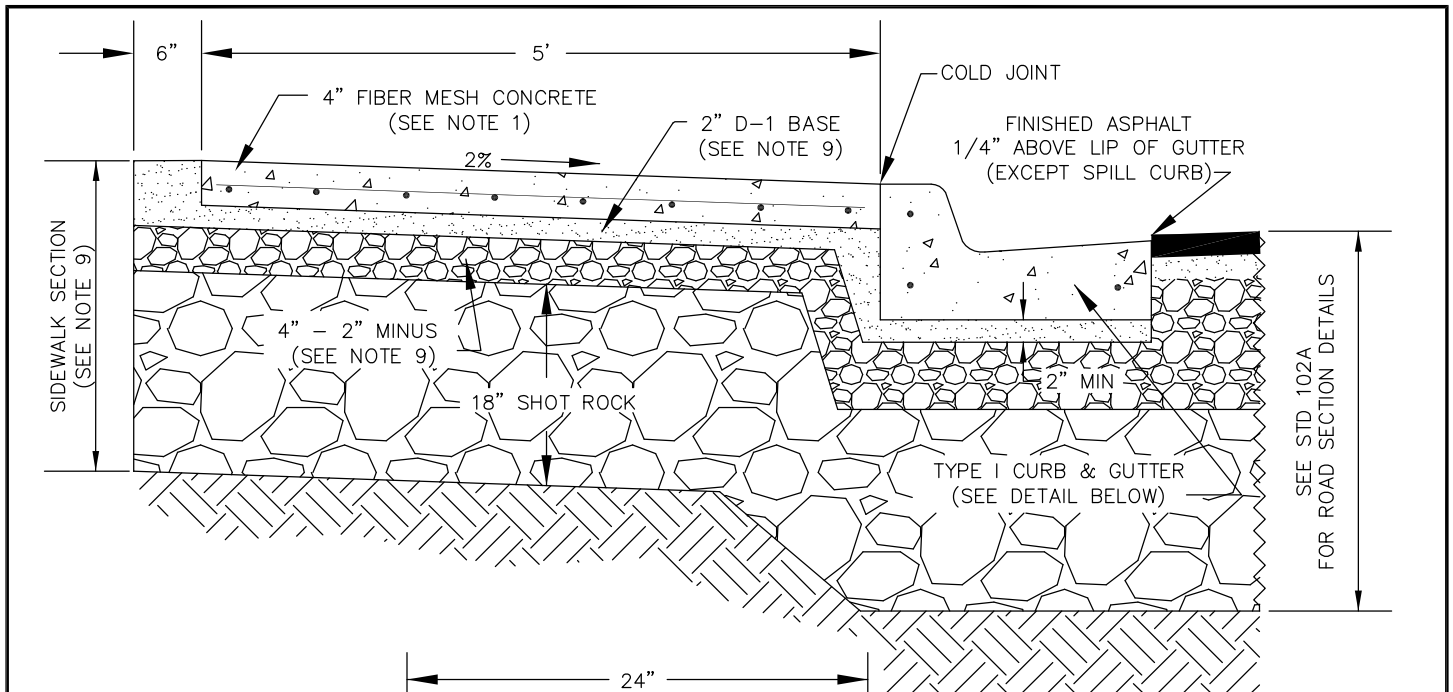
SCALE: NTS	DATE: 4/1/08	CITY AND BOROUGH OF JUNEAU, ALASKA LOCAL ACCESS STREET CUL-DE-SAC	
DRAWN BY: TAD	CHECKED BY: JB/STAFF		
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 107	



**NOTES:**

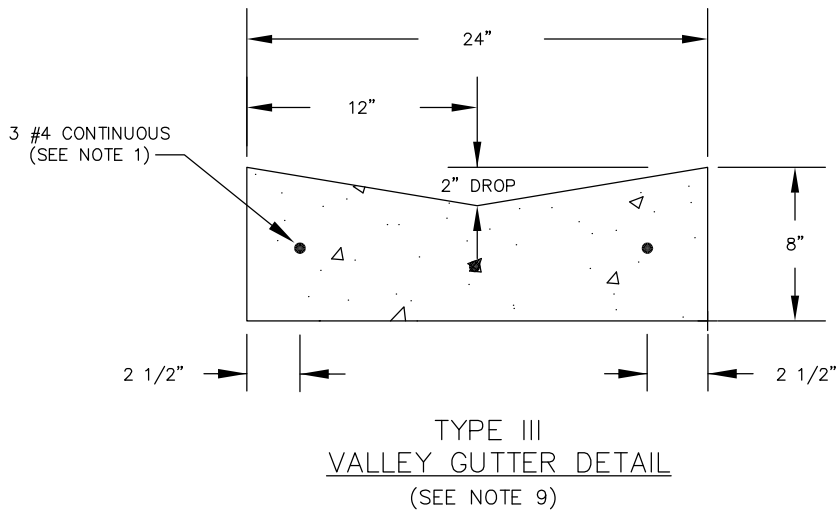
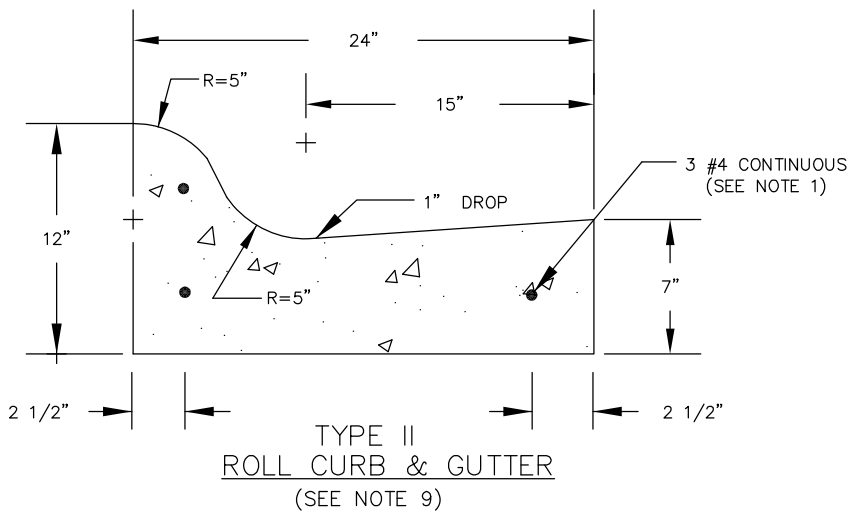
1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO SECTION 02708-GUARDRAIL, OF THE MOST CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CIVIL ENGINEERING PROJECTS AND SUBDIVISION IMPROVEMENTS.
2. W 6"x8"x6'-0" STEEL POST MAY BE SUBSTITUTED FOR PRESSURE TREATED POST.
3. 2' MINIMUM OFFSET FROM EDGE OF PAVEMENT OR REQUIRED LANE WIDTH. SEE STANDARD DETAIL 102B.

<b>SCALE:</b> NTS	<b>DATE:</b> 1/4/09	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b> <b>GUARDRAIL</b>	
<b>DRAWN BY:</b> RDK	<b>CHECKED BY:</b> JB/STAFF		
<b>APPROVED BY:</b> 		<b>REVISED:</b> 8/14/2011	<b>STANDARD 110</b>



- NOTES:**
1. CONCRETE SHALL BE CLASS A, FIBER MESH REINFORCED IN ACCORDANCE WITH CBJ STANDARD SPECIFICATION SECTION 03303 – SIDEWALK, CURB AND GUTTER. REBAR IN CURB AND WIRE MESH IN SIDEWALK IS ALLOWED AS SHOWN.
  2. CONCRETE INTERNATIONAL CORPORATION ASHFORD FORMULA OR APPROVED EQUAL SHALL BE APPLIED AS A CURING COMPOUND. APPLICATION SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATIONS.
  3. COLD JOINTS ARE REQUIRED EVERY 10' MAXIMUM. ALL JOINTS AND SEAMS SHALL BE EDGED.
  4. STEEL TROWELING FINISH REQUIRED PRIOR TO BROOM FINISHING ON ALL SURFACES.
  5. CURB AND GUTTER TRANSITION DESIGN TO BE APPROVED BY THE ENGINEER.
  6. TYPE II AND TYPE III CURB TO BE USED AS DIRECTED BY THE ENGINEER IN ACCORDANCE TO CBJ STANDARD 104B.
  7. ALL REINFORCING STEEL MUST HAVE A MINIMUM OF 2" OF CONCRETE COVER WHEN SUBSTITUTED FOR FIBER MESH.
  8. WHEELCHAIR ACCESS RAMPS SHALL BE REQUIRED ON ALL NEW SIDEWALK CONSTRUCTION AT CROSSWALKS AND INTERSECTIONS. ACCESS RAMPS TO BE CONSTRUCTED IN ACCORDANCE TO CBJ STANDARD 106.
  9. 4" CONCRETE SIDEWALK SUBBASE SHALL BE 2" D-1, 4" 2" MINUS AND 18" OF SHOT ROCK. 2" ASPHALT SIDEWALK SUBBASE SHALL BE 2" D-1, 6" 2" MINUS AND 18" SHOT ROCK.
  10. MINIMUM LONGITUDINAL SLOPE FOR CURB AND GUTTER SHALL BE NO LESS THAN 0.5%.

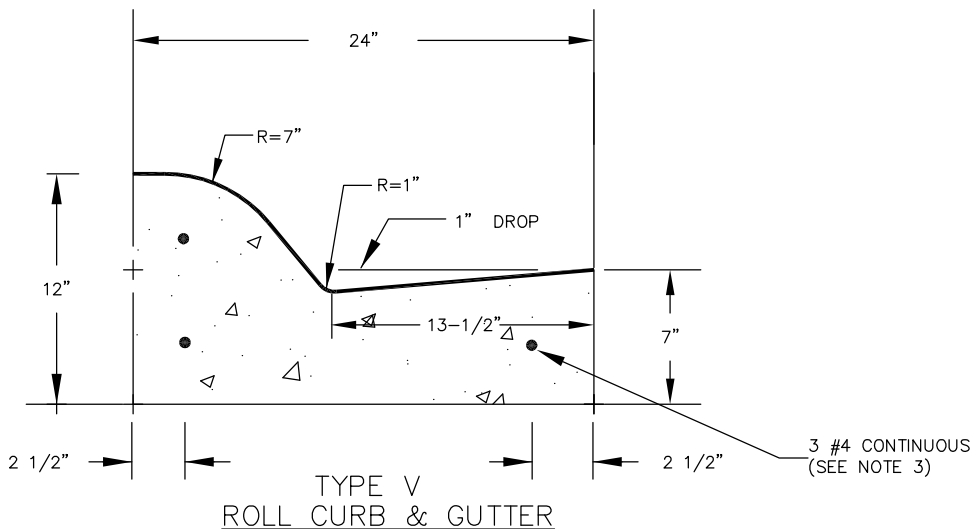
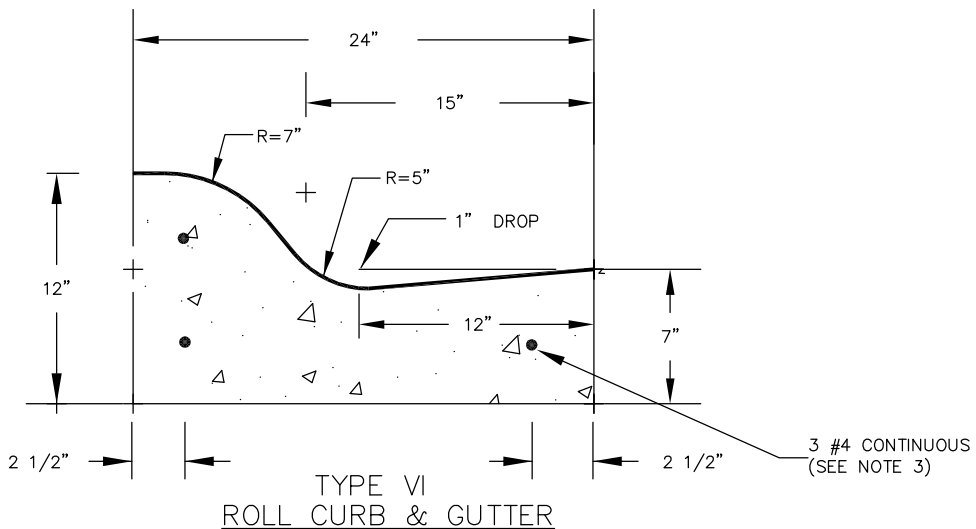
<b>SCALE:</b> NTS	<b>DATE:</b> 1/4/96	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b> <b>CONCRETE SIDEWALK,</b> <b>TYPE I CURB &amp; GUTTER</b>	
<b>DRAWN BY:</b> DRW	<b>CHECKED BY:</b> JB/STAFF		
<b>APPROVED BY:</b> 		<b>REVISED:</b> 8/14/2011	<b>STANDARD 111A</b>



**NOTES:**

1. CONCRETE SHALL BE CLASS A, FIBER MESH REINFORCED IN ACCORDANCE WITH CBJ STANDARD SPECIFICATION SECTION 03303 - SIDEWALK, CURB AND GUTTER. REBAR IN CURB IS ALLOWED AS SHOWN.
2. CONCRETE INTERNATIONAL CORPORATION ASHFORD FORMULA OR APPROVED EQUAL SHALL BE APPLIED AS A CURING COMPOUND. APPLICATION SHALL CONFORM TO THE MANUFACTURER'S RECOMMENDATIONS
3. COLD JOINTS ARE REQUIRED EVERY 10' MAXIMUM. ALL JOINTS AND SEAMS SHALL BE EDGED
4. STEEL TROWELING FINISH REQUIRED PRIOR TO BROOM FINISHING ON ALL SURFACES.
5. CURB AND GUTTER TRANSITION DESIGN TO BE APPROVED BY THE ENGINEER.
6. ALL REINFORCING STEEL MUST HAVE A MINIMUM OF 2" OF CONCRETE COVER WHEN SUBSTITUTED FOR FIBER MESH.
7. THE MINIMUM LONGITUDINAL SLOPE FOR CURB AND GUTTER SHALL BE NO LESS THAN 0.5%.
8. WHEELCHAIR ACCESS RAMPS SHALL BE REQUIRED ON ALL NEW SIDEWALK CONSTRUCTION AT INTERSECTIONS AND CROSSWALKS. ACCESS RAMPS TO BE CONSTRUCTED IN ACCORDANCE WITH CBJ STANDARD 106.
9. TYPE II ROLL CURB & GUTTER AND TYPE III VALLEY GUTTER MAY BE USED ONLY WITH APPROVAL FROM ENGINEER AND CBJ STREET DEPARTMENT.

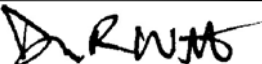
<b>SCALE:</b> NTS	<b>DATE:</b> 7/5/95	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>	
<b>DRAWN BY:</b> JFN	<b>CHECKED BY:</b> JB/STAFF	<b>CURB &amp; GUTTER TYPES II &amp; III</b>	
<b>APPROVED BY:</b> 		<b>REVISED:</b> 8/14/2011	<b>STANDARD 111B</b>

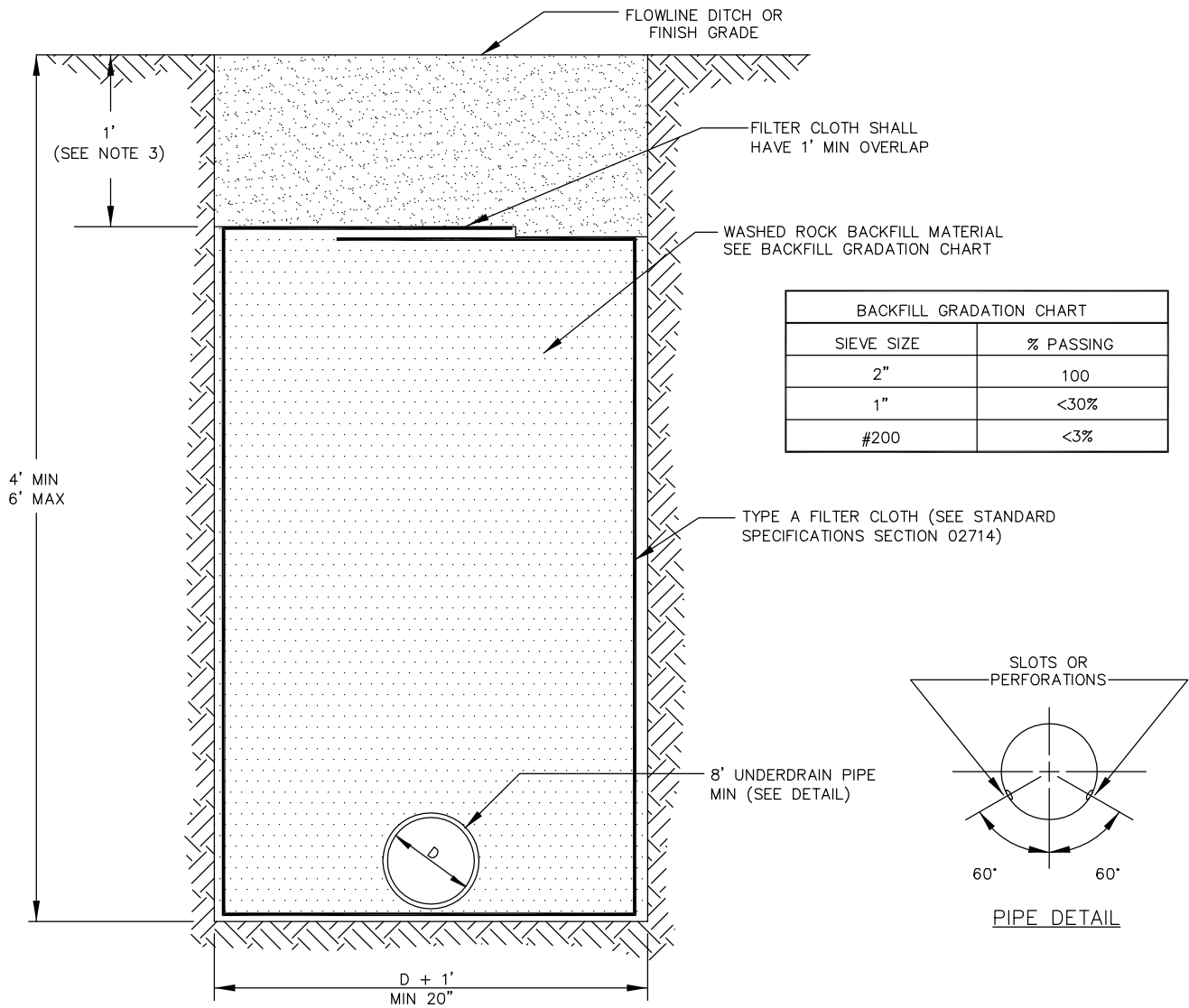


TYPE II AND TYPE III CURB TO BE USED ONLY WHEN DIRECTED BY THE ENGINEER.

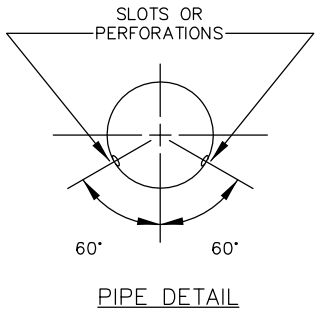
**NOTES:**

1. WHEELCHAIR ACCESS RAMPS SHALL BE REQUIRED ON ALL NEW SIDEWALK CONSTRUCTION AT INTERSECTIONS AND CROSSWALKS. ACCESS RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CBJ STANDARD 106.
2. CURB AND GUTTER TRANSITION DESIGN TO BE APPROVED BY THE ENGINEER.
3. ALL REINFORCING STEEL MUST HAVE A MINIMUM OF 2" OF CONCRETE COVER. FIBER MESH CONCRETE MAY BE ALLOWED AS APPROVED BY THE ENGINEER FOR ROADS WITH GRADES OF LESS THAN 6%.
4. ALL JOINTS AND SEAMS SHALL BE EDGED, COLD JOINTS SHALL BE A MAXIMUM OF 10' O.C..
5. THE MINIMUM GRADE FOR CURB AND GUTTER TO BE NO LESS THAN 0.5%.
6. STEEL TROWELING FINISH REQUIRED PRIOR TO BROOM FINISHING ON ALL SURFACES.
7. CONCRETE INTERNATIONAL CORPORATION ASHFORD FORMULA OR APPROVED EQUAL SHALL BE APPLIED AS A CURING COMPOUND. APPLICATION SHALL CONFORM TO THE MANUFACTURER'S RECOMMENDATIONS.

<b>SCALE:</b> NTS	<b>DATE:</b> 7/5/95	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>	
<b>DRAWN BY:</b> JFN	<b>CHECKED BY:</b> JB/STAFF	<b>CURB &amp; GUTTER</b>	
<b>APPROVED BY:</b> 	<b>REVISED:</b> 8/14/2011	<b>TYPES IV &amp; V</b>	
		<b>STANDARD 111C</b>	

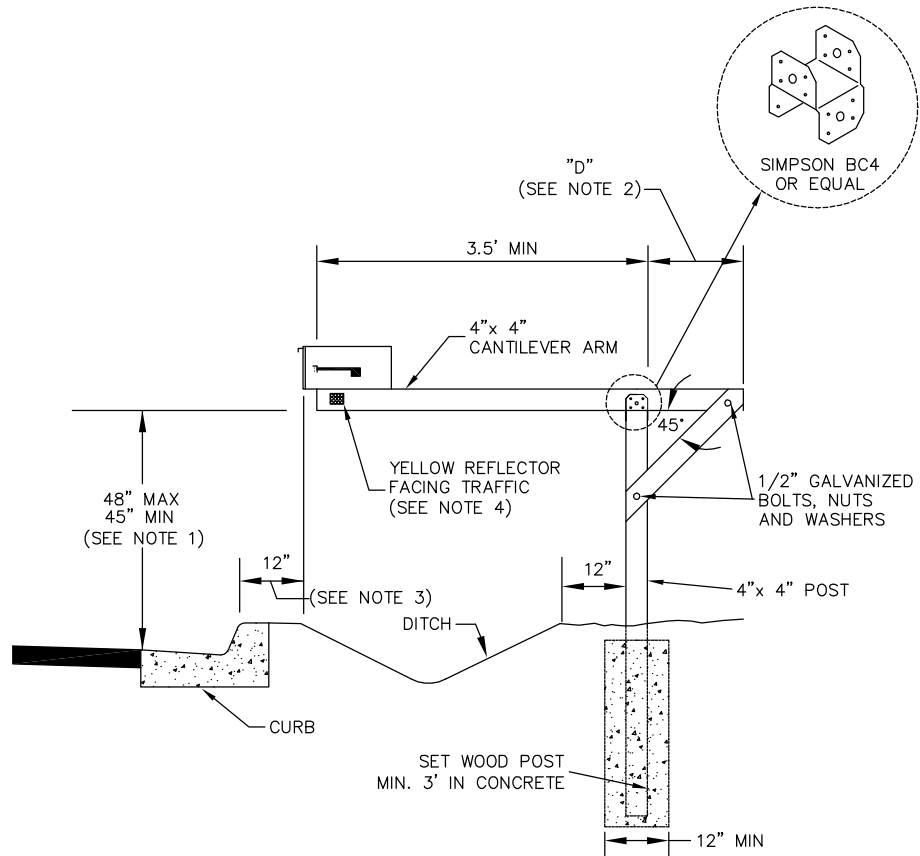


BACKFILL GRADATION CHART	
SIEVE SIZE	% PASSING
2"	100
1"	<30%
#200	<3%



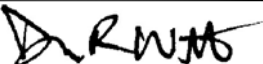
- NOTES**
1. UNDERDRAINS SHALL BE CONNECTED INTO A STORMWATER SYSTEM OR OPEN DRAINWAY AS APPROVED BY THE ENGINEER.
  2. UNLESS OTHERWISE SHOWN ON PLANS, UNDERDRAIN SHALL BE INSTALLED UNDER THE ROADWAY DITCH.
  3. WHEN TRENCH IS UNDER A ROADBED, PAVED DITCH, OR OTHER STRUCTURE, THE WASHED ROCK BACKFILL MATERIAL AND FILTER CLOTH SHALL COMPLETELY FILL THE TRENCH.
  4. NON-PERFORATED PIPE MAY BE USED AT THE OUTLET ENDS OF UNDERDRAINS AS APPROVED BY THE ENGINEER.
  5. UNLESS CONNECTED TO A STORMWATER SYSTEM THE OUTFALL END OF AN UNDERDRAIN PIPE SHALL BE COVERED WITH GALVANIZED NO. 17 GAGE HARDWARE CLOTH SCREEN WITH 1/2" x 1/2" MESH OPENINGS. THE SCREEN SHALL CLAMPED ON WITH A STAINLESS STEEL CLAMP. THE OUTLET END OF THE UNDERDRAIN SHALL BE MARKED WITH A SUITABLE MARKER APPROVED BY THE ENGINEER.
  6. THE UPSTREAM END OF THE UNDERDRAIN SHALL COMMENCE WITH A CLEANOUT. CLEANOUTS ARE REQUIRED IN THE UNDERDRAIN PIPE EVERY 150 FEET.

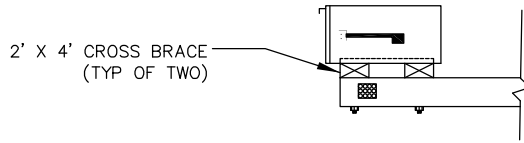
<b>SCALE:</b> NTS	<b>DATE:</b> 12/3/96	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>	
<b>DRAWN BY:</b> DRW	<b>CHECKED BY:</b> JB/STAFF	<b>UNDERDRAIN</b>	
<b>APPROVED BY:</b> <i>DRW</i>		<b>REVISED:</b> 8/14/2011	<b>STANDARD 113</b>



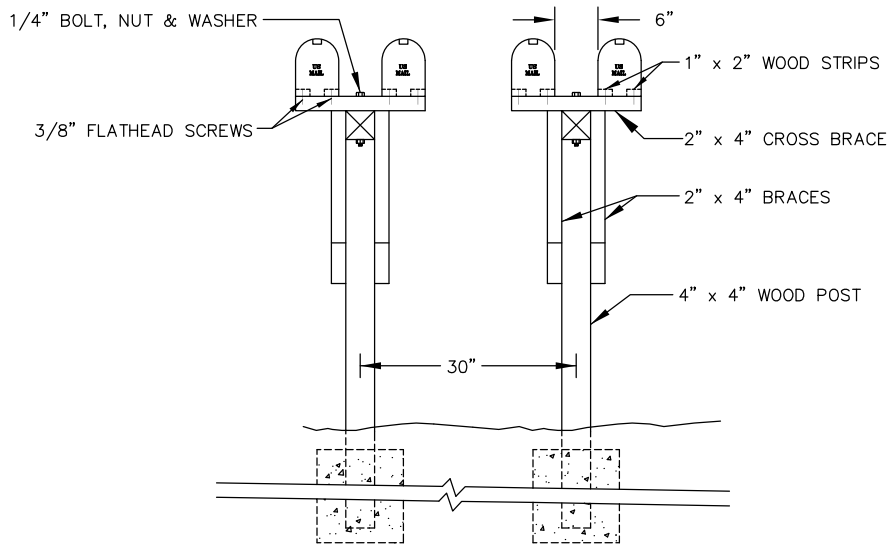
**NOTES:**

1. MAINTAIN MINIMUM 45" UNOBSTRUCTED CLEARANCE BENEATH CANTILEVERED ARM (NOT INCLUDING DEPTH OF DITCH). BOX SHALL BE NO HIGHER THAN 48" ABOVE ROADWAY.
2. "D" SHALL BE 1/3 OF THE LENGTH OF THE CANTILEVERED ARM.
3. MAILBOXES INSTALLED ON ROADWAYS THAT HAVE A SIDEWALK SHALL BE INSTALLED WITH THE FRONT OF THE MAILBOX FLUSH WITH THE BACK OF SIDEWALK. MAILBOXES ON ROADWAYS WITHOUT CURB & GUTTER SHALL BE INSTALLED 12" BEYOND THE TRAVELED WAY.
4. REFLECTORS SHALL BE YELLOW AND HAVE A MINIMUM AREA OF 4.5 SQ. IN. REFLECTORS SHALL BE ACRYLIC PRISMATIC TYPE AND CONFORM TO AASHTO M290, OR REFLECTIVE SHEETING TYPE AND CONFORM TO AASHTO M268, TYPE II OR III.
5. ALL WOOD USED IN MAILBOX INSTALLATION SHALL BE PRESSURE TREATED FOR GROUND CONTACT. ALL CUTS AND DRILLED HOLES SHALL BE TREATED WITH PENTACHLOROPHENAL OR EQUAL.
6. SEE STATE OF ALASKA STANDARD DRAWING M 20.12, "MAILBOX LOCATION", FOR LOCATING POSTS AND BOXES ALONG STATE OF ALASKA HIGHWAYS.
7. CANTILEVERED ARM LENGTHS GREATER THAN 5' REQUIRE A PLAN TO BE SUBMITTED TO CBJ ENGINEERING FOR APPROVAL.
8. NEWSPAPER RECEPTACLES, ETC. MAY BE ATTACHED ON THE SIDE OF THE CANTILEVERED ARM. NO ATTACHMENTS ARE ALLOWED UNDER THE CANTILEVERED ARM TO MAINTAIN CLEARANCE.

SCALE: NTS	DATE: 3/17/99	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: TAD	CHECKED BY: JB/STAFF	CANTILEVERED SINGLE MAILBOX	
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 116	



SIDE VIEW



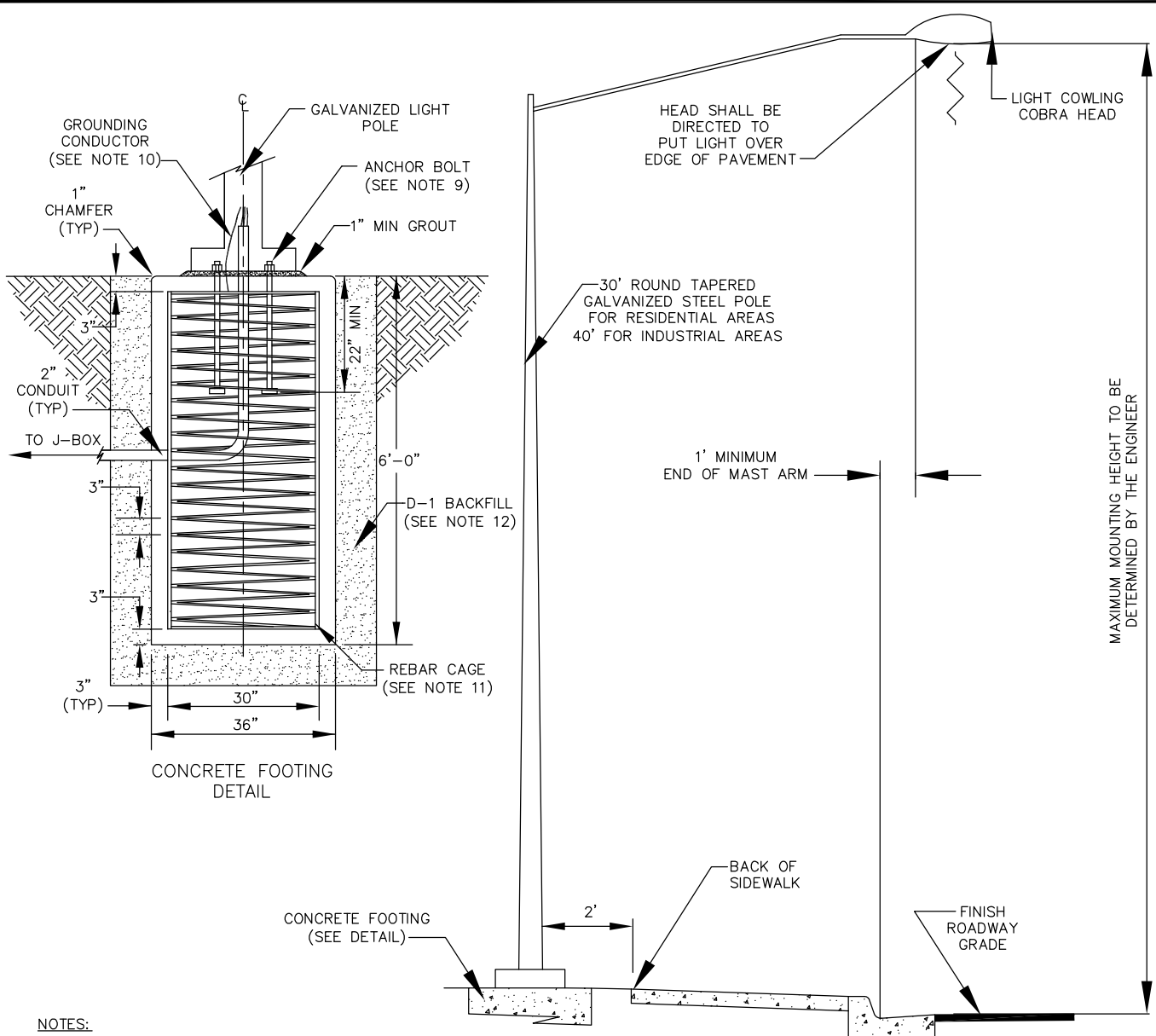
FRONT VIEW

NOTES

1. CANTILEVERED GANG MAILBOXES SHALL CONFORM IN ALL OTHER ASPECTS TO STANDARD 116.
2. EACH STRUCTURE SHALL SUPPORT A MAXIMUM OF TWO MAILBOXES.
3. CANTILEVERED ARM LENGTHS GREATER THAN 5', REQUIRE A PLAN TO BE SUBMITTED TO CBJ ENGINEERING FOR APPROVAL.
4. OTHER DESIGNS MUST BE SUBMITTED TO CBJ ENGINEERING FOR APPROVAL.

SCALE: NTS	DATE: 12/4/96	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: DRW	CHECKED BY: JB/STAFF	CANTILEVERED GANG MAILBOX	
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 117	

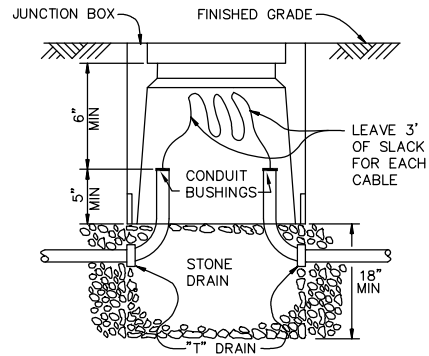
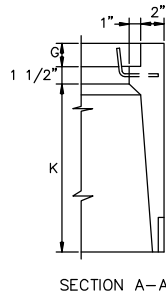
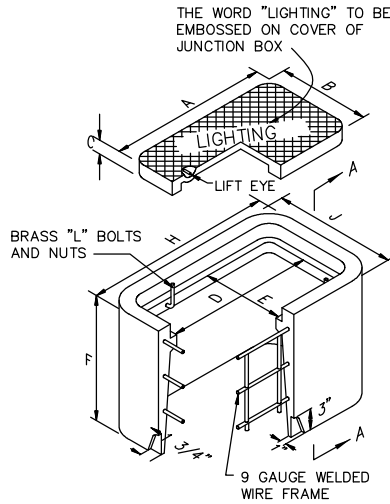




**NOTES:**

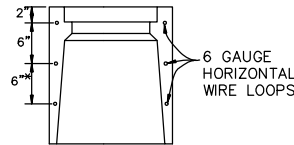
1. THE STREET LIGHTING ELECTRICAL DISTRIBUTION SYSTEM SHALL BE DESIGNED BY AN ALASKAN REGISTERED ELECTRICAL ENGINEER IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE.
2. STREET LIGHTS SHALL BE CONSTRUCTED AT INTERSECTIONS WITH SPACING BETWEEN LIGHTS NOT TO EXCEED 250' OR AS DIRECTED BY THE ENGINEER.
3. A PHOTOELECTRIC CELL SHALL BE MOUNTED ON EACH POLE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
4. UNDERGROUND WIRING BETWEEN LIGHTS TO BE INSTALLED IN PVC CONDUIT. ALL CONDUIT INSTALLED ABOVE GROUND TO BE GALVANIZED RIGID STEEL (GRS).
5. A TYPE 1A JUNCTION BOX IS REQUIRED FOR EACH LIGHT POLE AT A LOCATION DETERMINED BY THE ELECTRICAL ENGINEER. WIRING SHALL BE CONTINUOUS WITH SPLICING AT LIGHT POLES AND JUNCTION BOXES ONLY.
6. PROVIDE DOUBLE FUSED CONNECTOR KITS WITH FUSES IN THE BASE OF EACH POLE AS SPECIFIED BY THE ELECTRICAL ENGINEER.
7. PROVIDE A LOAD CENTER AND/OR HEAVY DUTY, STAINLESS STEEL, FUSED DISCONNECT(S) AS REQUIRED. SPECIFICATIONS AND LOCATION OF LOAD CENTER AND/OR DISCONNECT(S) TO BE DETERMINED BY THE ELECTRICAL ENGINEER.
8. LED LUMINARIES SHALL BE BetaLED #BLD-STR-38-HT-034-LED-B-UL-350 OR APPROVED EQUAL AND COMPLY WITH UL 1598. APPROVED FOR WET LOCATIONS AND IESNA RP-8 FOR LIGHT DISTRIBUTION. THE HOUSING SHALL BE RIGID FORMED, WEATHER-TIGHT AND LIGHT-TIGHT ENCLOSURES. SHEET METAL SHALL BE CORROSION-RESISTANT ALUMINUM. EXPOSED HARDWARE SHALL BE STAINLESS STEEL AND PLASTIC COMPONENTS SHALL BE RESISTANT TO YELLOWING.
9. (4) 1"x36" EMBEDDED GALVANIZED ANCHOR BOLTS WITH 4" MIN HOOK, 6" OF THREAD, LEVELING NUTS AND PROTECTIVE CAPS. BOLTS SHALL MEET ASTM-A36 WITH MIN YIELD STRESS OF 36.0 KSI.
10. #8 CU GROUNDING CONDUCTOR BONDED TO ANCHOR BOLTS, LIGHT POLE AND EQUIPMENTS GROUND ROUTED WITH (3) #8 LIGHTING CIRCUIT CONDUCTORS.
11. (6) #8 BARS SPACED EQUALLY INSIDE 30" DIA, #2 BAR SPIRAL. START SPIRAL 3" BELOW TOP AND 3" ABOVE BOTTOM WITH 1 TURN EVERY 3".
12. BACKFILL WITH 12" OF D-1 AROUND FOOTING SIDE AND BOTTOM. COMPACT TO 95% MAXIMUM DENSITY.

<b>SCALE:</b> NTS	<b>DATE:</b> 1/10/97	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>	
<b>DRAWN BY:</b> DRW	<b>CHECKED BY:</b> JB/STAFF	<b>STREET LIGHTING</b>	
<b>APPROVED BY:</b> 	<b>REVISED:</b> 8/14/2011	<b>STANDARD 118</b>	

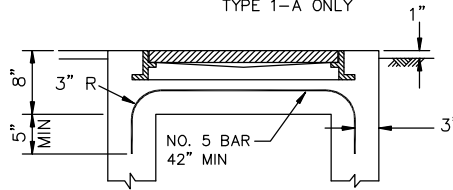


TYPE I & I-A JUNCTION BOX

	DIMENSIONS (IN.)	
	TYPE I	TYPE I-A
A	15	22 3/4
B	10	13 1/4
C	1 3/4	2
D	13 1/2	21 1/4
E	8 1/2	11 3/4
F	12	18
G	1 3/4	2
H	19 1/2	27 1/4
J	14 1/2	17 3/4
K	8 3/4	14 1/2



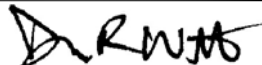
ALTERNATE REINFORCING  
TYPE 1-A ONLY

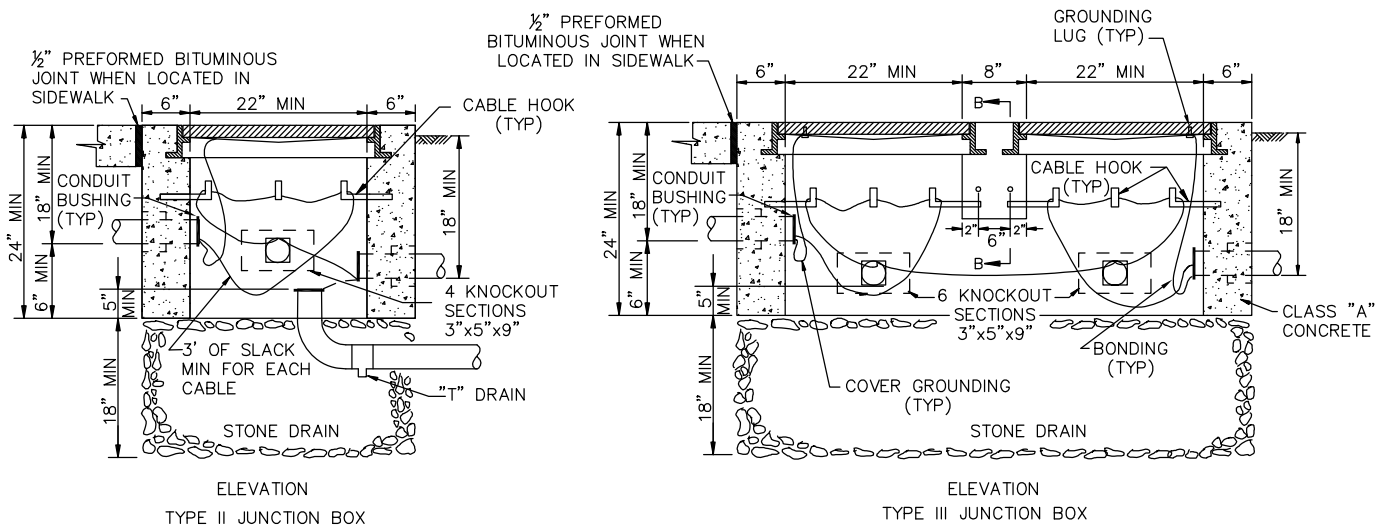
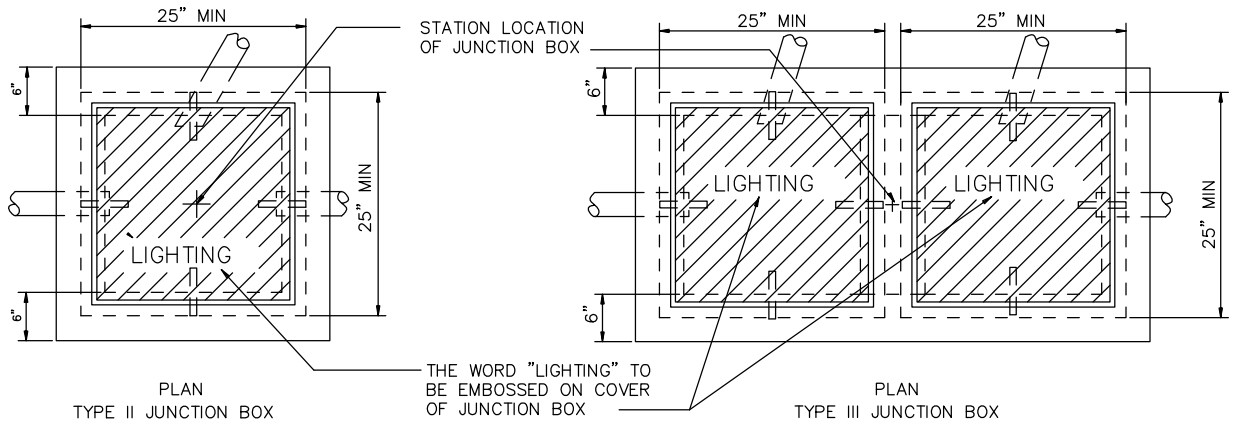


SECTION B-B

NOTES:

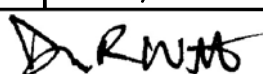
1. EACH FRAME AND COVER FOR TYPE I & 1A JUNCTION BOXES SHALL BE EITHER ALUMINUM OR CAST IRON.
2. JUNCTION BOXES LOCATED IN A SIDEWALK SHALL BE INSTALLED WITH A 1/2" PREFORMED BITUMINOUS JOINT MATERIAL AROUND ITS PERIMETER.
3. ALL CONDUITS SHALL BE BONDED TO FORM A CONTINUOUS ELECTRICALLY SECURE SYSTEM WITH THE GROUND AT THE LOAD CENTER JUNCTION BOX.
4. ALL JUNCTION BOX COVERS SHALL BE BONDED TO GROUND WITH COPPER BRAID OF #8 AWG CROSS SECTION. FOR TYPES 1 & 1A THE LENGTH SHALL BE 3 FEET.
5. ALL CONDUITS SHALL BE GROUTED IN KNOCKOUT SECTIONS IN ACCORDANCE WITH THE ALASKA SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION.
6. JUNCTION BOXES SHALL BE SET FLUSH WITH THE SURROUNDING SURFACE EXCEPT IN A UNPAVED SHOULDER, WHEN THEY SHALL BE LOCATED 2" BELOW GRADE.

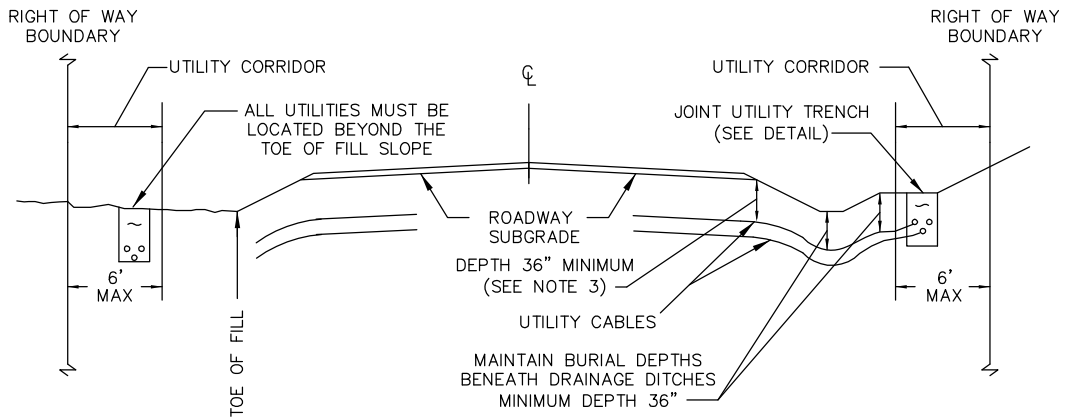
SCALE: NTS	DATE: 1/18/00	CITY AND BOROUGH OF JUNEAU, ALASKA <b>JUNCTION BOX</b> TYPE 1 & TYPE 1A
DRAWN BY: AL	CHECKED BY: JB/STAFF	
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 119A



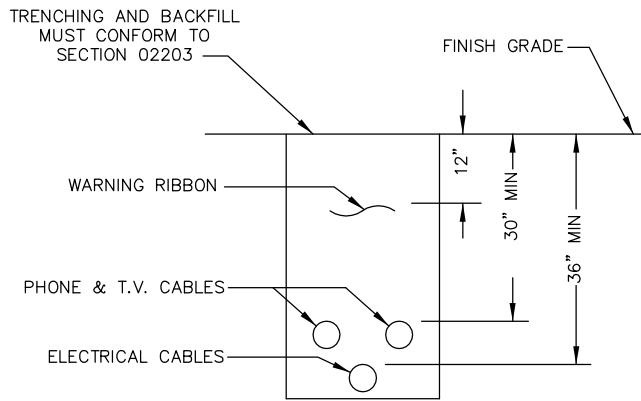
NOTES:

1. EACH FRAME AND COVER FOR TYPE II AND TYPE III JUNCTION BOXES SHALL BE OF CAST IRON FOR LIGHT DUTY USE WITH A MINIMUM WEIGHT OF 210 POUNDS.
2. JUNCTION BOXES LOCATED IN A SIDEWALK SHALL BE INSTALLED WITH A 1/2" PREFORMED BITUMINOUS JOINT MATERIAL AROUND ITS PERIMETER.
3. ALL CONDUITS SHALL BE BONDED TO FORM A CONTINUOUS ELECTRICALLY SECURE SYSTEM WITH THE GROUND AT THE LOAD CENTER JUNCTION BOX.
4. ALL JUNCTION BOX COVERS SHALL BE BONDED TO GROUND WITH COPPER BRAID OF #8 AWG CROSS SECTION. FOR TYPES II & III, THE LENGTH SHALL BE 5 FEET.
5. ALL CONDUITS SHALL BE GROUTED IN KNOCKOUT SECTIONS IN ACCORDANCE WITH THE ALASKA SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION.
6. JUNCTION BOXES SHALL BE SET FLUSH WITH THE SURROUNDING SURFACE EXCEPT IN A UNPAVED SHOULDER, WHEN THEY SHALL BE LOCATED 2" BELOW GRADE.

SCALE: NTS	DATE: 10/26/08	CITY AND BOROUGH OF JUNEAU, ALASKA JUNCTION BOX TYPE II & TYPE III	
DRAWN BY: AL	CHECKED BY: JB/STAFF		
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 119B	



ROAD CROSSING  
(SEE NOTE 3)



36" MIN BURIAL IN ROAD PRISM  
(SEE NOTE 3)

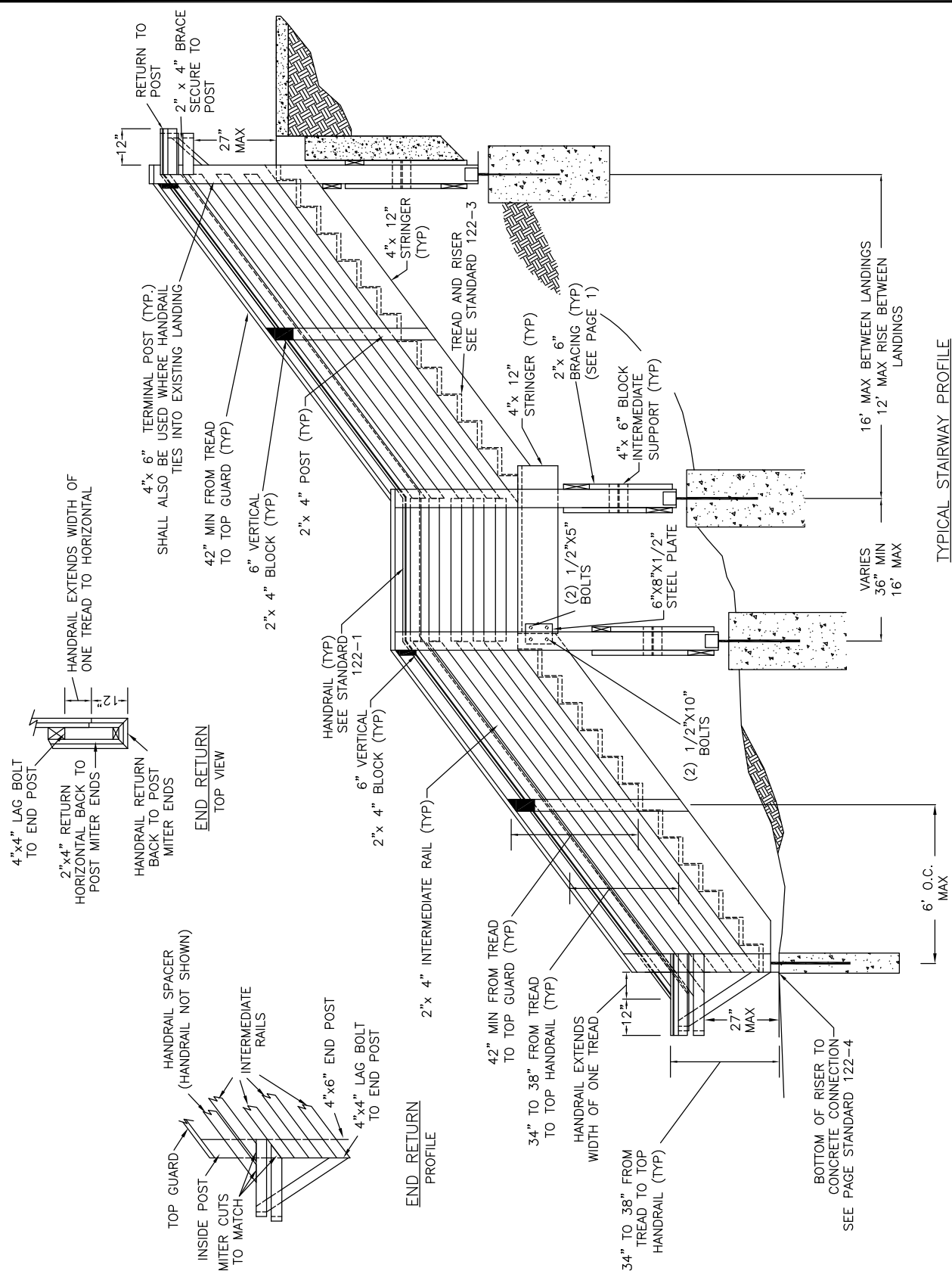
UTILITY TRENCH DETAIL  
UTILITY CORRIDOR ONLY

NOTES:

1. ALL CABLES AND CONDUIT SHALL BE 6" MIN AWAY FROM ALL CBJ DRAINAGE, WATER, AND SEWER STRUCTURES.
2. PEDESTALS SHALL BE MARKED AND IDENTIFIED BY UTILITIES WITH 6 FOOT TALL MARKING POLES.
3. CONCRETE DUCTS MUST HAVE PRIOR APPROVAL BY THE ENGINEER.
4. PLACEMENT OF PEDESTALS AND TRANSFORMERS SHALL BE APPROVED BY THE ENGINEER.
5. ALL UTILITIES SERVING A LOT SHALL BE PLACED TOGETHER AND SHALL BE PLACED AT THE INTERSECTION OF THE RIGHT-OF-WAY AND A COMMON LOT LINE.
6. ALL PRIVATE UTILITIES TRAVERSING THE RIGHT-OF-WAY SHALL CROSS PERPENDICULAR TO THE CENTERLINE AND SHALL BE GROUPED IN TIGHT BUNDLES. THE MINIMUM DEPTH WITHIN THE ROADWAY PRISM SHALL BE 36" BELOW SUBGRADE TO TOP OF THE HIGHEST CONDUIT.
7. ALL TRENCHING WITHIN THE ROADWAY SHALL BE CONSTRUCTED PER CBJ STANDARD 125, PAVEMENT RESURFACING AND TRENCH DETAIL.

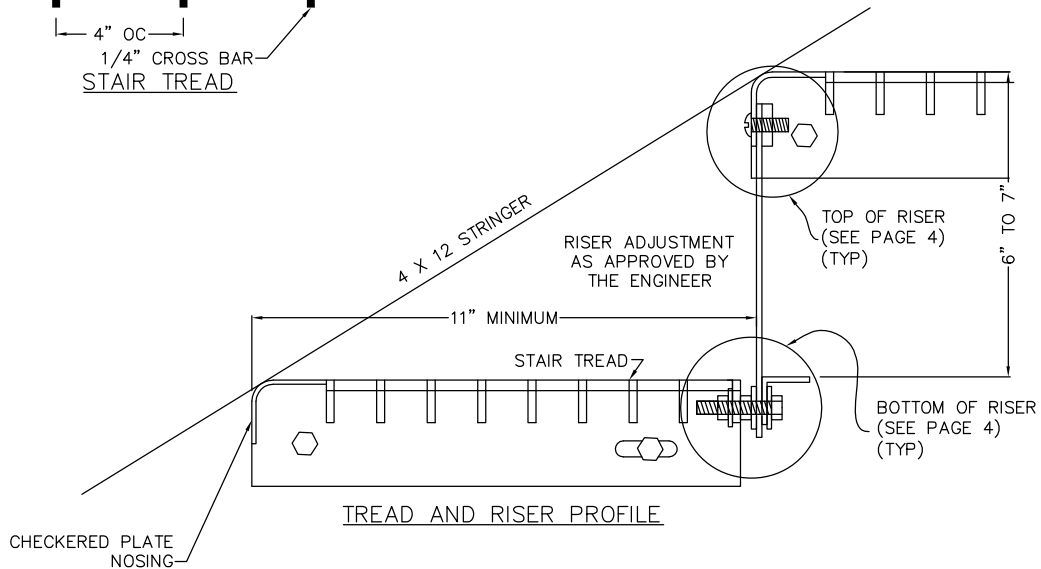
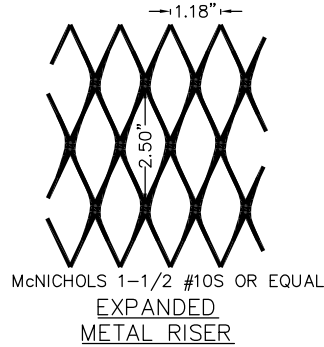
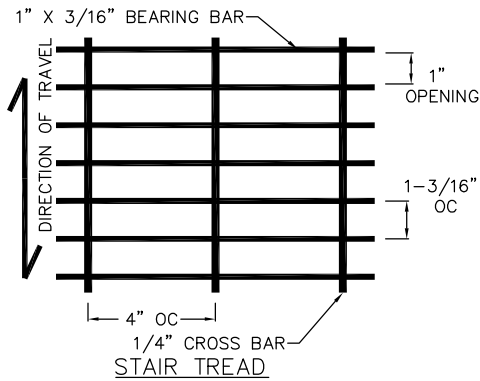
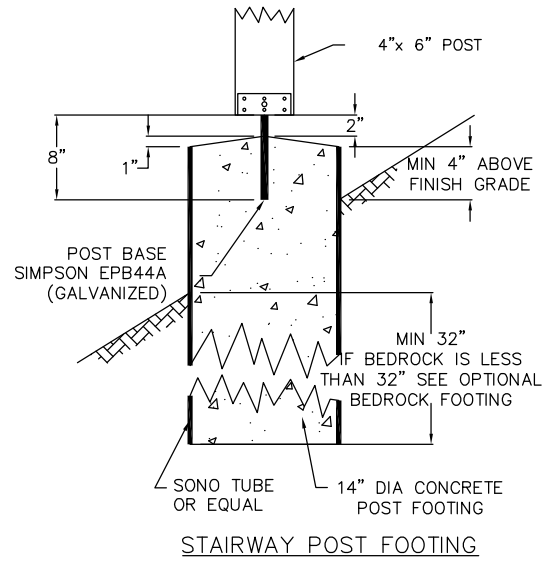
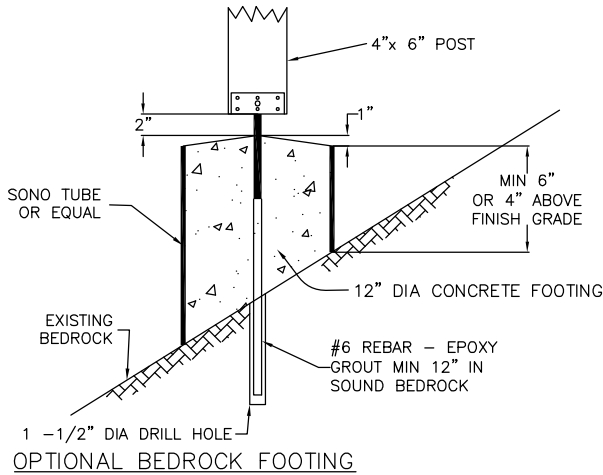
SCALE: NTS	DATE: 12/4/96	<b>CITY AND BOROUGH OF JUNEAU, ALASKA PRIVATE UTILITY LOCATION WITHIN CBJ R-O-W</b>	
DRAWN BY: DRW	CHECKED BY: JB/STAFF		
APPROVED BY: 	REVISED: 8/14/2011	<b>STANDARD 120</b>	



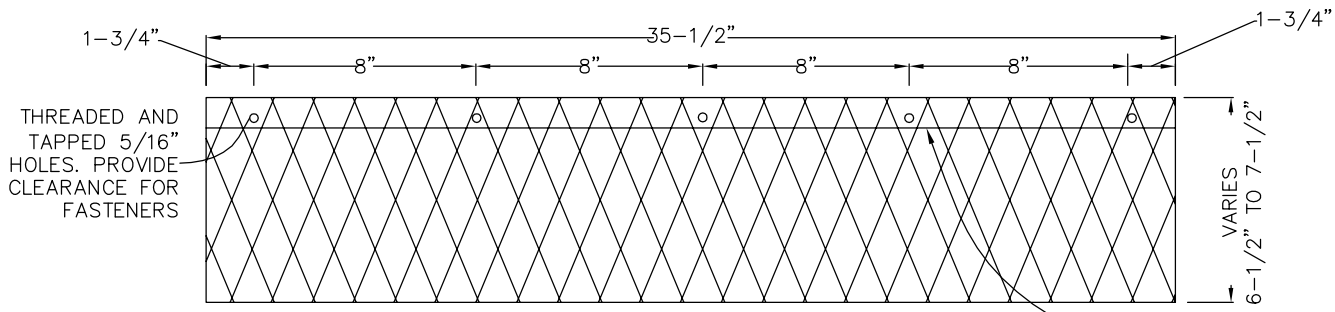


TYPICAL STAIRWAY PROFILE  
 FOR DETAILS ON RAIL SPACING,  
 HANDRAILS AND RAIL HEIGHT  
 SEE STANDARD 122-1

SCALE: NTS	DATE: 7/24/98	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: TAD	CHECKED BY: JB/STAFF	STANDARD STAIRWAY	
APPROVED BY: <i>[Signature]</i>	REVISED: 8/14/2011	STANDARD 122-2	

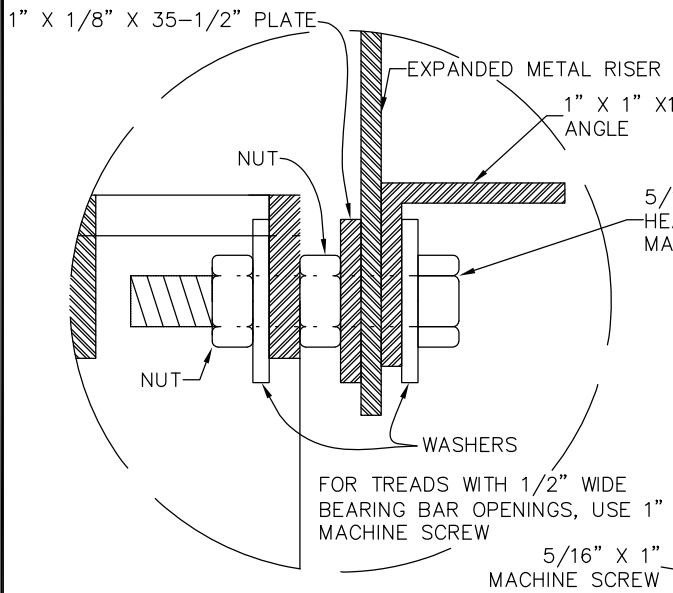


SCALE:	NTS	DATE:	7/24/98	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY:	TAD	CHECKED BY:	JB/STAFF	STANDARD STAIRWAY	
APPROVED BY:			REVISED:	8/14/2011	STANDARD 122-3

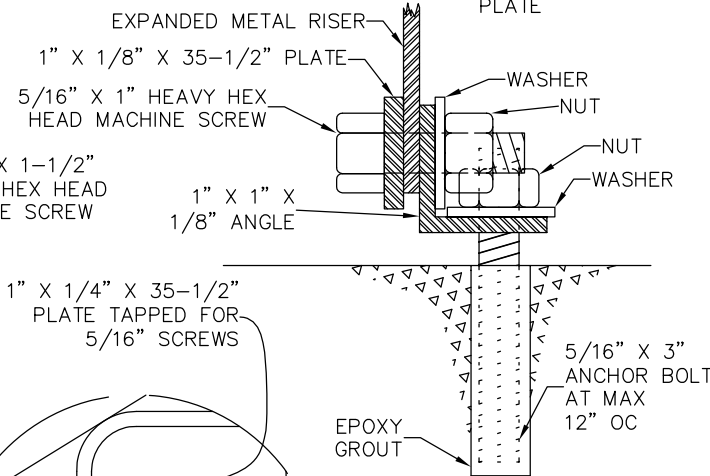


ADJUSTABLE HEIGHT RISER

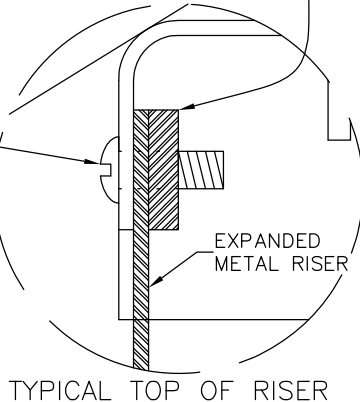
EXPANDED METAL SPOT WELDED TO 1" X 1/4" X 35-1/2" PLATE



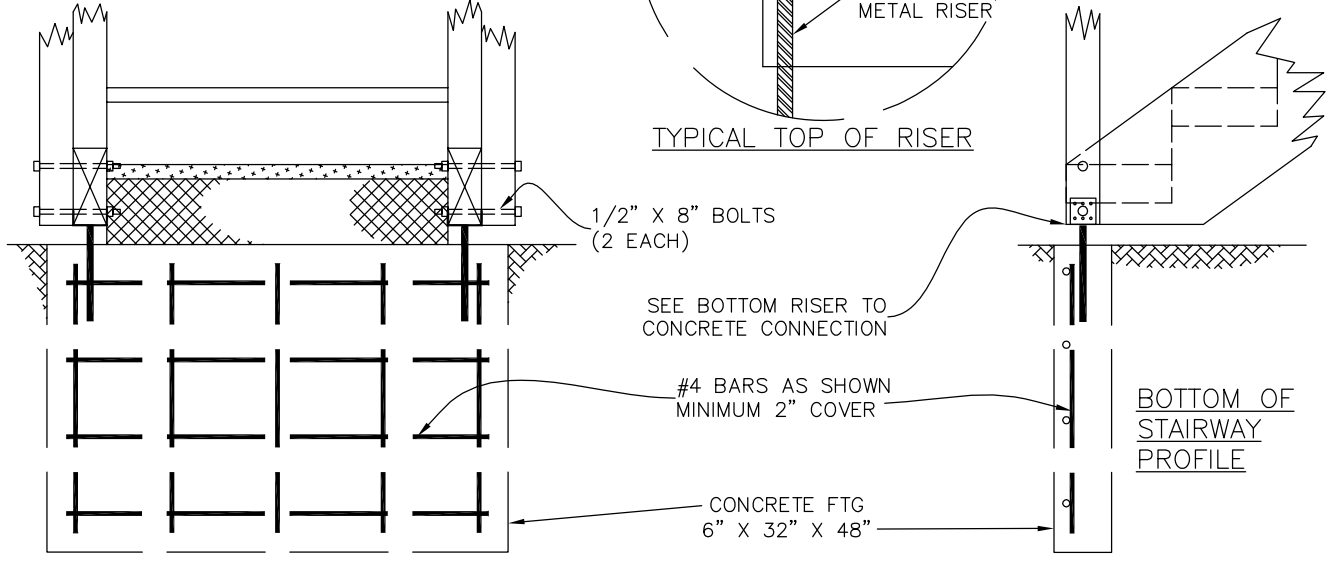
TYPICAL BOTTOM OF RISER



BOTTOM OF RISER TO CONCRETE CONNECTION



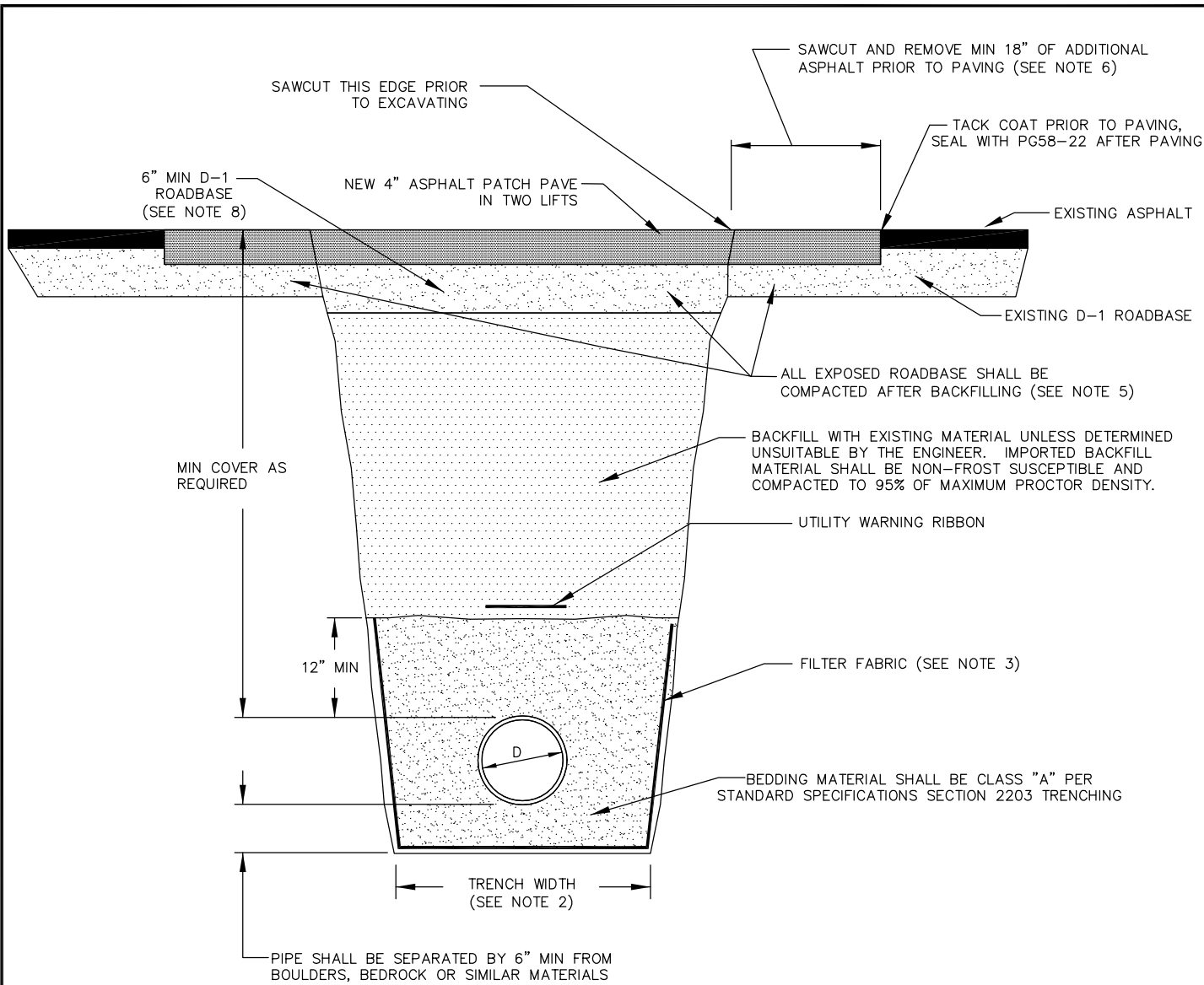
TYPICAL TOP OF RISER



BOTTOM OF STAIRWAY SECTION

SCALE:	NTS	DATE:	7/24/98	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY:	TAD	CHECKED BY:	JB/STAFF	STANDARD STAIRWAY	
APPROVED BY:			REVISED:	8/14/2011	STANDARD 122-4



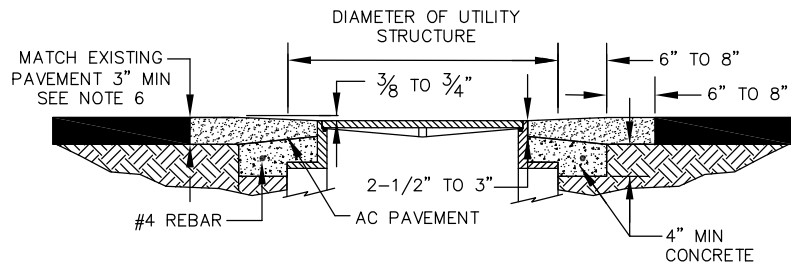


**NOTES:**

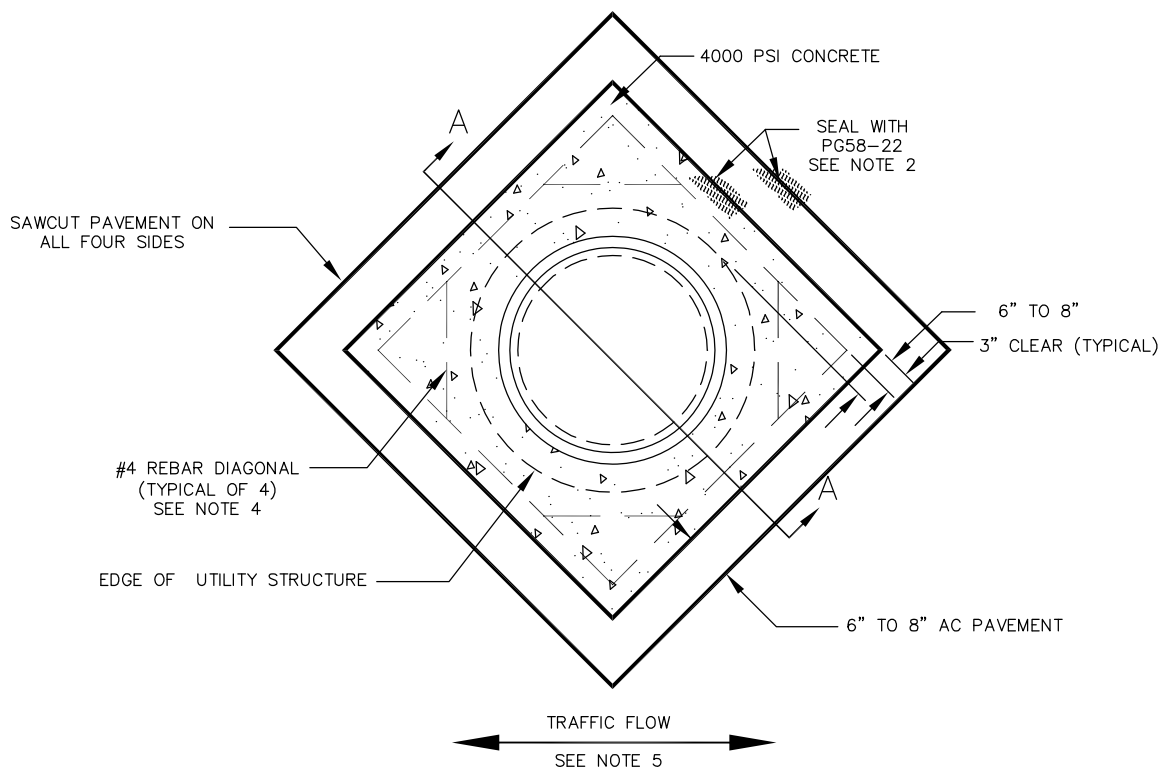
1. TRENCHES SHALL BE WITHIN 20' OF PERPENDICULAR TO CENTER-LINE OF ROADWAY UNLESS APPROVED BY THE ENGINEER.
2. MINIMUM TRENCH WIDTH SHALL BE NOMINAL PIPE DIAMETER ("D") PLUS 2'.
3. FILTER FABRIC SHALL BE USED AS DIRECTED BY THE ENGINEER. ATTACH TO TRENCH SIDEWALL A MIN OF 12" ABOVE TOP OF PIPE.
4. BEDDING & BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY WITHIN THE RIGHT-OF-WAY AND THROUGHOUT THE DEPTH OF EACH LIFT. EXISTING MATERIAL FROM THE TRENCH SHALL BE USED UNLESS DETERMINED UNSUITABLE BY THE ENGINEER. LIFT DEPTH SHALL BE 12" MAXIMUM. ADDITIONAL DEPTH UP TO 18" MAXIMUM MAY BE APPROVED BY THE ENGINEER.
5. PAVEMENT SHALL BE SAWCUT PRIOR TO EXCAVATING. AFTER BACKFILLING TRENCH, PAVEMENT SHALL BE SAWCUT A SECOND TIME TO EXPOSE A MINIMUM OF 18" OF UNDISTURBED BASE MATERIAL. ENTIRE WIDTH OF EXPOSED ROADBASE SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY.
6. IF TRENCH IS NOT IMMEDIATELY BACKFILLED AND COMPACTED, REMOVAL OF MORE THAN 18" OF EXTRA ASPHALT AND FURTHER COMPACTION OF THE ROADBASE SHALL BE REQUIRED BY THE ENGINEER.
7. RESURFACE ASPHALT PAVED STREETS WITH 6" MIN D-1, AND 4" MIN ASPHALT. ASPHALT SHALL BE PAVED IN TWO LIFTS.
8. RESURFACE UNPAVED STREETS WITH 9" MIN D-1.
9. FOR STREETS WITH SUBBASES CONSISTING OF MATERIALS OTHER THAN D-1, RESURFACE STREET AS DIRECTED BY THE ENGINEER.
10. REPLACE RECYCLED ASPHALT TO A DEPTH OF 6" MINIMUM OR MATCH EXISTING IF DEEPER.
11. NO PAVING ALLOWED AFTER OCTOBER 30. RESURFACE WITH 4" OF TEMPORARY CONCRETE IN PLACE OF PAVING. REMOVE CONCRETE AND PAVE IN THE SPRING. THE CBJ SHALL SECURE A BOND FROM THE CONTRACTOR FOR THE ESTIMATED COST OF REMOVAL AND PAVING.

<b>SCALE:</b>	NTS	<b>DATE:</b>	12/5/96
<b>DRAWN BY:</b>	DRW	<b>CHECKED BY:</b>	JB/STAFF
<b>APPROVED BY:</b>		<b>REVISED:</b>	<b>STANDARD 125</b>
		8/14/2011	

**CITY AND BOROUGH OF JUNEAU, ALASKA  
PAVEMENT RESURFACING  
AND TRENCH DETAIL**



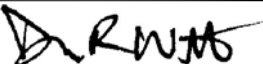
SECTION A-A

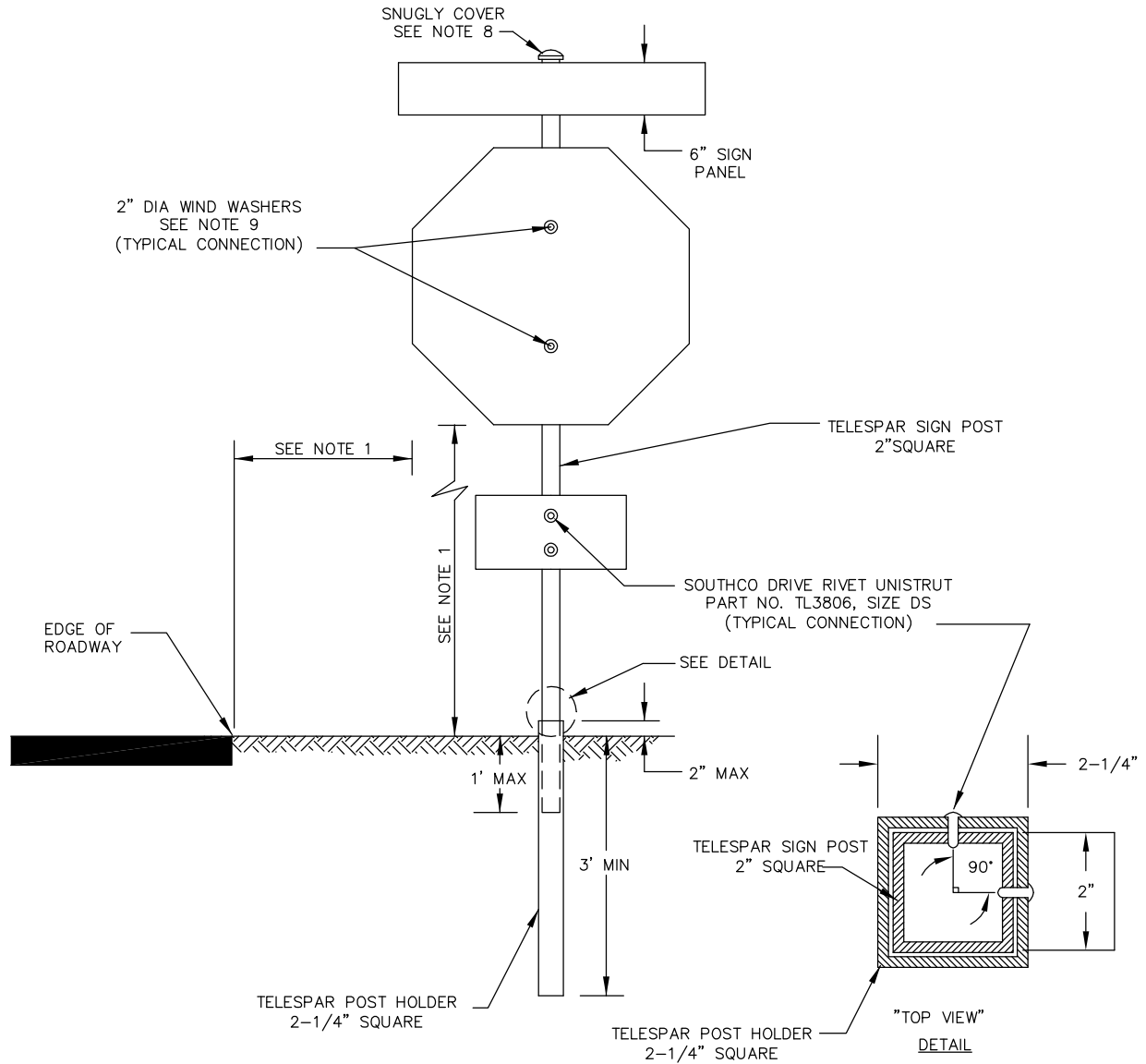


PLAN VIEW

NOTES:

1. ALL FRAMES SHALL BE RAISED TO FINISH GRADE PRIOR TO PAVING. STRUCTURES NOT WITHIN ALLOWABLE TOLERANCES AFTER PAVING SHALL BE CONSTRUCTED TO THIS DETAIL.
2. ALL SAWCUT JOINTS SHALL BE SEALED WITH PG58-22. MINIMUM WIDTH OF SEAL ON ALL JOINTS SHALL BE 3".
3. ALL SAWCUTS AND EXCAVATIONS SHALL BE PROTECTED WITH STEEL PLATES OR OTHER SUITABLE MATERIALS, IF EXPOSED.
4. CONCRETE SHALL BE 4000 PSI, REBAR TO BE #4 AS SHOWN. FIBER MESH CONCRETE MAY BE SUBSTITUTED FOR REBAR.
5. THE DIAGONAL OF THE CONCRETE COLLAR SHALL BE CONSTRUCTED PARALLEL TO THE TRAFFIC FLOW.
6. REPLACEMENT OF EXISTING ASPHALT THICKER THAN 3" SHALL BE PAVED IN TWO EQUAL LIFTS.

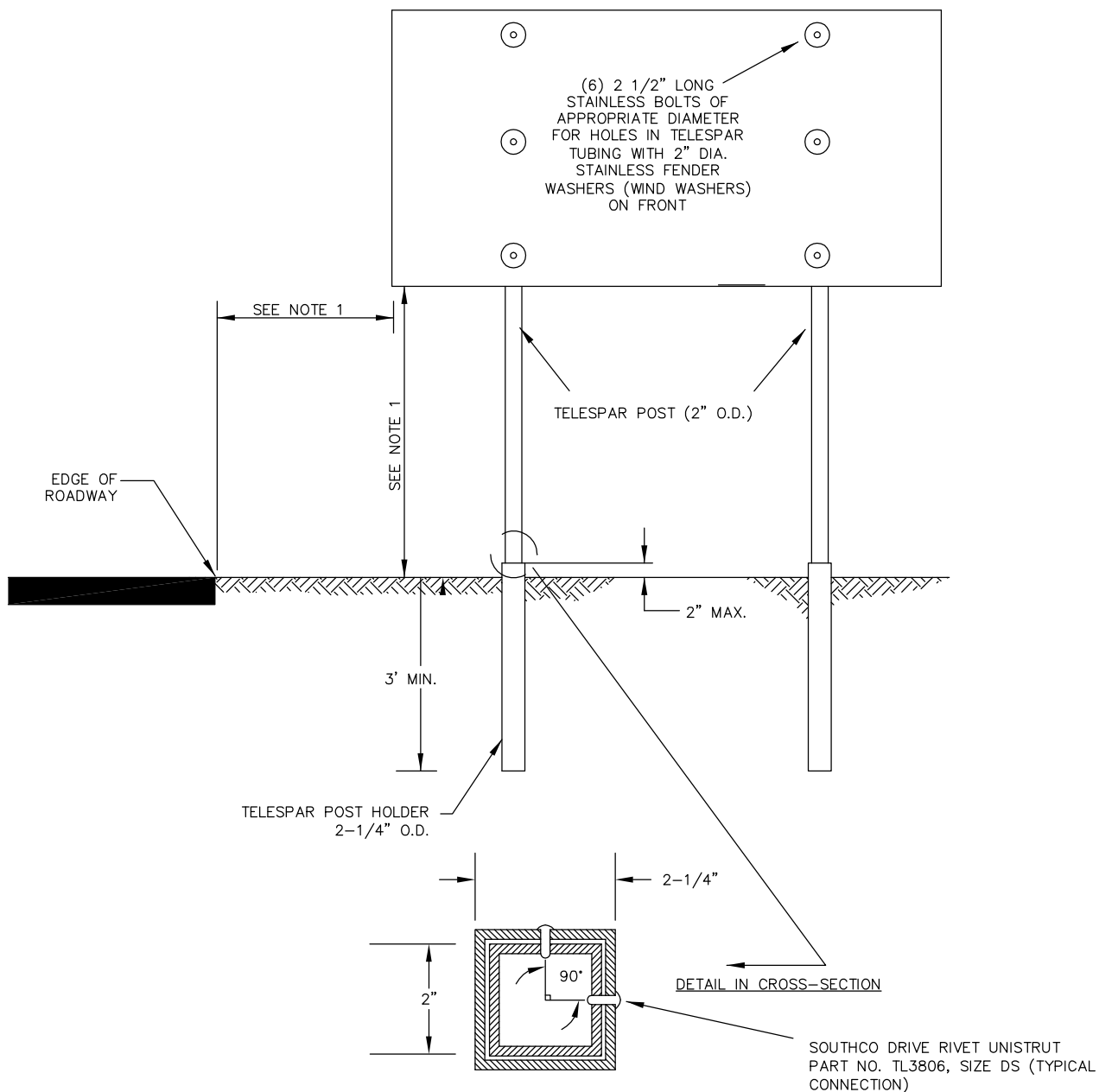
SCALE: NTS	DATE: 1/9/09	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: RDK	CHECKED BY: JB/STAFF	CONCRETE COLLAR	
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 126	



**NOTES:**

1. SIGN PANEL MATERIAL AND THICKNESS SHALL CONFORM TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. SIGN SIZE AND PLACEMENT SHALL CONFORM TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND THE ALASKA SUPPLEMENT (SEE LATEST EDITION.)
2. SIGN POST SHALL BE INSERTED INTO HOLDER A MINIMUM OF 0'-6" AND A MAXIMUM OF 1'-0".
3. STREET NAMES SHALL BE ON 6" EXTRUDED SIGN PANELS.
4. STREET SIGN PANELS SHALL BE BETWEEN 12 AND 36 INCHES IN LENGTH AND IN 6" INCREMENTS.
5. STREET NAME LETTERING SHALL BE 3 INCHES HIGH, SERIES C TYPE.
6. THE BRACKETS FOR THE EXTRUDED STREET SIGN PANELS SHALL HAVE A MINIMUM SPAN OF 5 INCHES.
7. A STREET NAME ASSEMBLY SHALL BE INSTALLED ON EACH STOP SIGN AND WILL SHOW THE STREET NAMES OF BOTH INTERSECTING STREETS.
8. SNUGLY COVER TOP OF POST WITH EXTRUDED TELESPAR POST CAP.
9. WIND WASHERS ARE REQUIRED ON FRONT SIDE OF SIGNS. THEY SHALL BE 2" DIA STAINLESS FENDER WASHERS OR APPROVED EQUAL AND MATCH THE COLOR OF THE SIGN.

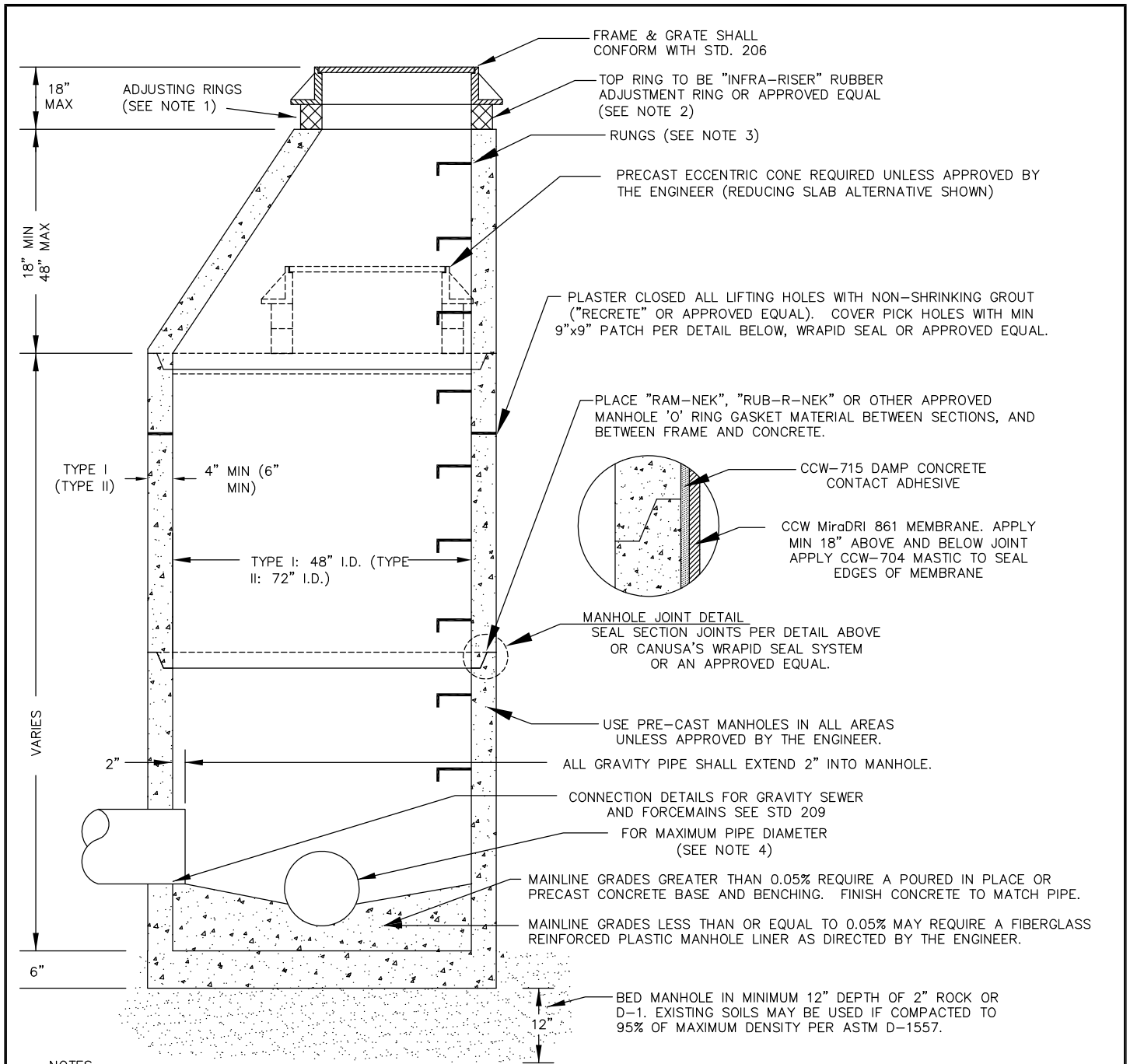
<b>SCALE:</b>	NTS	<b>DATE:</b>	12/6/96	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>
<b>DRAWN BY:</b>	DRW	<b>CHECKED BY:</b>	JB/STAFF	<b>SIGN ASSEMBLY SINGLE-POST</b>
<b>APPROVED BY:</b>			<b>REVISED:</b>	<b>STANDARD 127A</b>
			8/14/2011	



**NOTES:**

1. SIGN SIZE AND PLACEMENT SHALL CONFORM TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND THE ALASKA SUPPLEMENT (SEE LATEST EDITION).
2. SIGN POST SHALL BE INSERTED INTO HOLDER A MINIMUM OF 0'-6" AND A MAXIMUM OF 1'-0".

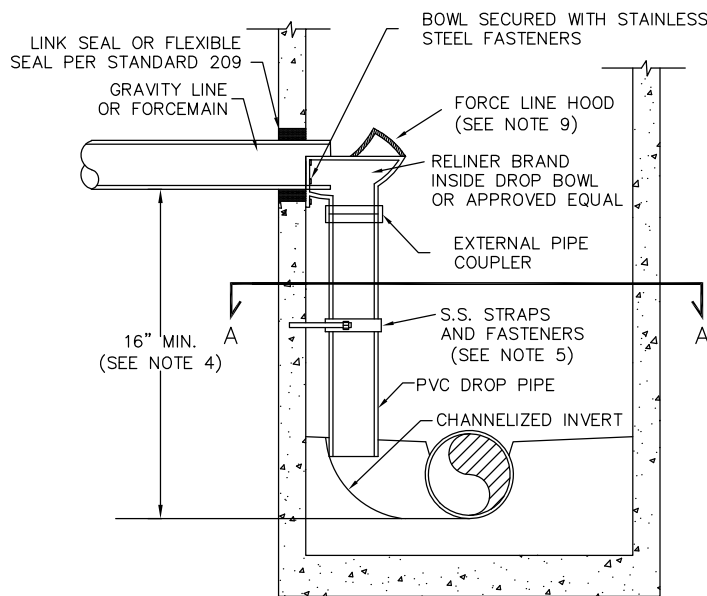
SCALE:	NTS	DATE:	10/15/98	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY:	TJF	CHECKED BY:	MS	SIGN ASSEMBLY DOUBLE-POST	
APPROVED BY:			REVISED:	8/14/2011	STANDARD 127B



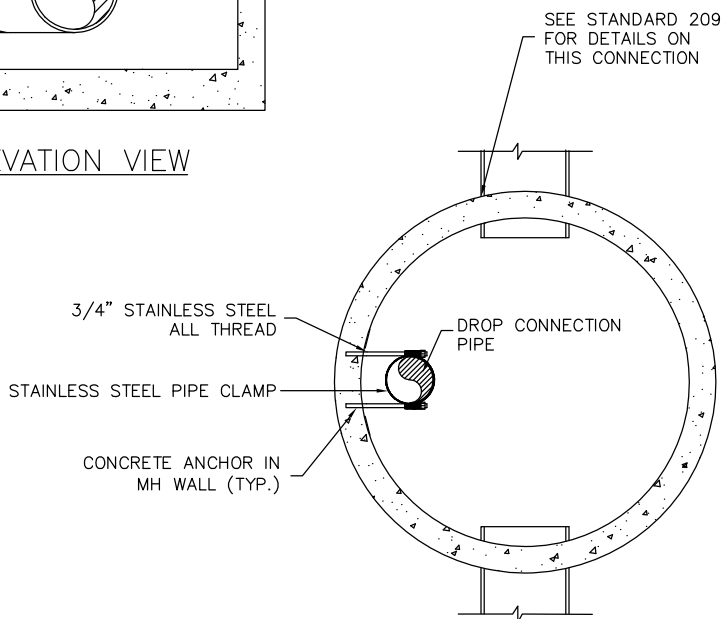
**NOTES**

1. USE NO MORE THAN ONE 4" ADJUSTING RING FOR NEW CONSTRUCTION OR UNPAVED ROADS. USE NO MORE THAN THREE 4" RINGS FOR RECONSTRUCTION OF PAVED OR CHIPSEAL ROADS. TOP ADJUSTING RINGS SHALL BE AN "INFRA-RISER" RUBBER ADJUSTING RING OR APPROVED EQUAL. MATCH FINAL GRADE PER TABLE CBJ STANDARD 205.
2. USE "PL POLYURETHANE SELF-LEVELING CONCRETE CRACK SEALANT" OR APPROVED EQUAL FOR "INFRA-RISER" INSTALLATION.
3. RUNGS TO BE PLACED 12" O.C. ON UNOBSTRUCTED SIDE OF MANHOLE. LAST RUNG SHALL BE 18" MAX FROM BOTTOM OF MANHOLE, AND TOP RUNG SHALL BE 6" MAXIMUM FROM TOP OF CONE. IF UNOBSTRUCTED SIDE NOT AVAILABLE, LAST RUNG SHALL BE PLACED 6" OVER SMALLEST PIPE. RUNGS SHALL BE LANE POLYETHYLENE 14" LADDER STEPS OR AN APPROVED EQUAL.
4. MAXIMUM PIPE DIAMETER SHALL BE 20" FOR A TYPE I MANHOLE. FOR LARGER PIPES, USE A TYPE II MANHOLE. MANHOLES INTERSECTED BY MORE THAN 2 PIPES, 15" DIAMETER OR LARGER, USE A TYPE II MANHOLE. MINIMUM MAINLINE DIAMETER SHALL BE 8".
5. REFER TO A.S.T.M. C-478 FOR DESIGN REQUIREMENTS AND C-478-69 FOR MINIMUM STEEL FOR BARREL AND BASE. BLOCKOUTS SHALL BE FORMED.
6. IF MANHOLE IS WITHIN A ROADWAY, COMPACTION TESTS MUST BE TAKEN ON BACKFILL EVERY 3'. DENSITY SHALL BE 95% OF MAXIMUM PROCTOR DENSITY.
7. MANHOLE FRAMES MAY BE RAISED TO ACCOMMODATE PAVEMENT OVERLAYS PROVIDED THE DISTANCE FROM THE TOP OF THE FRAME TO THE FIRST RUNG IS LESS THAN 36".

<b>SCALE:</b>	NTS	<b>DATE:</b>	10/16/96	<b>CITY AND BOROUGH OF JUNEAU, ALASKA SANITARY SEWER MANHOLE TYPES I &amp; II</b>	
<b>DRAWN BY:</b>	DRW	<b>CHECKED BY:</b>	STAFF		
<b>APPROVED BY:</b>			<b>REVISED:</b>	8/14/2011	<b>STANDARD 203</b>



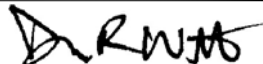
ELEVATION VIEW

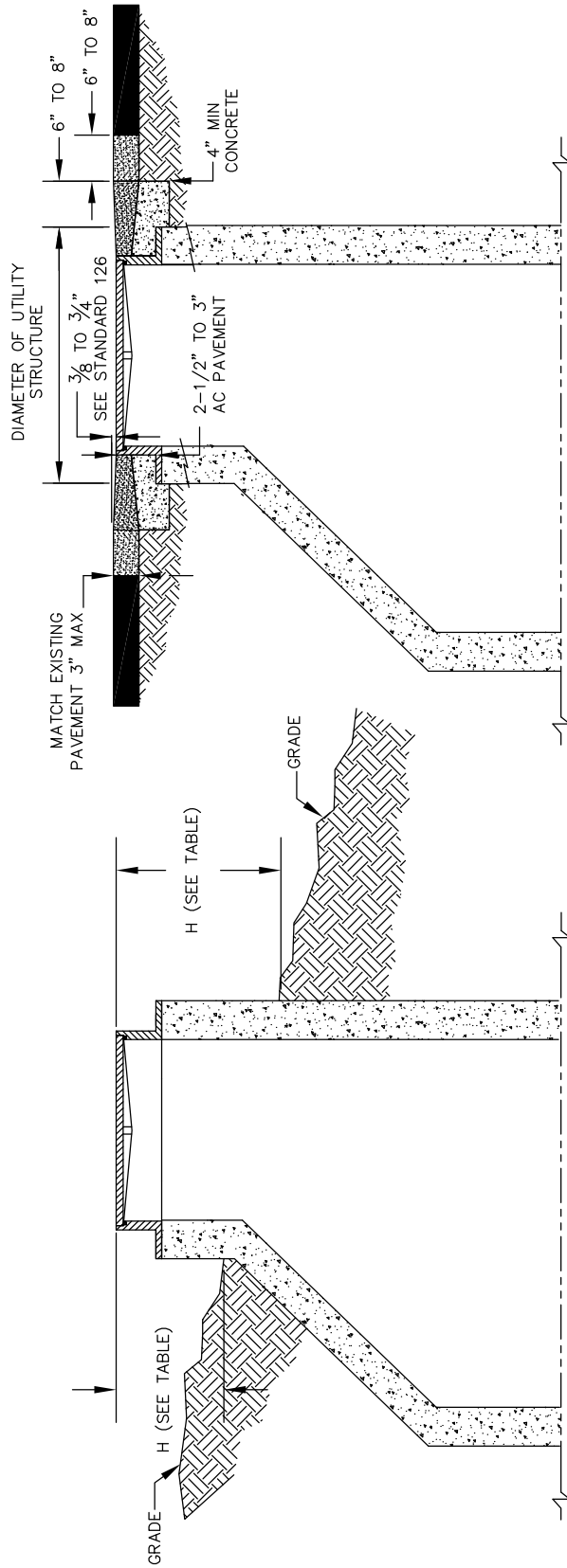


PIPE SUPPORT DETAIL (SEE NOTE 6)  
SECTION A-A

NOTES:

1. ALL OTHER ASPECTS OF MANHOLE CONSTRUCTION SHALL CONFORM WITH STANDARD 203.
2. MANHOLE ELEVATION SHALL CONFORM WITH STANDARD 205.
3. MANHOLE COVER AND FRAME SHALL CONFORM WITH STANDARD 206.
4. DROP CONNECTIONS ARE REQUIRED IF INFLOW INVERT ELEVATION IS MORE THAN 16" ABOVE THE OUTLET INVERT ELEVATION WHERE INVERT ELEVATIONS ARE LESS THAN 16" APART, A CHANNELIZED INVERT SHALL BE FORMED TO A MAXIMUM OF ONE INFLOW PIPE DIAMETER BELOW THE INFLOW PIPE INVERT.
5. STAINLESS STEEL PIPE SUPPORTS SHALL BE INSTALLED 3'-0" ON CENTER ON THE VERTICAL DROP PIPE.
6. A RELINER BRAND STAINLESS ADJUSTABLE CLAMPING BRACKET MAY BE USED IN PLACE OF THE ILLUSTRATED PIPE SUPPORT.
7. DROP PIPING SHALL BE THE DIAMETER SPECIFIED BY THE MANUFACTURER OF THE DROP ASSEMBLY.
8. IF MORE THAN ONE DROP CONNECTION IS MADE, INSTALL A MIN. 6' DIAMETER MANHOLE.
9. FORCE LINE HOOD FOR INSIDE DROP BOWL, RELINER BRAND OR APPROVED EQUAL.

SCALE: NTS	DATE: 5/5/99	CITY AND BOROUGH OF JUNEAU, ALASKA SANITARY SEWER DROP MANHOLE
DRAWN BY: TAD	CHECKED BY: STAFF	
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 204



MANHOLE LID ABOVE GRADE

MANHOLE HEIGHTS ABOVE GRADE

LOCATION OF MANHOLE	HEIGHT (H)
UNDEVELOPED & SWAMPY AREAS	12" TO 24"
HIGHWAY R.O.W.'S OUTSIDE OF TRAFFIC AREAS	1" TO 6"

MANHOLE LID BELOW GRADE

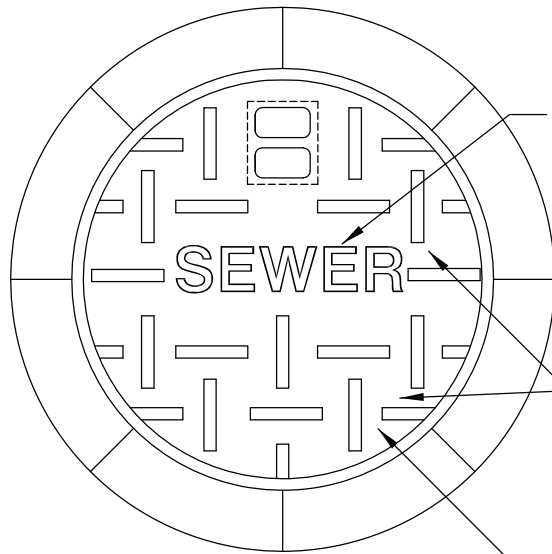
MANHOLE DEPTHS BELOW GRADE

LOCATION OF MANHOLE	DEPTH (D)
PAVED STREETS (SEE NOTE 1)	3/8" - 3/4"
BACKYARDS, GRAVEL STREETS, AND TRAVELED ALLEY AREAS	6" MAX

NOTES:

1. MANHOLE LID MUST CONFORM TO THE GRADE AND CROSS SLOPE OF THE STREET. SEE STANDARD 126.
2. MEASUREMENT SHALL BE TAKEN FROM THE TOP OF THE FRAME. SEE STANDARD 206A/206B
3. FOR BACKYARDS, GRAVEL STREETS AND TRAVELED ALLEY AREAS, BACKFILL TO MATCH EXISTING GRADE.
4. SANITARY SEWER MAIN CLEANOUT ELEVATIONS SHALL CONFORM TO THIS STANDARD.

SCALE: NTS	DATE: 12/2/96	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: DRW	CHECKED BY: STAFF	MANHOLE HEIGHTS	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 205	



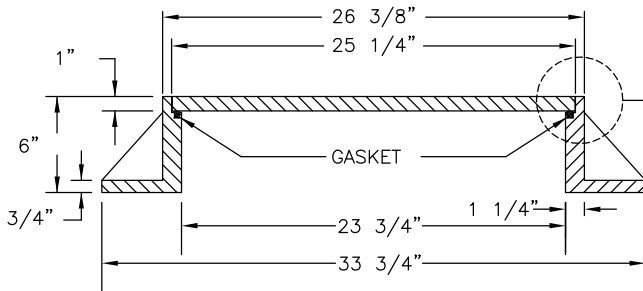
2" CAST LETTERS  
(SEE NOTE 2)

INSTALL NON-SKID MANHOLE COVER PER  
STANDARD 205 GRADE REQUIREMENTS. ALL  
MANHOLES MUST HAVE EGRESS LIDS.

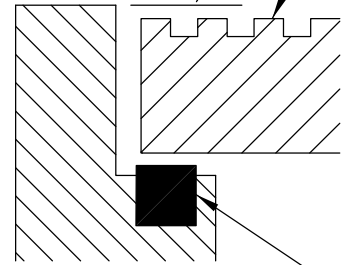
1/2" x 3" x 3/8" NON-SKID PATTERN CAST  
INTEGRAL ON TOP. LUGS FLUSH WITH TOP OF  
FRAME.

PLAN VIEW

ALL MANHOLE COVERS SHALL  
BE MACHINED BELOW FRAME



ELEVATION VIEW



3/8" x 3/8" WATERTIGHT  
NEOPRENE GASKET

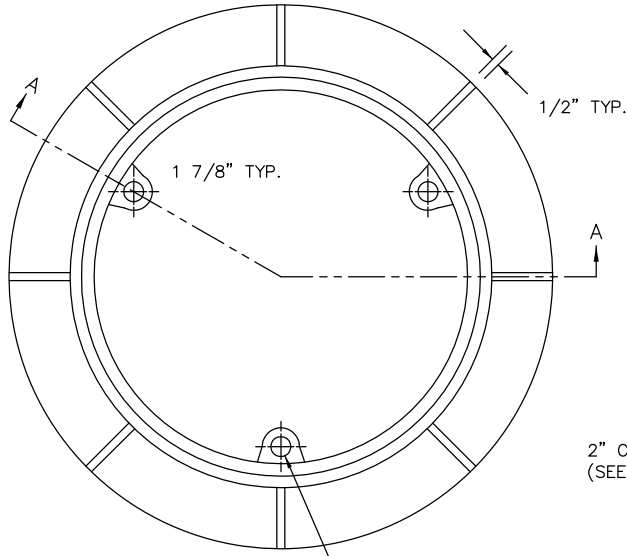
GASKET DETAIL

NOTES:

1. FRAME MUST BE MACHINED TO FIT WATERTIGHT NEOPRENE GASKET.
2. MANHOLE COVER SHALL BE WATER TIGHT WITH NO HOLES, SHALL HAVE THE WORD "SEWER", "WATER" OR "STORM DRAIN" CAST IN COVER AND SHALL BE PROVIDED WITH AN INTEGRAL POCKET LIFT HANDLE.
3. FRAME AND MANHOLE COVER DIMENSIONS SHALL BE IN ACCORDANCE WITH OLYMPIC CONSTRUCTION CASTINGS NO. MH30A WITH EGRESS LID, OR AN APPROVED EQUAL.
4. FRAME AND MANHOLE COVER SHALL BE DUCTILE OR CAST IRON AND A TYPE THAT WILL NOT CREATE A HAZARD FOR BICYCLE TRAFFIC.
5. IF MAINLINE IS 20" OR GREATER, PROVIDE MANHOLE WITH 30" OPENING IN COVER & FRAME.
6. ALL MANHOLE COVERS SHALL BE MACHINED BELOW FRAME AS SHOWN IN GASKET DETAIL ABOVE.

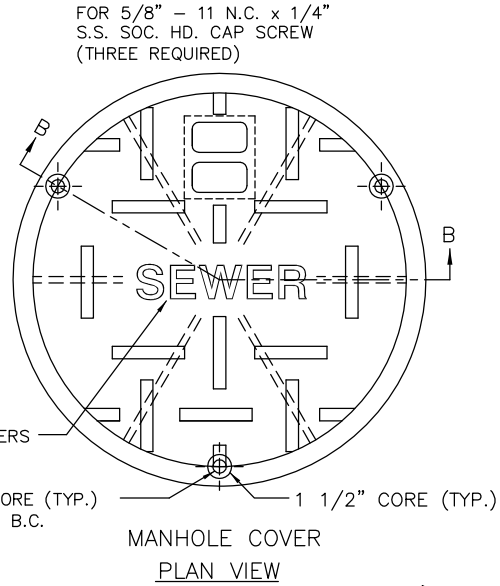
SCALE: NTS	DATE: 2/28/98	CITY AND BOROUGH OF JUNEAU, ALASKA STANDARD MANHOLE COVER & FRAME	
DRAWN BY: DRW	CHECKED BY: STAFF		
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 206A	





DRILL & TAP: 5/8" - 11 N.C. ON  
23" B.C. (TYP. 3 PL.)

FRAME  
PLAN VIEW

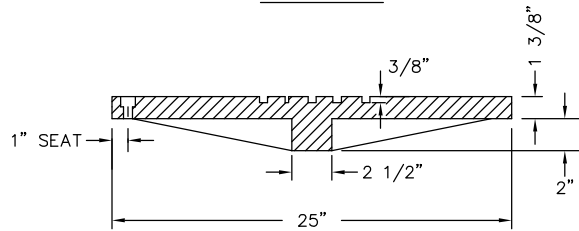


FOR 5/8" - 11 N.C. x 1/4"  
S.S. SOC. HD. CAP SCREW  
(THREE REQUIRED)

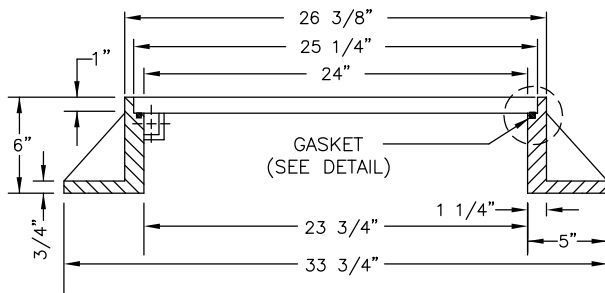
2" CAST LETTERS  
(SEE NOTE 2)

3/4" CORE (TYP.)  
ON 23" B.C.

MANHOLE COVER  
PLAN VIEW

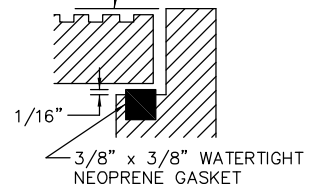


SECTION B-B



SECTION A-A

ALL MANHOLE COVERS SHALL BE  
MACHINED BELOW FRAME

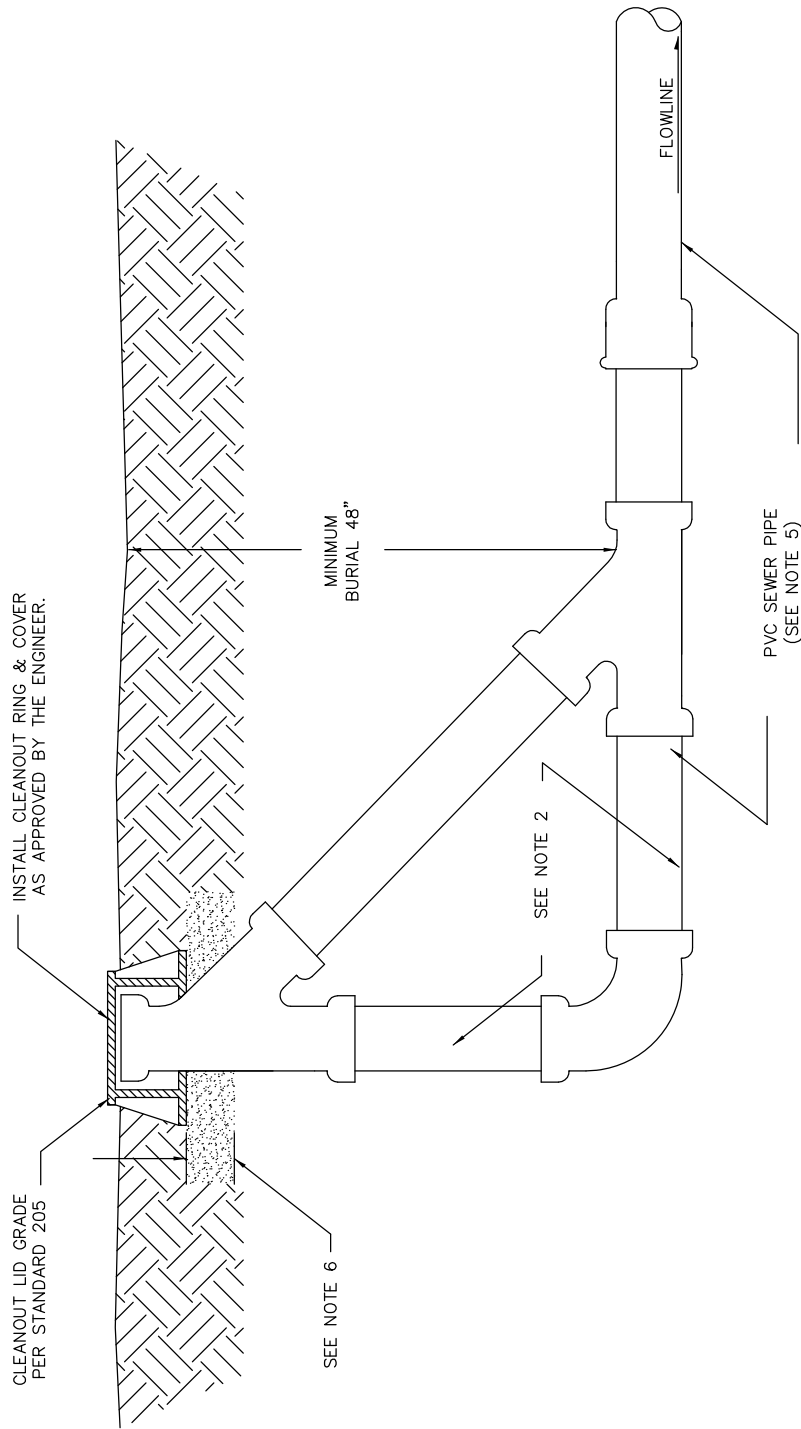


GASKET DETAIL

**NOTES**

1. FRAME MUST BE MACHINED TO FIT WATERTIGHT NEOPRENE GASKET.
2. MANHOLE COVER SHALL BE WATER TIGHT WITH NO HOLES, SHALL HAVE THE WORD(S) "SEWER", "WATER", OR "STORM SEWER" CAST IN COVER AND SHALL BE PROVIDED WITH AN INTEGRAL POCKET LIFT HANDLE.
3. FRAME AND MANHOLE COVER DIMENSIONS SHALL BE IN ACCORDANCE WITH OLYMPIC CONSTRUCTION CASTINGS NO. MH30A , OR AN APPROVED EQUAL. IF MAINLINE IS 20" OR GREATER, PROVIDE A MANHOLE WITH 30" MANHOLE COVER & FRAME.
4. FRAME AND MANHOLE COVER SHALL BE DUCTILE OR CAST IRON AND A TYPE THAT WILL NOT CREATE A HAZARD FOR BICYCLE TRAFFIC.
5. ALL CASTINGS SHALL BE MACHINED BELOW FRAME.
6. MANHOLE COVER AND FRAME SHALL MEET THE MINIMUM REQUIREMENTS OF STANDARD 206A.

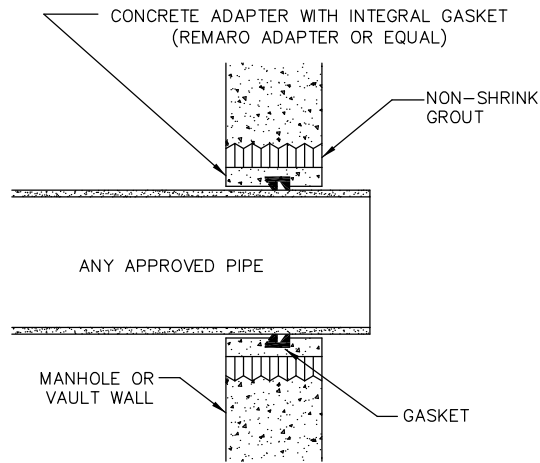
SCALE: NTS	DATE: 12/2/96	CITY AND BOROUGH OF JUNEAU, ALASKA LOCKING MANHOLE COVER & FRAME
DRAWN BY: DRW	CHECKED BY: STAFF	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 206B



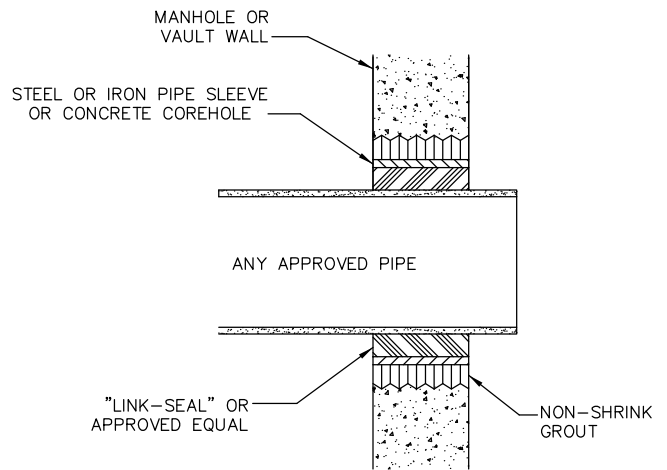
**NOTES:**

1. WHERE DEPTH OF PIPE MUST BE LESS THAN 48" INSULATION SHALL BE REQUIRED AS APPROVED BY THE ENGINEER.
2. GRADE SHALL MATCH MAIN LINE FLOWLINE WITH A MINIMUM SLOPE OF 0.4%. VERTICAL PIPE SHALL BE PLUMB.
3. MINIMUM PIPE DIAMETER SHALL BE 8" UNLESS APPROVED BY THE ENGINEER.
4. MATERIALS FOR PIPE CONSTRUCTION SHALL CONFORM TO CBJ STANDARD SPECIFICATIONS FOR CIVIL ENGINEERING PROJECTS AND SUBDIVISION IMPROVEMENTS DATE DECEMBER 2003, SECTION 02401 - SANITARY SEWER PIPE, 2:2 PVC SEWER PIPE.
5. MATERIALS AND INSTALLATION OF THE SEWER LATERAL SHALL CONFORM TO THE UNIFORM PLUMBING CODE.
6. BASE FOR LID SHALL BE A MIN OF 6" D-1 COMPACTED TO 95% DENSITY OR AS DIRECTED BY THE ENGINEER.
7. CLEANOUTS MAY BE SUBSTITUTED FOR AN ENDLINE MANHOLE ONLY WITH APPROVAL FROM WASTEWATER UTILITIES.

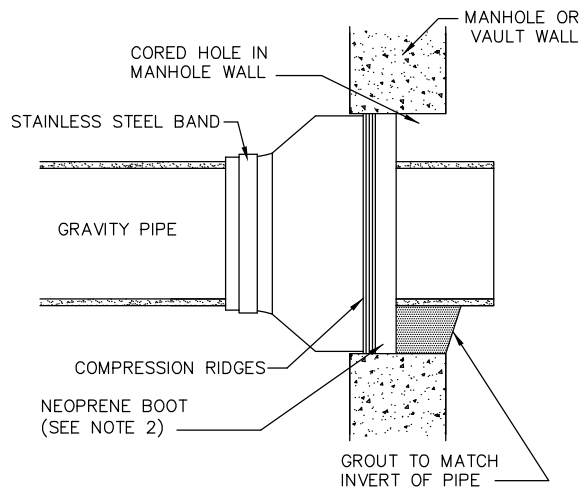
SCALE: NTS	DATE: 8/9/10	CITY AND BOROUGH OF JUNEAU, ALASKA SANITARY SEWER CLEANOUT MAINLINE	
DRAWN BY: STAFF	CHECKED BY: STAFF		
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 208	



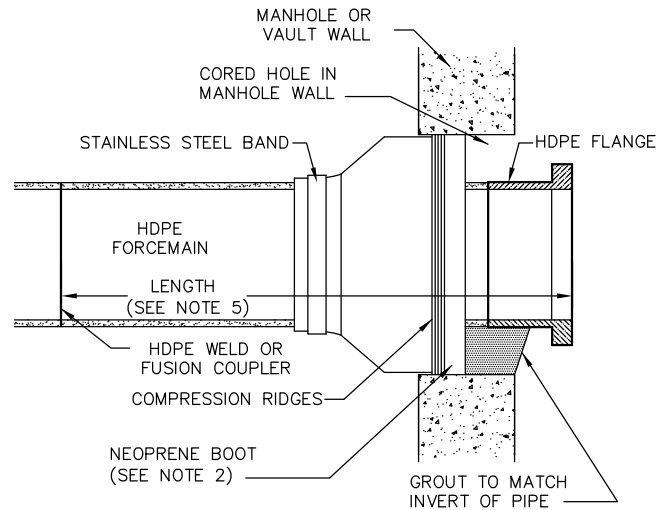
ASBESTOS CEMENT OR  
CONCRETE ADAPTER  
PVC SAND COLLAR  
(SEE NOTE 4)



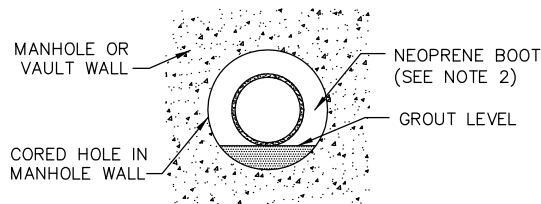
"LINK-SEAL" ADAPTER



FLEXIBLE SEAL ADAPTER



HDPE FORCEMAIN CONNECTION

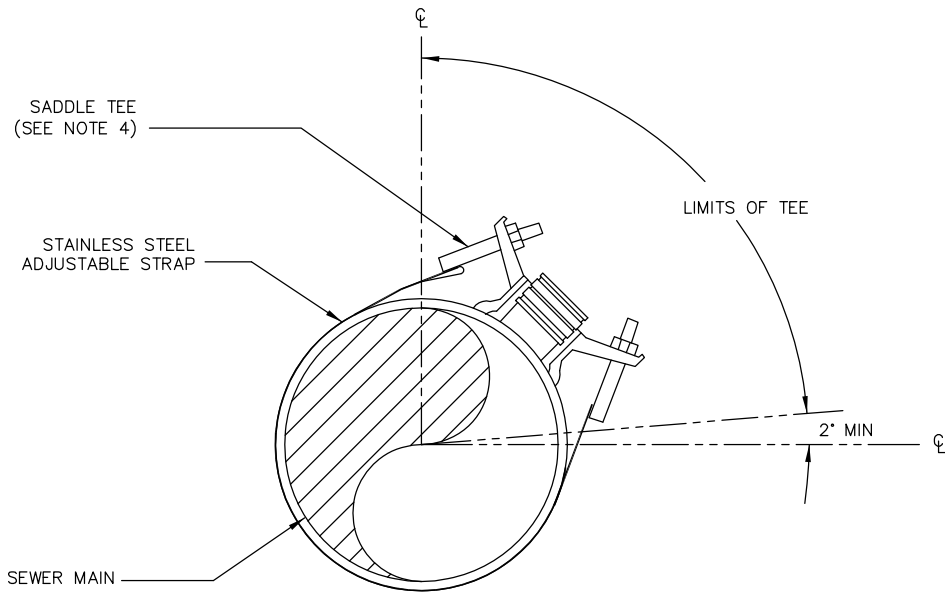


GROUT DETAIL

NOTES

1. ALL MANHOLE CONNECTIONS SHALL BE 100% WATERTIGHT.
2. ALL PIPE SHALL EXTEND 2" INTO MANHOLE.
3. NEOPRENE BOOT ON THE FLEXIBLE SEAL ADAPTER SHALL BE A MINIMUM OF 3/8" THICK PER ASTM C-443, AND SHALL BE HELD IN PLACE WITH AN INTERNAL EXPANDING BAND SUCH AS "KOR-N-SEAL" OR APPROVED EQUAL.
4. PVC SAND COLLAR NOT ALLOWED IN AREAS OF A HIGH WATER TABLE.
5. HDPE FLANGE SHALL BE WELDED TO A SECTION OF PIPE AND INSERTED THROUGH THE FLEXIBLE SEAL FROM THE INSIDE OF THE MANHOLE. THE LENGTH OF HDPE REQUIRED TO BE DETERMINED BY THE INSTALLER.
6. ROMAC HDPE PIPE STIFFENER OR APPROVED EQUAL MAY BE REQUIRED FOR HDPE GRAVITY MAIN INSTALLATIONS. VERIFY WITH THE ENGINEER PRIOR TO INSTALLATION.

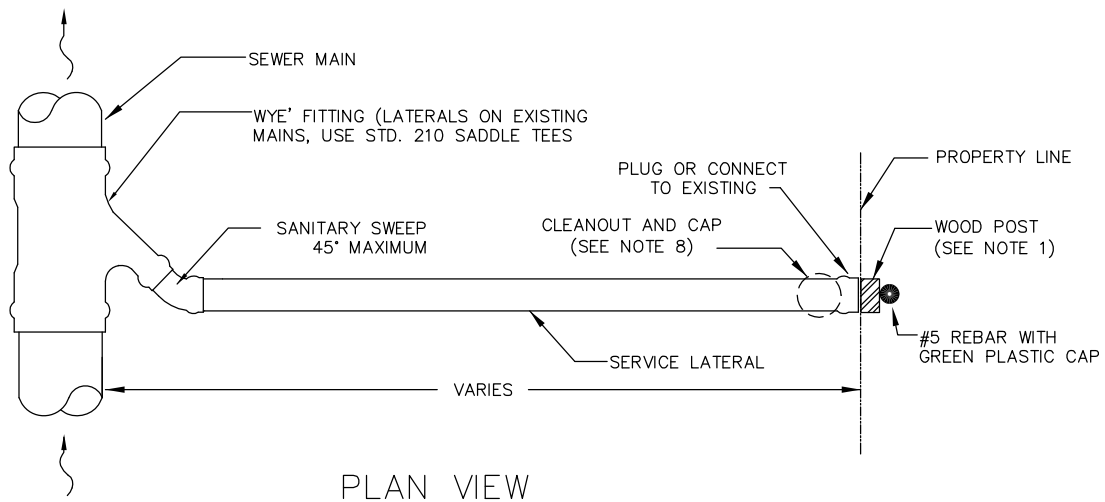
SCALE: NTS	DATE: 7/5/95	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: DRW	CHECKED BY: STAFF	MANHOLE CONNECTION DETAILS	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 209	



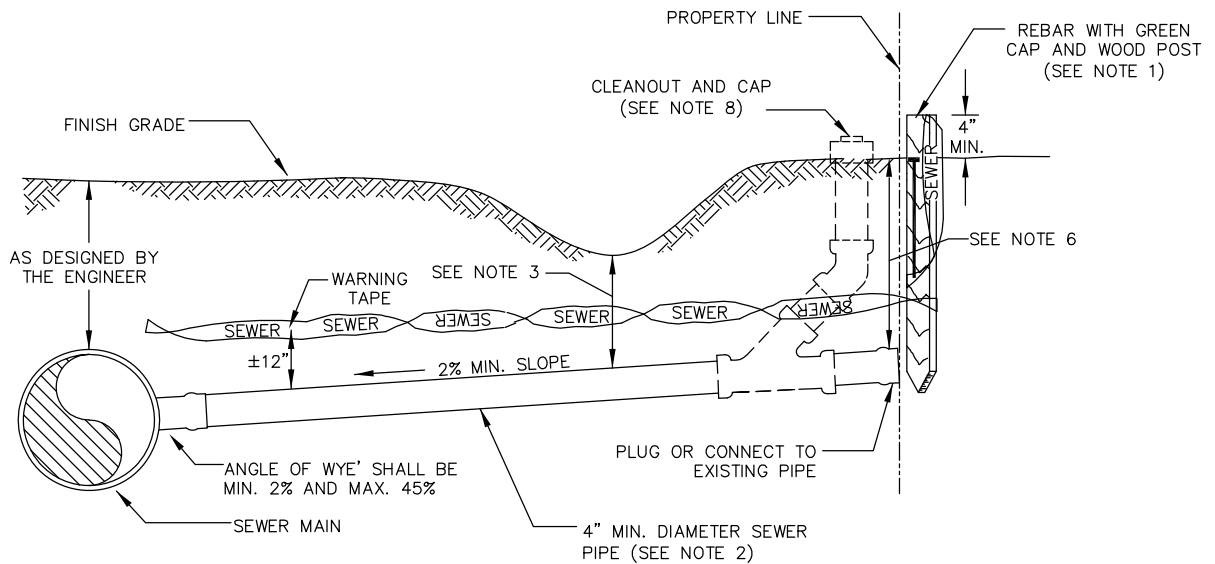
NOTES:

1. DIAMETER OF HOLE CUT IN SEWER MAIN SHALL NOT EXCEED 0.25" LARGER THAN THE SADDLE TEE CONNECTION. TEE SHALL BE CENTERED OVER CUT IN PIPE AND CLAMPED WITH METAL BAND SO TEE GASKET FORMS A WATER-TIGHT SEAL.
2. WATER AND DEBRIS SHALL NOT BE ALLOWED TO ENTER THE SEWER MAIN DURING THE TAPPING OPERATION.
3. SWING TIES TO THE TEE MUST BE MEASURED AND FURNISHED TO CBJ ENGINEERING DEPARTMENT.
4. SADDLE TEE SHALL BE A ROMAC CB SEWER SADDLE OR AN APPROVED EQUAL.

SCALE: NTS	DATE: 7/5/95	CITY AND BOROUGH OF JUNEAU, ALASKA SANITARY SEWER SADDLE TEE	
DRAWN BY: DRW	CHECKED BY: STAFF		
APPROVED BY: <i>DRW</i>		REVISED: 8/14/2011	STANDARD 210



PLAN VIEW

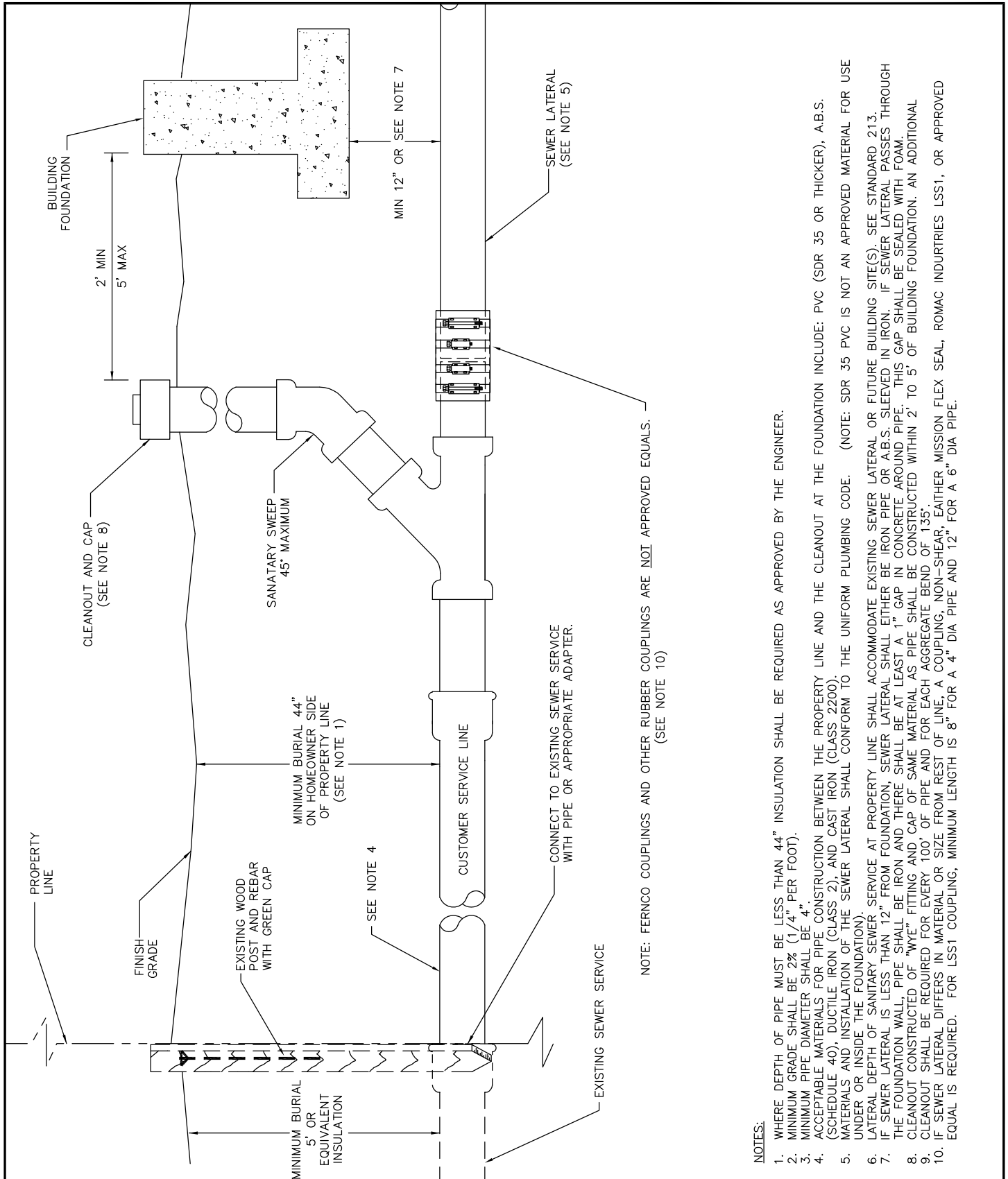


ELEVATION VIEW

NOTES:

1. MARK SERVICE WITH GREEN PAINTED 2"x4" POST OR STAMP "S" IN TOP OF CURB. POST SHALL EXTEND TO DEPTH OF SERVICE LATERAL. REBAR W/CAP SHALL BE DRIVEN TO GROUND LEVEL. EXTEND WARNING TAPE TO TOP OF POST AND STAPLE IN PLACE.
2. ACCEPTABLE PIPE FOR USE WITHIN R.O.W. INCLUDES C900 PVC, SDR 35 PVC AND DUCTILE IRON.
3. MINIMUM CLEARANCE OF 18" REQUIRED BENEATH DITCH LINE. PIPE WITH LESS THAN 44" OF COVER SHALL BE INSULATED AS APPROVED BY THE ENGINEER.
4. DISTANCE FROM WYE TO MANHOLE AND TWO MEASURED DISTANCES FROM END OF SERVICE PIPE TO PERMANENT OBJECTS SHALL BE NOTED ON AS-BUILT PLANS.
5. SERVICE LATERAL SHALL END AT THE PROPERTY LINE WITH A BELL AT THE END OF PIPE.
6. LATERAL DEPTH AT PROPERTY LINE SHALL ACCOMMODATE EXISTING BUILDING SEWER OR FUTURE BUILDING SITE(S).
7. PIPE CONNECTIONS IN THE RIGHT-OF-WAY THAT DO NOT USE BELL AND SPIGOT SHALL CONFORM TO STANDARD 218.
8. CLEANOUT MAY BE REQUIRED AT THE DIRECTION OF THE ENGINEER.

SCALE: NTS	DATE: 12/2/96	CITY AND BOROUGH OF JUNEAU, ALASKA SANITARY SEWER SERVICE LATERAL	
DRAWN BY: DRW	CHECKED BY: STAFF		
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 213	

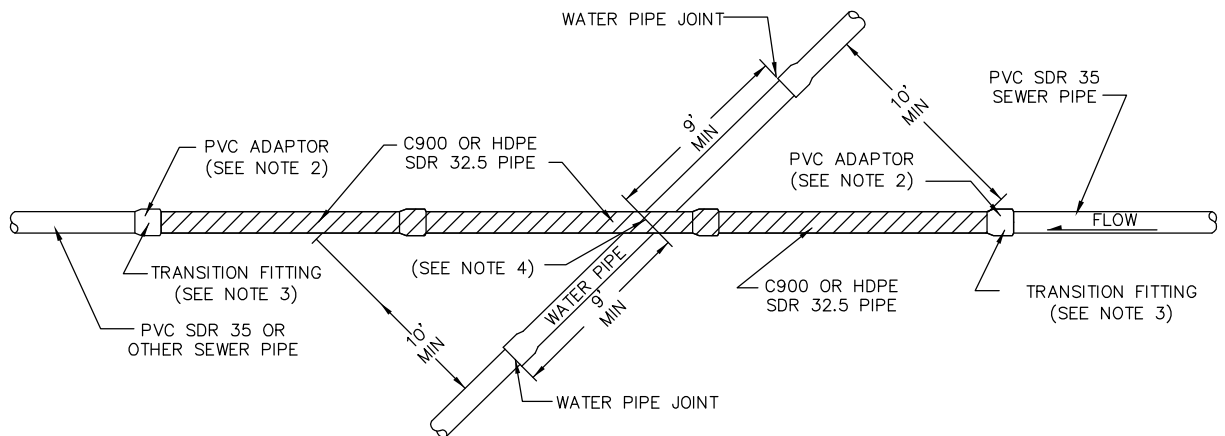


NOTE: FERNCO COUPLINGS AND OTHER RUBBER COUPLINGS ARE NOT APPROVED EQUALS. (SEE NOTE 10)

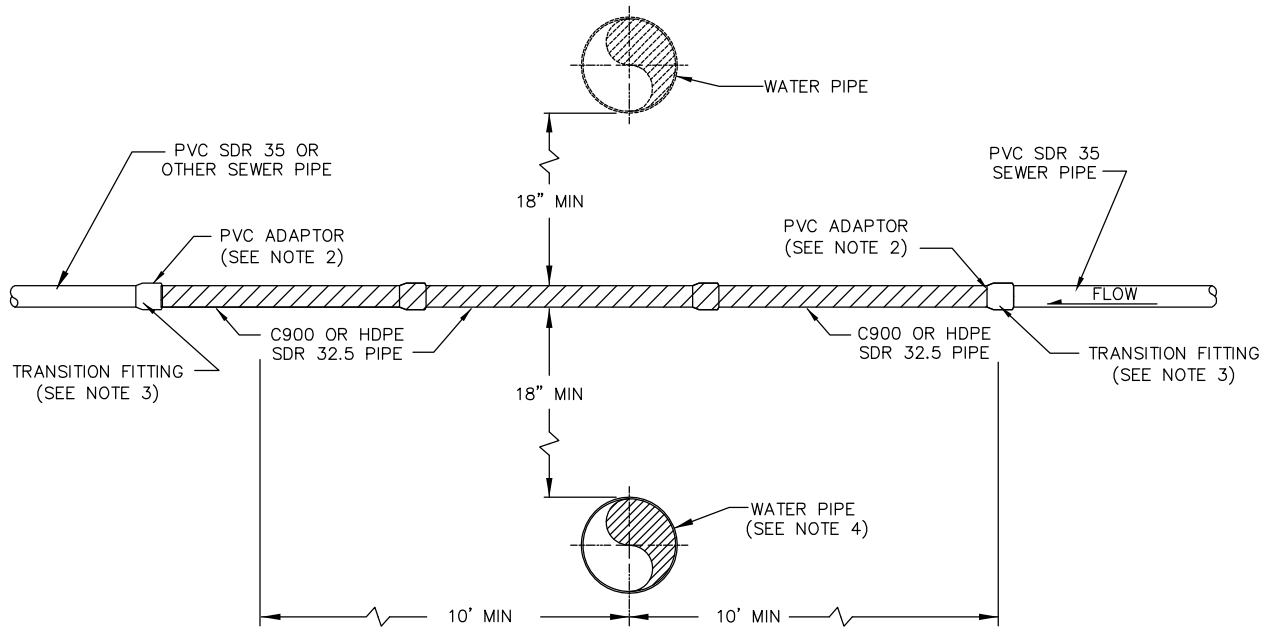
**NOTES:**

1. WHERE DEPTH OF PIPE MUST BE LESS THAN 44" INSULATION SHALL BE REQUIRED AS APPROVED BY THE ENGINEER.
2. MINIMUM GRADE SHALL BE 2% (1/4" PER FOOT).
3. MINIMUM PIPE DIAMETER SHALL BE 4".
4. ACCEPTABLE MATERIALS FOR PIPE CONSTRUCTION BETWEEN THE PROPERTY LINE AND THE CLEANOUT AT THE FOUNDATION INCLUDE: PVC (SDR 35 OR THICKER), A.B.S. (SCHEDULE 40), DUCTILE IRON (CLASS 2), AND CAST IRON (CLASS 2200).
5. MATERIALS AND INSTALLATION OF THE SEWER LATERAL SHALL CONFORM TO THE UNIFORM PLUMBING CODE. (NOTE: SDR 35 PVC IS NOT AN APPROVED MATERIAL FOR USE UNDER OR INSIDE THE FOUNDATION).
6. LATERAL DEPTH OF SANITARY SEWER SERVICE AT PROPERTY LINE SHALL ACCOMMODATE EXISTING SEWER LATERAL OR FUTURE BUILDING SITE(S). SEE STANDARD 213.
7. IF SEWER LATERAL IS LESS THAN 12" FROM FOUNDATION, SEWER LATERAL SHALL EITHER BE IRON PIPE OR A.B.S. SLEEVED IN IRON. IF SEWER LATERAL PASSES THROUGH THE FOUNDATION WALL, PIPE SHALL BE IRON AND THERE SHALL BE AT LEAST A 1" GAP IN CONCRETE AROUND PIPE. THIS GAP SHALL BE SEALED WITH FOAM.
8. CLEANOUT CONSTRUCTED OF "WYE" FITTING AND CAP OF SAME MATERIAL AS PIPE SHALL BE CONSTRUCTED WITHIN 2' TO 5' OF BUILDING FOUNDATION. AN ADDITIONAL CLEANOUT SHALL BE REQUIRED FOR EVERY 100' OF PIPE AND FOR EACH AGGREGATE BEND OF 135°.
10. IF SEWER LATERAL DIFFERS IN MATERIAL OR SIZE FROM REST OF LINE, A COUPLING, NON-SHEAR, EITHER MISSION FLEX SEAL, ROMAC INDUSTRIES LSS1, OR APPROVED EQUAL IS REQUIRED. FOR LSS1 COUPLING, MINIMUM LENGTH IS 8" FOR A 4" DIA PIPE AND 12" FOR A 6" DIA PIPE.

<b>SCALE:</b>	NTS	<b>DATE:</b>	7/5/95
<b>DRAWN BY:</b>	DRW	<b>CHECKED BY:</b>	STAFF
<b>APPROVED BY:</b>			<b>REVISD:</b> 8/14/2011
<b>CITY AND BOROUGH OF JUNEAU, ALASKA SANITARY SEWER CONNECTION CUSTOMER SERVICE LINE</b>			<b>STANDARD 214</b>



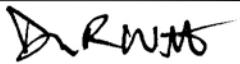
PLAN VIEW

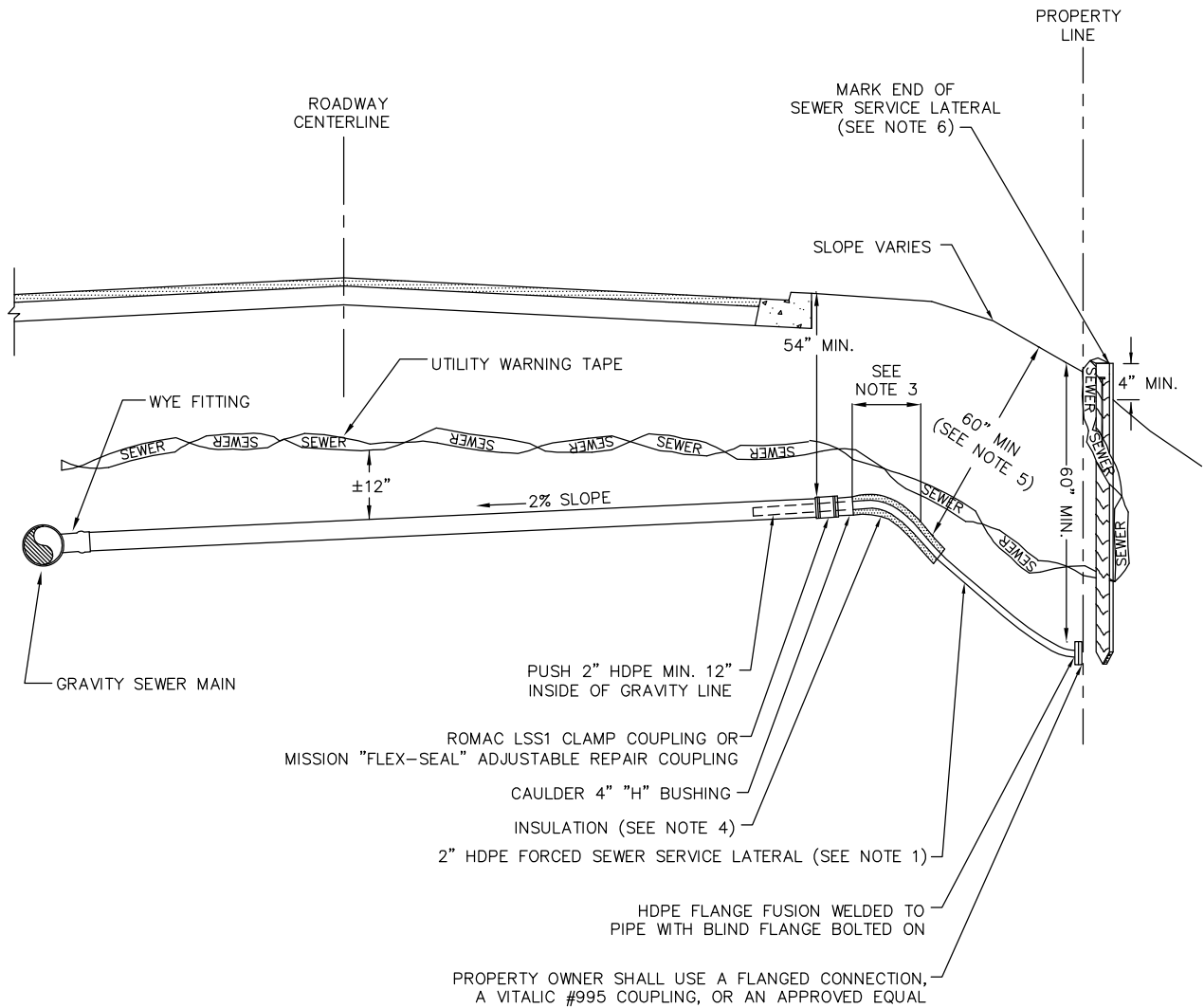


ELEVATION VIEW

NOTES:

1. HDPE, C900 OR SDR 32.5 SEWER PIPE SHALL BE INSTALLED FOR THE LENGTH SHOWN FOR ALL SANITARY SEWER CROSSINGS AS DIRECTED BY THE ENGINEER.
2. FROM SDR 35 TO C900 AND C900 TO SDR 35 JOINTS SHALL BE TRANSITION BELL PVC ADAPTER, INSTALLED PER THE MANUFACTURERS RECOMMENDATION.
3. FROM SDR 35 TO HDPE AND HDPE TO SDR 35 JOINTS SHALL BE TRANSITION FITTING OR LSS-1, STAINLESS NON-SHEAR COUPLING, INSTALLED PER THE MANUFACTURERS RECOMMENDATION.
4. A FULL LENGTH OF WATER PIPE SHALL BE CENTERED UNDER OR OVER THE SANITARY SEWER PIPE AT ALL CROSSINGS. THE TEN FOOT MEASUREMENT SHALL BE TAKEN PERPENDICULAR TO THE WATER PIPE JOINT.

SCALE: NTS	DATE: 2/1/2010	CITY AND BOROUGH OF JUNEAU, ALASKA SANITARY SEWER CROSSING	
DRAWN BY: STAFF	CHECKED BY: STAFF		
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 215	



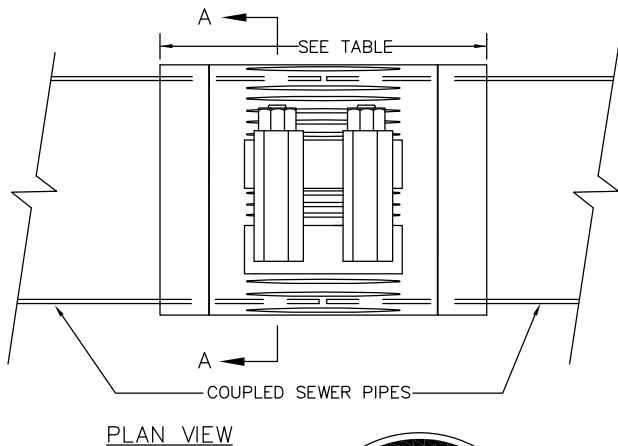
ELEVATION VIEW

NOTES:

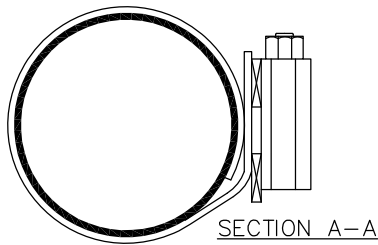
1. HDPE PORTION OF SEWER SERVICE LATERAL SHALL BE CONTINUOUS. LENGTH OF PIPE VARIES.
2. EXTEND 4" PVC SEWER LATERAL AT LEAST TO EDGE OF SHOULDER.
3. USE MINIMUM DISTANCE TO BEND PIPE TO INCREASE DEPTH.
4. INSULATE PIPE WITH ONE SIX FOOT LENGTH OF IMCOLOCK WRAPAROUND PIPE INSULATION OR AN APPROVED EQUAL.
5. MAINTAIN 60" OF COVER TO THE PROPERTY LINE OR INSULATE FOR LOSS OF COVER DIMENSION.
6. INSTALL REBAR WITH GREEN CAP, 2"x4" WOOD POST FROM INVERT TO 4" ABOVE GROUND, PAINTED GREEN, EXTEND WARNING RIBBON TO TOP OF POST AND STAPLE TO TOP OF POST.

SCALE:	NTS	DATE:	12/2/96	CITY AND BOROUGH OF JUNEAU, ALASKA PRESSURE SANITARY SEWER SERVICE LATERAL
DRAWN BY:	DRW	CHECKED BY:	STAFF	
APPROVED BY:			REVISED:	STANDARD 216
			8/14/2011	





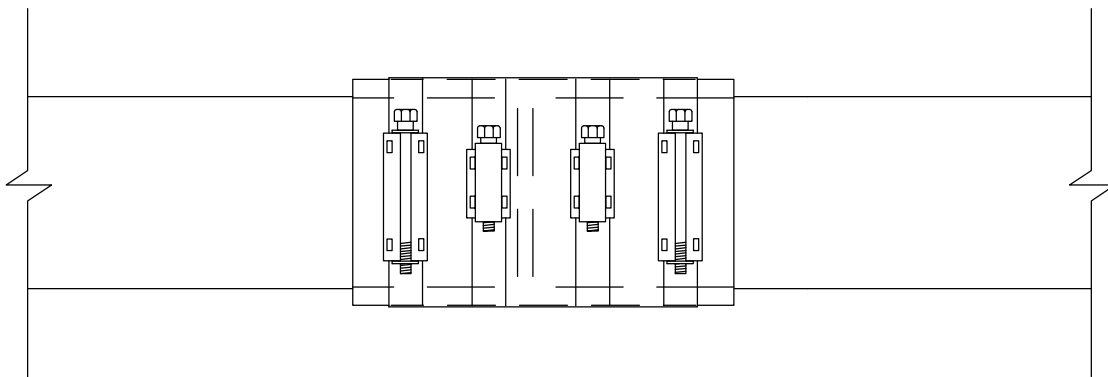
PLAN VIEW



SECTION A-A

PIPE SIZE	LENGTH OF LSS1 CLAMP
4"	6"
6"	12"
8"	12"
10"	12"
12"	12"
14"	12"
18"	16"
21"	20"
24"	20"
27"	24"
30"	24"

**ROMAC LSS1 CLAMP COUPLING**  
 REQUIRED FOR CONNECTIONS WITHIN THE RIGHT-OF-WAY

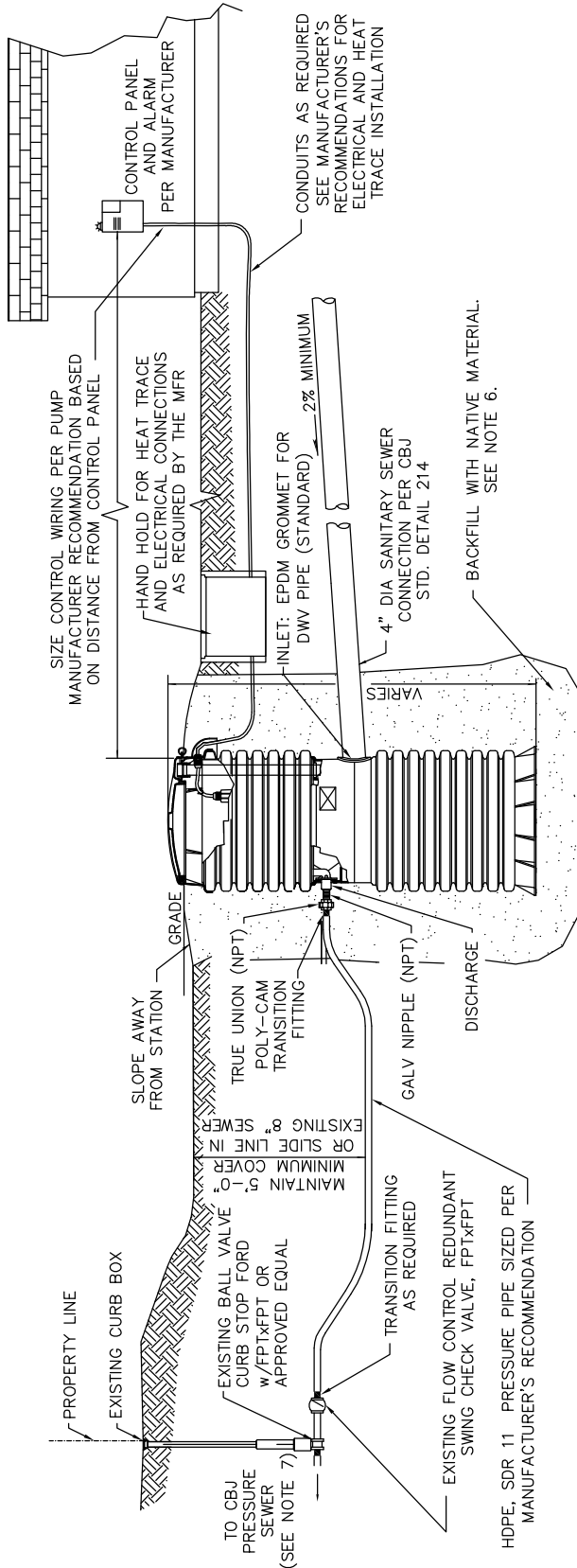


**MISSION "FLEX-SEAL" ADJUSTABLE REPAIR COUPLING**  
 ALLOWED FOR SERVICE CONNECTIONS OUTSIDE OF RIGHT-OF-WAY

NOTES

1. USE ONLY NON-SHEAR ROMAC INDUSTRIES LSS1 SEWER CLAMP COUPLING FOR CONNECTING SEWER PIPES WITHIN THE RIGHT-OF-WAY.
2. A MISSION "FLEX-SEAL" ADJUSTABLE REPAIR COUPLING, OR APPROVED EQUAL OF APPROPRIATE SIZE AND TYPE AND INSTALLED AS PER MANUFACTURER'S INSTRUCTIONS MAY BE USED FOR CONNECTIONS OUTSIDE THE RIGHT-OF-WAY. FERNCO BRAND AND OTHER RUBBER COUPLINGS ARE NOT APPROVED ALTERNATIVES.
3. BOLTS, WASHERS, NUTS, LUG, AND SHELL SHALL BE STAINLESS STEEL.
4. CONNECTED PIPES SHALL BE CUT PERPENDICULAR AND INSERTED INTO COUPLING SO THAT ENDS ARE FLUSH.
5. WHEN CONNECTING TO AN EXISTING SERVICE USE COUPLING CONFORMING TO THIS DETAIL AT CONNECTION AT PROPERTY LINE.

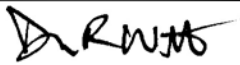
SCALE: NTS	DATE: 12/2/96	CITY AND BOROUGH OF JUNEAU, ALASKA COUPLING FOR DISSIMILAR SANITARY SEWER PIPES
DRAWN BY: DRW	CHECKED BY: STAFF	
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 218

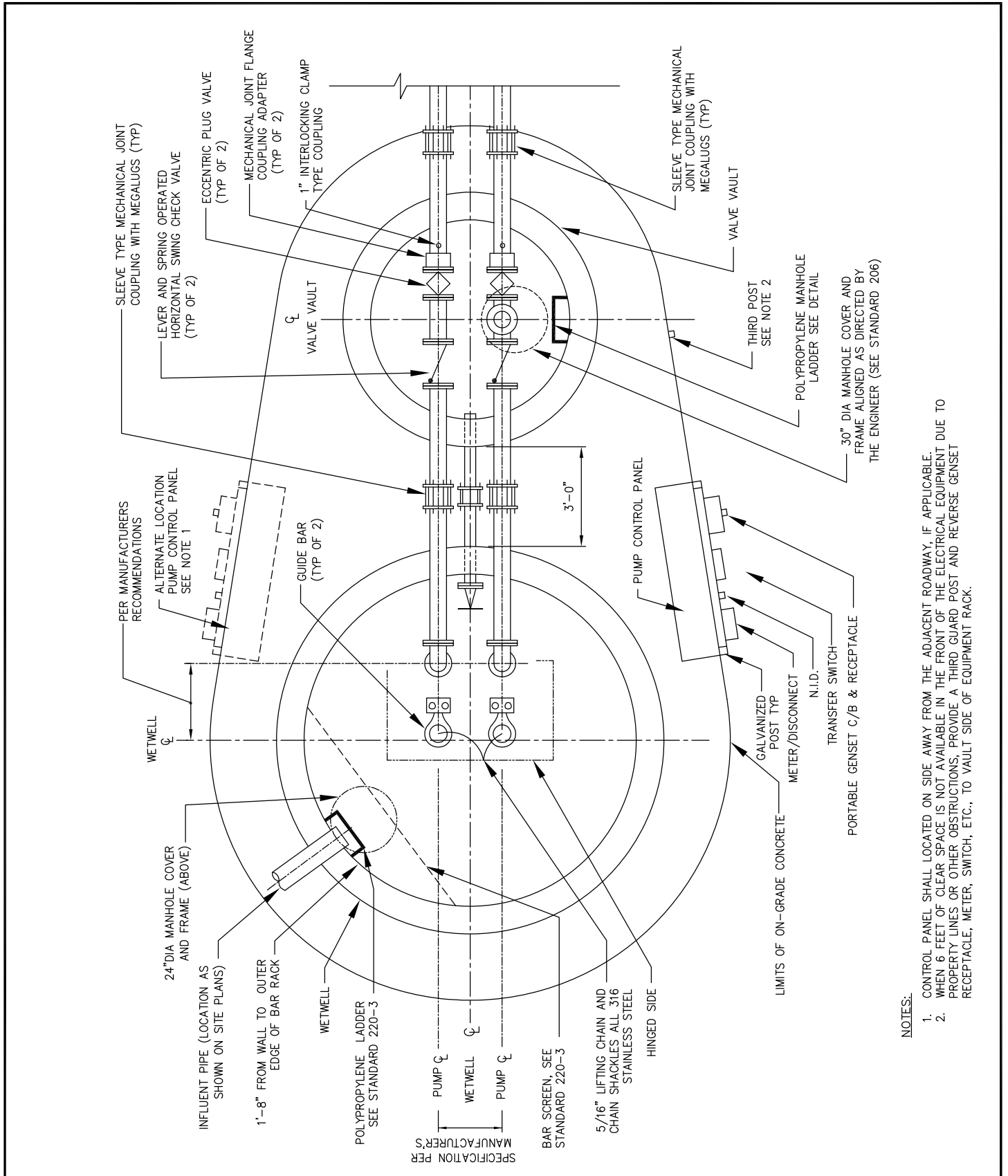


RESIDENTIAL PUMP STATION

NOTES

1. RESIDENTIAL PUMP STATIONS SHALL BE COMPLETE FACTORY ASSEMBLED UNITS CONSISTING OF THE PUMPS, WET WELL BASINS, PIPING, ELECTRICAL AND CONTROLS.
2. PUMPS ARE TO BE SUBMERSIBLE PROGRESSIVE CAVITY GRINDER PUMPS. PUMPS MAY BE E-ONE D-SERIES, MODEL DH071, CRANE COMPANY, BARNES SGPC, 1 HP OR APPROVED EQUAL.
3. PUMP STATION BASIN ASSEMBLIES ARE TO BE FIBERGLASS OR HIGH DENSITY POLYETHYLENE. PUMP STATION BASIN ASSEMBLIES MAY BE E/ONE D SERIES; BARNES EASYELECTRIC FACTORY PREWIRED BASIN PACKAGE WITH JUNCTION BOX OR APPROVED EQUAL.
4. CONTROL PANELS SHALL BE UL APPROVED, WALL MOUNTED, NEMA 4 X ENCLOSURE WITH PADLOCK LATCH. CONTROL PANELS SHALL BE SUPPLIED WITH ALARMS BOTH AUDIBLE AND VISUAL AS REQUIRED BY THE MANUFACTURER. THE PANEL SHALL BE FURNISHED WITH MANUAL PUMP START. APPROVED CONTROL PANELS INCLUDE E/ONE SENTRY, BARNES STEALTH OR APPROVED EQUAL.
5. PUMPS SHALL BE PROVIDED WITH THE STANDARD CHECK VALVE AND ANTI-SIPHON VALVE ON THE DISCHARGE PIPING. THE DISCHARGE PIPING SHALL ALSO HAVE A REDUNDANT CHECK VALVE ACCESSIBLE FROM THE INSIDE OF THE PUMP STATION BASIN.
6. IN AREAS OF HIGH GROUND WATER AN ANCHOR MAY BE REQUIRED. SEE MANUFACTURER'S RECOMMENDATION FOR SIZE OF ANCHOR.
7. CONNECTIONS TO GRAVITY LINE PER CBJ STANDARD DETAIL 216.

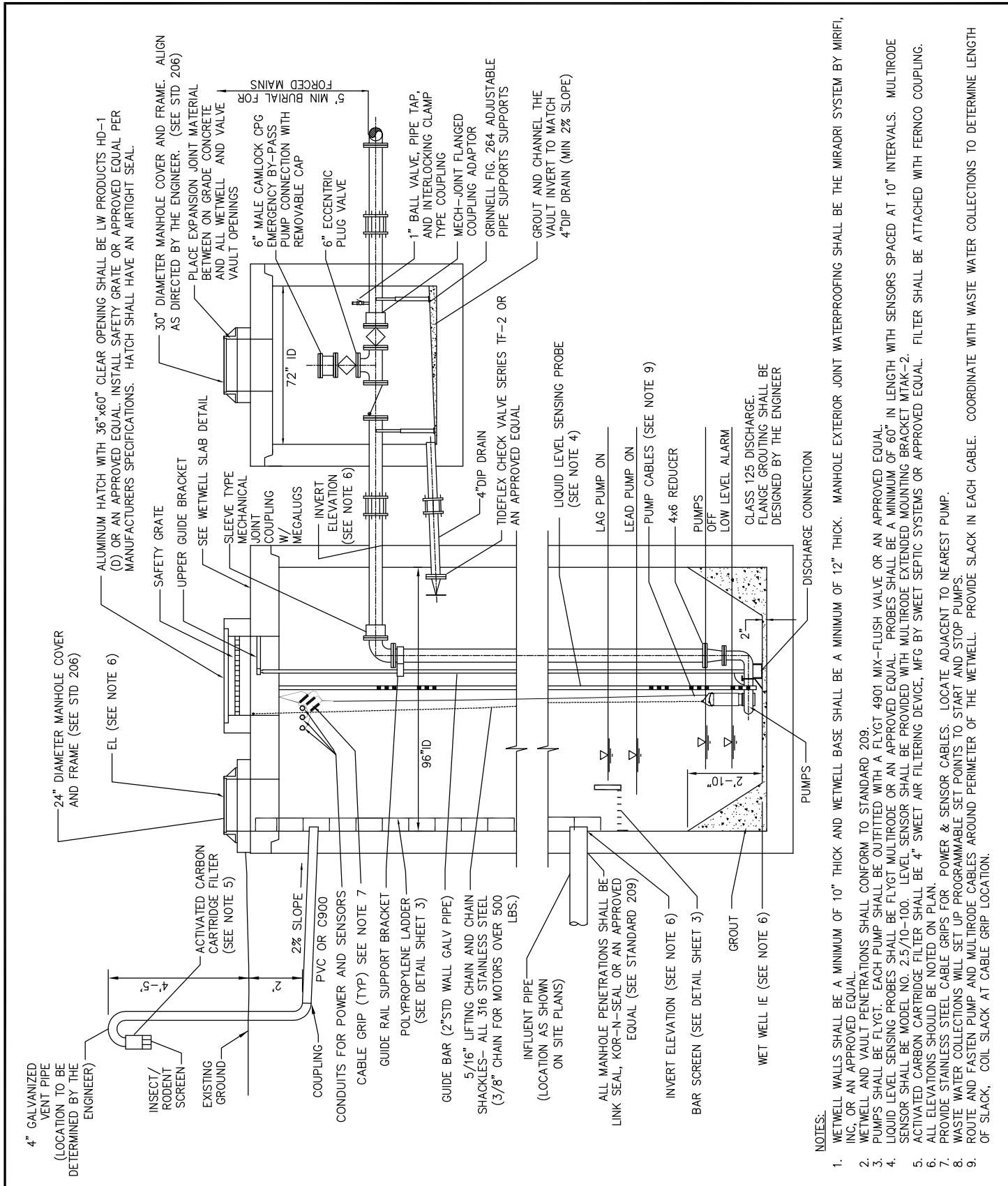
SCALE: NTS	DATE: 2/1/10	CITY AND BOROUGH OF JUNEAU, ALASKA RESIDENTIAL PUMP STATION PRESSURE MAIN	
DRAWN BY: STAFF	CHECKED BY: STAFF		
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 219	



**NOTES:**

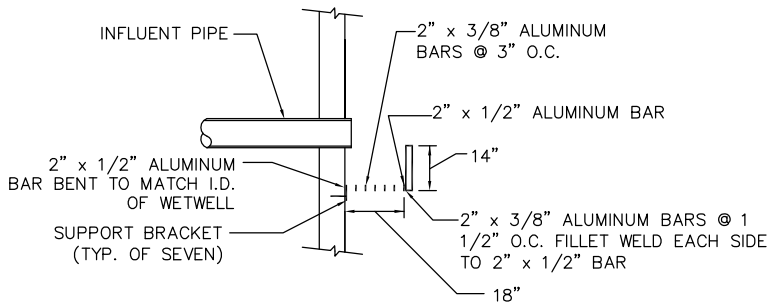
1. CONTROL PANEL SHALL LOCATED ON SIDE AWAY FROM THE ADJACENT ROADWAY, IF APPLICABLE.
2. WHEN 6 FEET OF CLEAR SPACE IS NOT AVAILABLE IN THE FRONT OF THE ELECTRICAL EQUIPMENT DUE TO PROPERTY LINES OR OTHER OBSTRUCTIONS, PROVIDE A THIRD GUARD POST AND REVERSE GENSET RECEPTACLE, METER, SWITCH, ETC., TO VAULT SIDE OF EQUIPMENT RACK.

<b>SCALE:</b> NTS	<b>DATE:</b> 1/18/00	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>	
<b>DRAWN BY:</b> STAFF	<b>CHECKED BY:</b> JB/STAFF	<b>PUMP STATION</b>	
<b>APPROVED BY:</b> 	<b>REVISED:</b> 8/14/2011	<b>PLAN VIEW</b>	
		<b>STANDARD 220-1</b>	

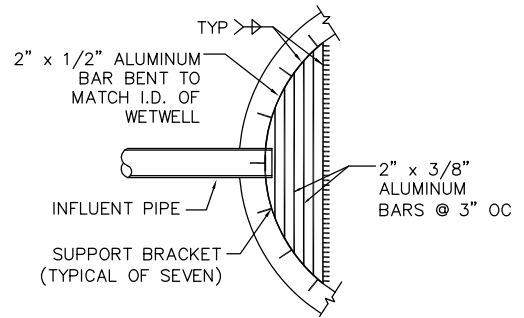


- NOTES:**
1. WETWELL WALLS SHALL BE A MINIMUM OF 10" THICK AND WETWELL BASE SHALL BE A MINIMUM OF 12" THICK. MANHOLE EXTERIOR JOINT WATERPROOFING SHALL BE THE MIRADRI SYSTEM BY MIRIFI, INC. OR AN APPROVED EQUAL.
  2. WETWELL AND VAULT PENETRATIONS SHALL CONFORM TO STANDARD 209.
  3. PUMPS SHALL BE FLYGT. EACH PUMP SHALL BE OUTFITTED WITH A FLYGT 4901 MIX-FLUSH VALVE OR AN APPROVED EQUAL.
  4. LIQUID LEVEL SENSING PROBES SHALL BE FLYGT MULTIRODE OR AN APPROVED EQUAL. PROBES SHALL BE A MINIMUM OF 60" IN LENGTH WITH SENSORS SPACED AT 10" INTERVALS. MULTIRODE SENSOR SHALL BE MODEL NO. 2.5/10-100. LEVEL SENSOR SHALL BE PROVIDED WITH MULTIRODE EXTENDED MOUNTING BRACKET MTKA-2.
  5. ACTIVATED CARBON CARTRIDGE FILTER SHALL BE 4" SWEET AIR FILTERING DEVICE, MFG BY SWEET SEPTIC SYSTEMS OR APPROVED EQUAL. FILTER SHALL BE ATTACHED WITH FERRECO COUPLING.
  6. ALL ELEVATIONS SHOULD BE NOTED ON PLAN.
  7. PROVIDE STAINLESS STEEL CABLE GRIPS FOR POWER & SENSOR CABLES. LOCATE ADJACENT TO NEAREST PUMP.
  8. WASTE WATER COLLECTIONS WILL SET UP PROGRAMMABLE SET POINTS TO START AND STOP PUMPS.
  9. ROUTE AND FASTEN PUMP AND MULTIRODE CABLES AROUND PERIMETER OF THE WETWELL. PROVIDE SLACK IN EACH CABLE. COORDINATE WITH WASTE WATER COLLECTIONS TO DETERMINE LENGTH OF SLACK, COIL SLACK AT CABLE GRIP LOCATION.

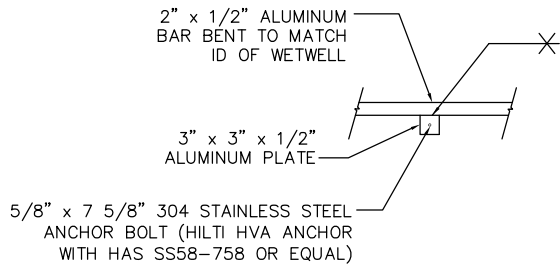
SCALE: NTS	DATE: 1/18/00	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: STAFF	CHECKED BY: JB/STAFF	PUMP STATION ELEVATION VIEW	
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 220-2	



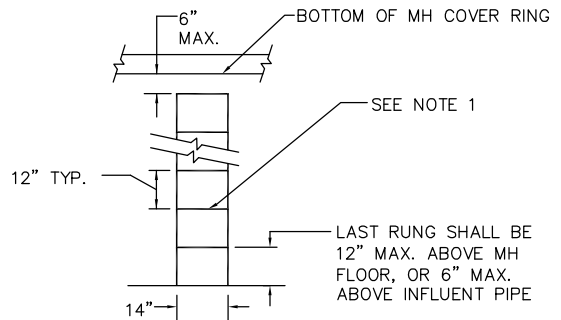
BAR SCREEN DETAIL  
ELEVATION VIEW



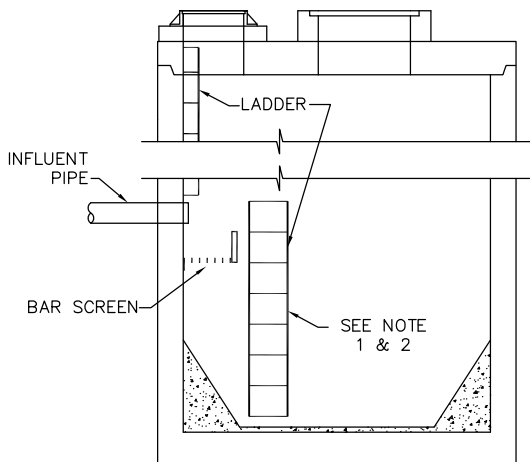
BAR SCREEN DETAIL  
PLAN VIEW



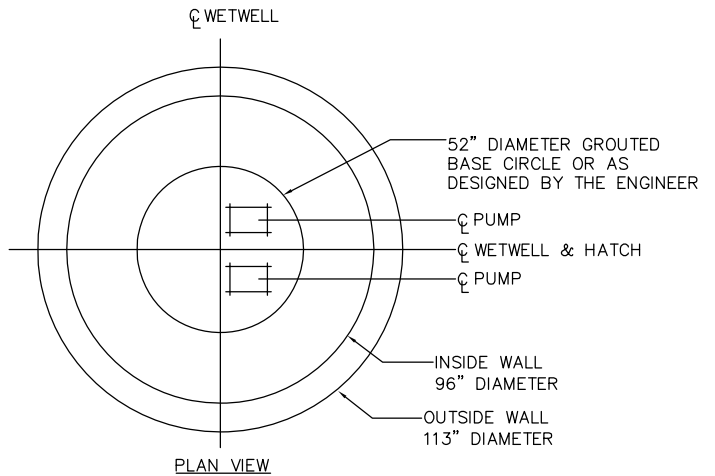
SUPPORT BRACKET DETAIL  
ELEVATION VIEW  
(TYPICAL OF 7 LOCATIONS)



WETWELL AND VAULT LADDERS  
ELEVATION VIEW



LADDER LOCATION  
ELEVATION VIEW

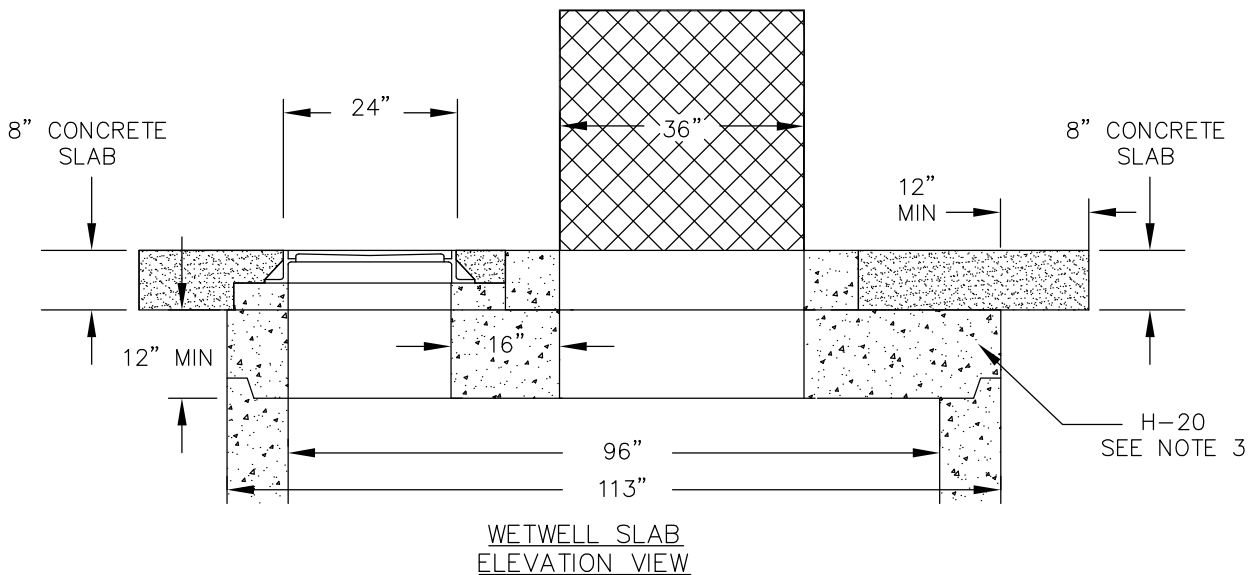
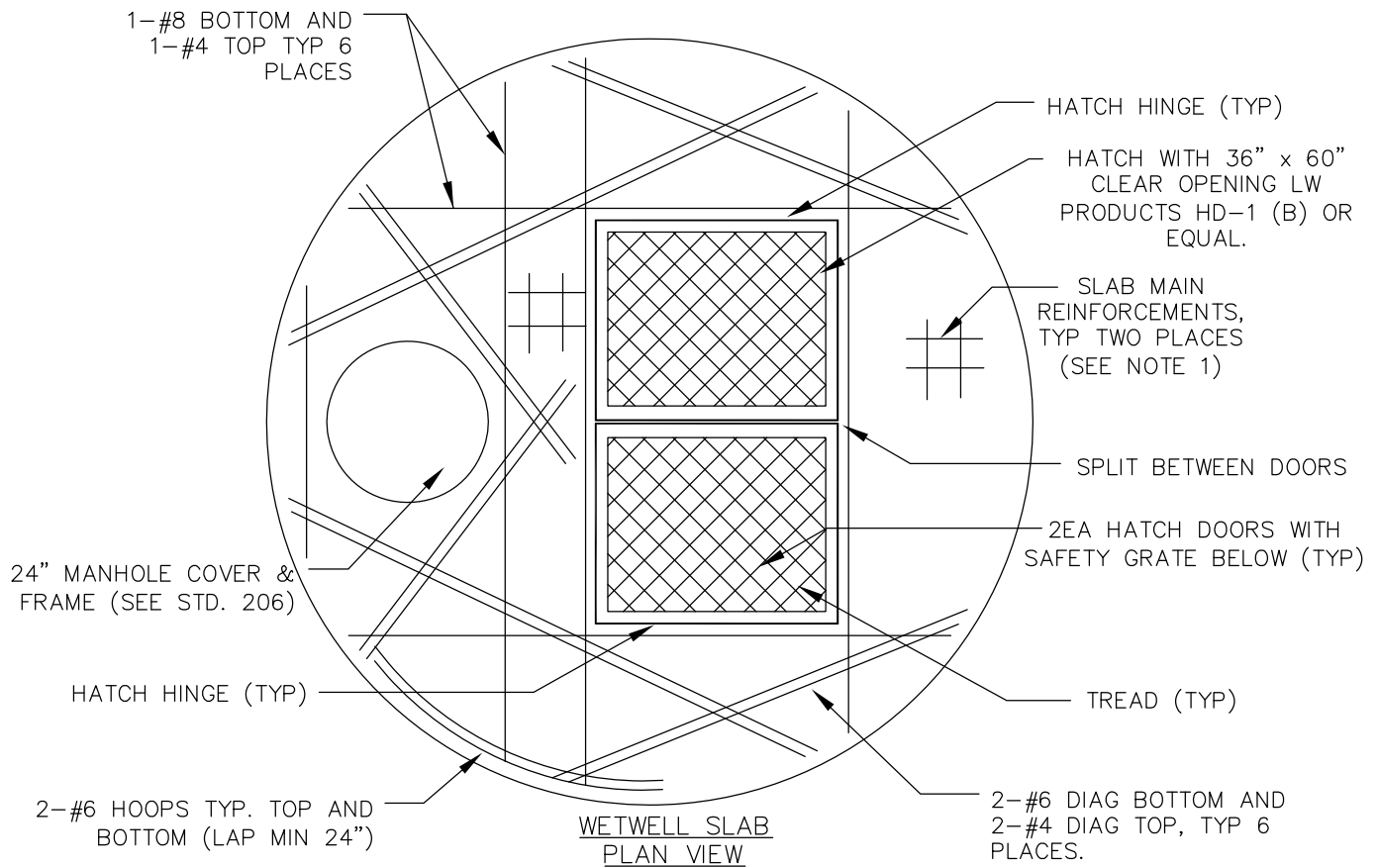


## PUMP STATION DETAILS

NOTES:

1. RUNGS AND RAILS OF LADDER SHALL BE CONSTRUCTED OF POLYPROPYLENE CONFORMING TO ASTM D-4101 WITH STEEL 1/2" GRADE 60 REINFORCING BAR CORES IN THE RUNGS AND 9/16" COLD DRAWN STEEL BAR CORES IN THE RAILS.
2. AN OFFSET SET OF LADDERS SHALL BE PLACED NEXT TO BAR SCREEN FOR ACCESS TO WETWELL FLOOR. LADDER MUST EXTEND ABOVE BAR SCREEN FOR OPERATOR SAFETY.

<b>SCALE:</b> NTS	<b>DATE:</b> 1/18/00	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>	
<b>DRAWN BY:</b> STAFF	<b>CHECKED BY:</b> JD/STAFF	<b>PUMP STATION DETAILS</b>	
<b>APPROVED BY:</b> 	<b>REVISED:</b> 8/14/2011	<b>STANDARD 220-3</b>	



**NOTES:**

1. SLAB SHALL BE REINFORCED WITH #6 @5" BOTTOM AND #4 @7" TOP. PROVIDE A MINIMUM OF #4 @12" TOP AND BOTTOM PERPENDICULAR TO MAIN REINFORCEMENT.
2. REINFORCING COVER SHALL BE 2-INCHES CLEAR AT TOP AND BOTTOM SURFACES.
3. LID TO BE H-20 LOADING PER MANHOLE MANUFACTURER.

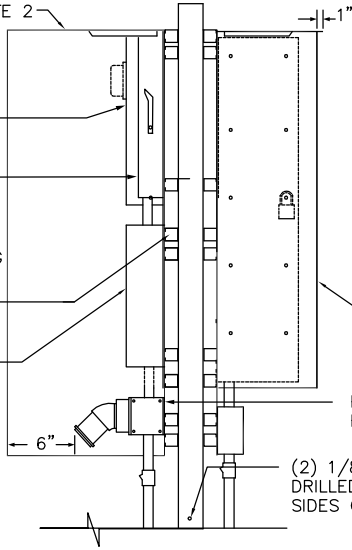
<b>SCALE:</b> NTS	<b>DATE:</b> 1/18/00	<b>CITY AND BOROUGH OF JUNEAU, ALASKA PUMP STATION DETAILS</b>	
<b>DRAWN BY:</b> STAFF	<b>CHECKED BY:</b> JB/STAFF		
<b>APPROVED BY:</b> 	<b>REVISED:</b> 8/14/2011	<b>STANDARD 220-4</b>	

1/4" GALV. MILD STEEL PLATE ON BOTH SIDES AND TOP OF EQUIPMENT. SEE NOTE 2

METER DISCONNECT  
PORTABLE GENERATOR TRANSFER SWITCH

HOT DIPPED GALVANIZED FRAMING ERECTOR CHANNEL 1-1/2" x 1-1/2"

GENSET C/B



BACK TO PACK MOUNTING

1/4" GALV. MILD STEEL PLATE ON BOTH SIDES AND TOP OF EQUIPMENT. SEE NOTE 2

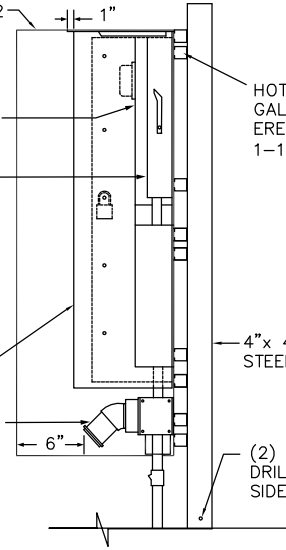
METER DISCONNECT  
PORTABLE GENERATOR TRANSFER SWITCH

PADLOCK LOCATION SEE SECTION Y-Y

PUMP CONTROL CABINET SHIELD

PORTABLE GENERATOR RECEPTACLE SEE NOTE X

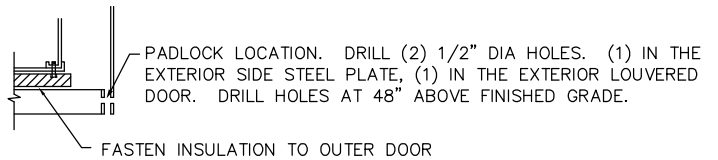
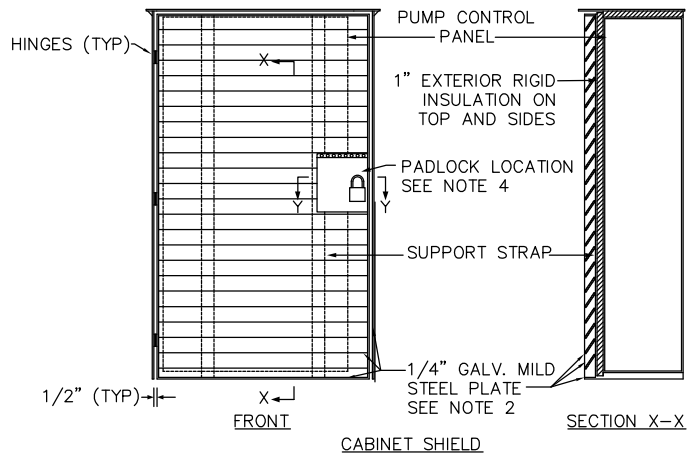
(2) 1/8" WEEP HOLES DRILLED ON OPPOSITE SIDES OF EACH POST



SIDE BY SIDE MOUNTING

NOTES:

1. LABEL METER DISCONNECT, PORTABLE GENSET CIRCUIT BREAKER, AND PORTABLE GENSET TRANSFER SWITCH WITH ENGRAVED PHENOLIC LABELS WITH 1" TALL CAPITAL LETTERS.
2. PROVIDE 1/4" GALVANIZED MILD STEEL ON BOTH SIDES AND TOP OF THE METER/DISCONNECT, TRANSFER SWITCH, AND THE GENSET CIRCUIT BREAKER AS SHOWN, SO THAT THE METAL EXTEND 6" BEYOND THE END OF THE GENSET RECEPTACLE.
3. PROVIDE PUMP CONTROL PANEL PROTECTION WITH LOCKING DOOR CONSTRUCTED FROM 1/4" GALVANIZED MILD STEEL PLATE AS SHOWN.
4. SECURE 6" X 6" RUBBER PAD TO EXTERIOR FRONT DOOR WITH GALVANIZED HARDWARE, MOUNT OVER THE PADLOCK.



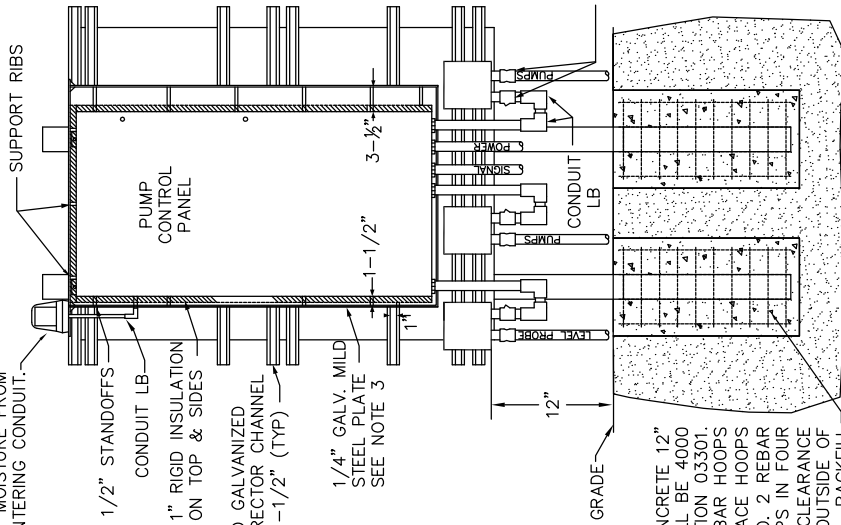
SECTION Y-Y

DETAIL - CABINET SHIELDS

NTS

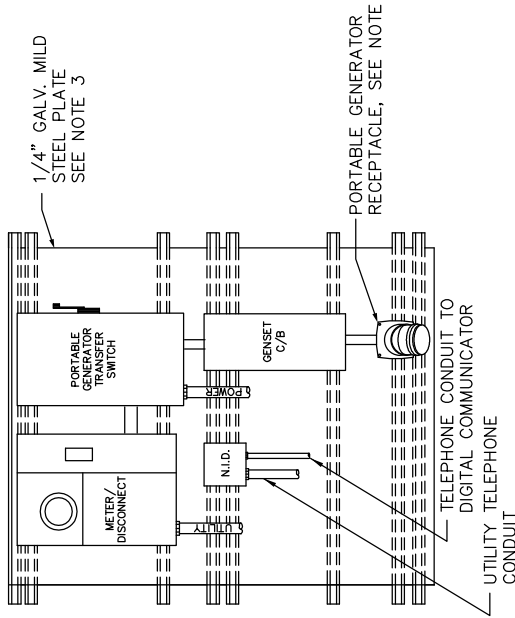
SCALE: NTS	DATE: 1/18/00	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: STAFF	CHECKED BY: JB/STAFF	PUMP STATION	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	CABINET SHIELDS	
		STANDARD 220-5	

ALARM STROBE LIGHT: EDWARDS NO. 94R-N5 W/ 93-LR LENS (LIGHT & CONTROLS PER LADDER DIAGRAM—PUMP CONTROLS. SEAL LIGHT TO PREVENT MOISTURE FROM ENTERING CONDUIT.



BURY POST 3' MIN IN CONCRETE 12" ALL SIDES, CONCRETE SHALL BE 4000 PSI PER CBJ SPEC SECTION 03301. REINFORCE WITH NO. 3 REBAR HOOPS EVERY 16" IN DEPTH. TIE NO. 2 REBAR VERTICALLY AROUND HOOPS IN FOUR PLACES. MAINTAIN 3" CLEARANCE BETWEEN REBAR AND OUTSIDE OF CONCRETE ALL SIDES. BACKFILL AROUND CONCRETE 12" ALL SIDES. BACKFILL PER CBJ STANDARD SPECIFICATION 02202 AND COMPACT TO 95% PER MODIFIED DENSITY METHOD.

FRONT VIEW  
NTS



BACK VIEW  
NTS

NOTES

1. LABEL METER DISCONNECT, PORTABLE GENSET CIRCUIT BREAKER, AND PORTABLE GENSET TRANSFER SWITCH WITH ENGRAVED PHENOLIC LABELS WITH 1" TALL CAPITAL LETTERS.
2. STAINLESS STEEL NEMA 4X JUNCTION BOX WITH TERMINAL LUGS, 12" X 12" X 6" MIN SIZE AS REQUIRED.
3. PROVIDE 1/4" GALVANIZED MILD STEEL PLATE ON BOTH THE BACK, AND THE TOP OF THE METER/DISCONNECT, TRANSFER SWITCH AND THE GENSET CIRCUIT BREAKER AS SHOWN. EXTEND THE SIDES AND TOP SO THAT THEY EXTEND 6" BEYOND THE END OF THE GENSET RECEPTACLE. SEE SHEET 5.
4. PROVIDE 1/4" GALVANIZED MILD STEEL PLATE AROUND THE PUMP CONTROL PANEL ON ALL SIDES AS SHOWN AND PER DETAIL SHOWN ON SHEET 5. CUT HOLES IN BOTTOM TO ALLOW CONDUIT TO ENTER AND EXIT THE PUMP CONTROL PANEL.
5. THE CBJ WILL FILL THE SEAL OFF(S) UPON COMPLETION OF THE PROJECT.

SCALE:

NTS

DATE:

1/18/00

DRAWN BY:

STAFF

CHECKED BY:

JB/STAFF

CITY AND BOROUGH OF JUNEAU, ALASKA  
PUMP STATION CONTROL PANEL  
BACK TO BACK LAYOUT

APPROVED BY:

REVISED:

8/14/2011

STANDARD 220-6A

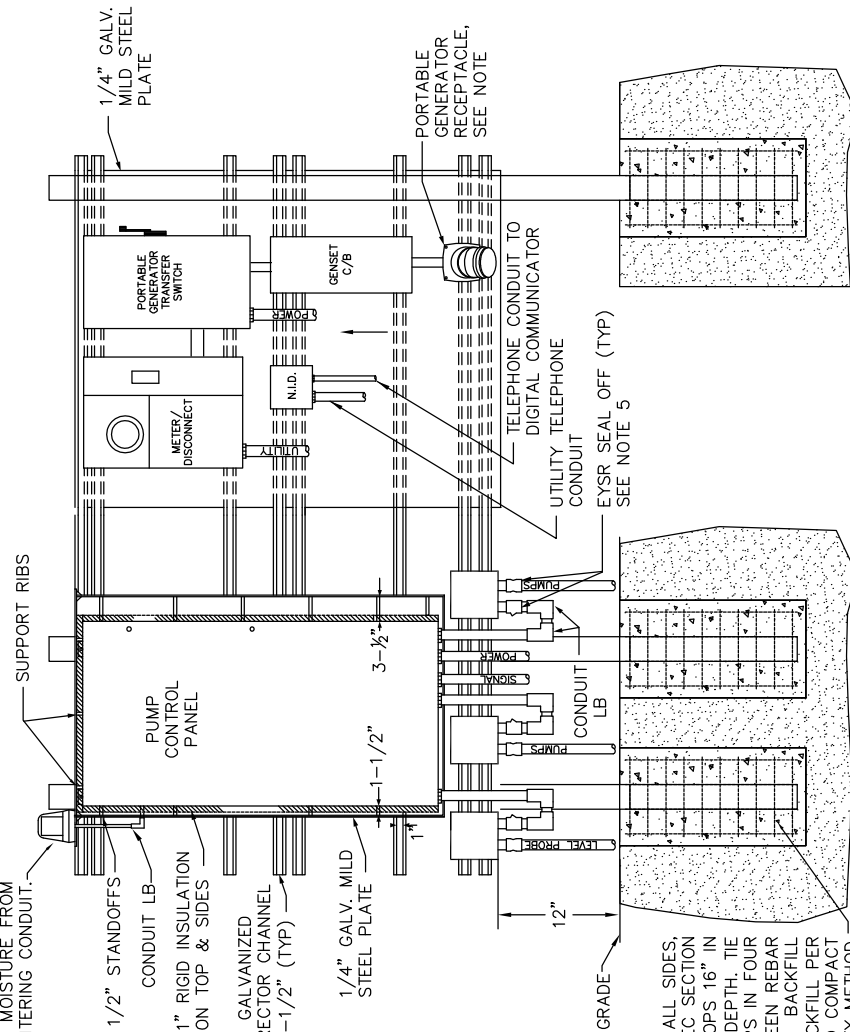


ALARM STROBE LIGHT: EDWARDS NO. 94R-N5 W/ 93-LR LENS (LIGHT & CONTROLS PER LADDER DIAGRAM—PUMP CONTROLS. SEAL LIGHT TO PREVENT MOISTURE FROM ENTERING CONDUIT.

NOTES

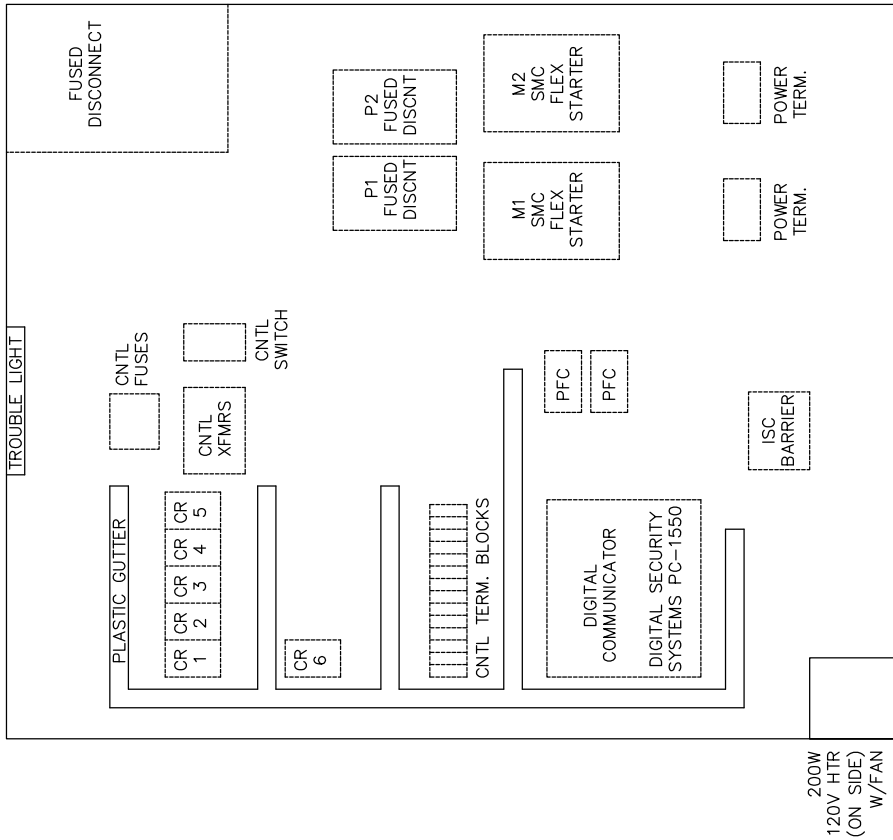
1. LABEL METER DISCONNECT, PORTABLE GENSET CIRCUIT BREAKER, AND PORTABLE GENSET TRANSFER SWITCH WITH ENGRAVED PHENOLIC LABELS WITH 1" TALL CAPITAL LETTERS.
2. STAINLESS STEEL NEMA 4X JUNCTION BOX WITH TERMINAL LUGS, 12" X 12" X 6" MIN SIZE AS REQUIRED.
3. PROVIDE 1/4" GALVANIZED MILD STEEL PLATE ON BOTH, THE BACK, AND THE TOP OF THE METER/DISCONNECT, TRANSFER SWITCH AND THE GENSET CIRCUIT BREAKER AS SHOWN. EXTEND THE SIDES AND TOP SO THAT THEY EXTEND 6" BEYOND THE END OF THE GENSET RECEPTACLE. SEE SHEET 5.
4. PROVIDE 1/4" GALVANIZED MILD STEEL PLATE AROUND THE PUMP CONTROL PANEL ON ALL SIDES AS SHOWN AND PER DETAIL SHOWN ON SHEET 5. CUT HOLES IN BOTTOM TO ALLOW CONDUIT TO ENTER AND EXIT THE PUMP CONTROL PANEL. THE CBJ WILL FILL THE SEAL OFF(S) UPON COMPLETION OF THE PROJECT.

BURY POST 3' MIN IN CONCRETE 12" ALL SIDES, CONCRETE SHALL BE 4000 PSI PER CBJ SPEC SECTION 03301. REINFORCE WITH NO. 3 REBAR HOOPS 16" IN DIAMETER. SPACE HOOPS EVERY 6" IN DEPTH. TIE NO. 2 REBAR VERTICALLY AROUND HOOPS IN FOUR PLACES. MAINTAIN 3" CLEARANCE BETWEEN REBAR AND OUTSIDE OF CONCRETE ALL SIDES. BACKFILL AROUND THE CONCRETE 12" ALL SIDES. BACKFILL PER CBJ STANDARD SPECIFICATION 02202 AND COMPACT TO 95% PER MODIFIED DENSITY METHOD.



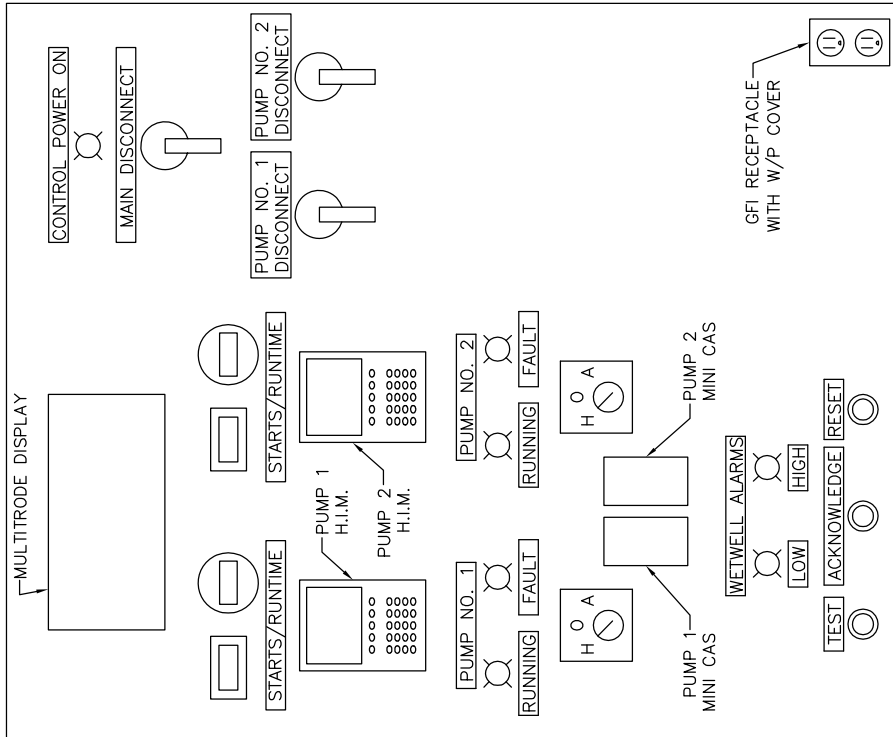
FRONT VIEW  
NTS

SCALE: NTS	DATE: 1/18/00	CITY AND BOROUGH OF JUNEAU, ALASKA PUMP STATION CONTROL PANEL SIDE BY SIDE LAYOUT	
DRAWN BY: STAFF	CHECKED BY: JB/STAFF		
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 220-6B	



36"W X 48"H X 12"D (MIN DIMENSIONS) NEMA 4X STAINLESS STEEL ENCLOSURE.  
 PROVIDE WITH VENTILATION GRILLS AND FAN IF HEAT LOAD CALCULATIONS REQUIRE.

**INTERIOR ELEVATION - PUMP PANEL**  
 NO SCALE

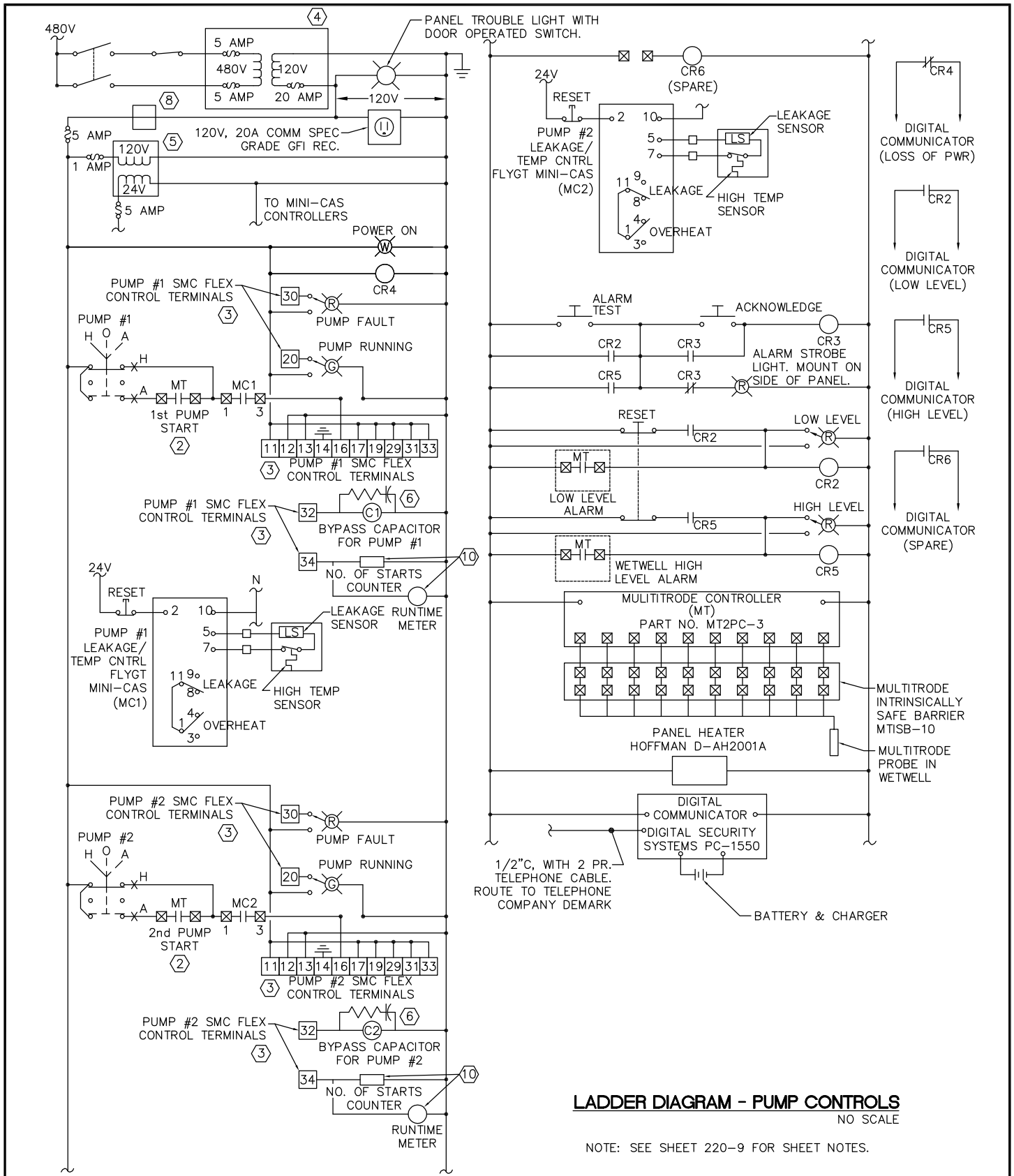


**DOOR ELEVATION - PUMP PANEL**  
 NO SCALE

NOTES:

- SEE SHEET 220-10 FOR THE CONTROL LEGEND.
- ALL PANEL ALARM INDICATOR LIGHTS SHALL HAVE PUSH-TO-TEST LIGHTS MOUNTED ON THE PANEL DOOR.
- THE MAIN DISCONNECT AND PUMP DISCONNECTS SHALL CONSIST OF FUSES AND DISCONNECT SWITCHES NOT CIRCUIT BREAKERS. THE MAIN DISCONNECT SHALL DISCONNECT POWER INSIDE PANEL WHEN THE DOOR OPENS.
- ALL RELAYS SHALL BE INDUSTRIAL CONTROL RELAYS. ALLEN BRADLEY BULLETIN "700" SERIES OR EQUAL. PROVIDE WITH NUMBER OF AUX CONTACTS AS REQUIRED (MIN. OF 2).
- ALL INDICATING LIGHTS SHALL BE 30MM NEMA 4X OIL TIGHT/WATER TIGHT/CORROSION RESISTANT PUSH-TO-TEST LED TYPE. PROVIDE ALLEN BRADLEY BULLETIN "800" SERIES OR EQUAL.
- ALL SELECTOR SWITCHES SHALL BE 30MM NEMA 4X OIL TIGHT/WATER TIGHT/CORROSION RESISTANT TYPE WITH GLOVED HAND KNOBS. PROVIDE ALLEN BRADLEY BULLETIN "800" SERIES OR EQUAL.
- THE NUMBER OF STARTS COUNTER SHALL BE A RED LION P/N CUB30000 OR EQUAL. THE RUN TIME COUNTER SHALL BE AN ETM P/N FWZ72 OR EQUAL.

SCALE: NTS	DATE: 1/18/00	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: STAFF	CHECKED BY: JB/STAFF	PUMP STATION	
APPROVED BY: 	REVISED: 8/14/2011	PUMP PANEL DOOR ELEVATION	
		STANDARD 220-7	



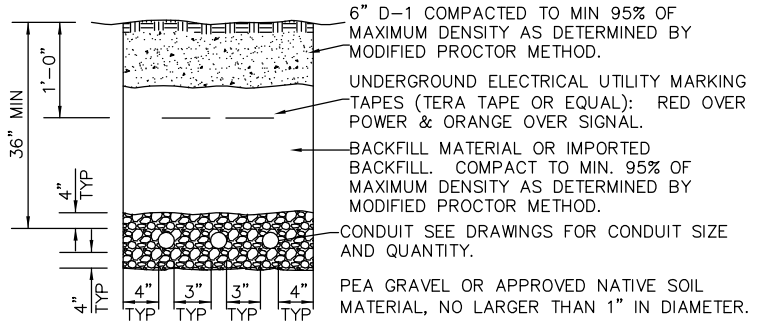
**LADDER DIAGRAM - PUMP CONTROLS**  
NO SCALE

NOTE: SEE SHEET 220-9 FOR SHEET NOTES.

SCALE: NTS	DATE: 1/18/00	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: STAFF	CHECKED BY: JB/STAFF	PUMP STATION	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	LADDER DIAGRAM	
		STANDARD 220-8	

**PUMP CONTROL NOTES**  
**FOR SHEET 220-8**

1. SEE SHEET 220-10 FOR THE CONTROL LEGEND.
2. COORDINATE WITH LJ ALARM TO PROVIDE (4) SEPARATE ALARMS TO LJ THROUGH THE DIGITAL COMMUNICATOR:
  - (1) LOSS OF POWER
  - (2) LOW LEVEL
  - (3) HIGH LEVEL
  - (4) SPARE
3. COORDINATE WITH CBJ WASTEWATER DEPARTMENT COLLECTIONS SECTION TO PROGRAM THE MULTITRODE CONTROLLER TO START AND STOP THE PUMPS, ALTERNATE THE PUMPS (LEAD VS. LAG), AND ESTABLISH THE HIGH AND LOW LEVEL ALARM SET POINTS.
4. PROGRAM SMC FLEX AUXILIARY CONTACT NO. 1 TO CLOSE WHEN STARTER IS "UP TO SPEED". PROGRAM SMC FLEX AUXILIARY CONTACT NO. 2 TO CLOSE WHEN STARTER IS "IN FAULT". PROGRAM SMC FLEX AUXILIARY CONTACT NO. 3 TO CLOSE WHEN STARTER IS "UP TO SPEED". PROGRAM SMC FLEX AUXILIARY CONTACT NO. 4 TO CLOSE WHEN STARTER IS "UP TO SPEED".
5. CONTROL TRANSFORMER. 480V:120V, 1 $\phi$ , 2 KVA, W/ FACTORY INSTALLED PRIMARY AND SECONDARY FUSE PROTECTION. SQUARE-D TF2000. SEE NOTE 9 BELOW.
6. CONTROL TRANSFORMER. 120V:24V, 1 $\phi$ , 100 VA, W/ FACTORY INSTALLED PRIMARY AND SECONDARY FUSE PROTECTION. SQUARE-D TF100. SEE NOTE 9 BELOW.
7. PROVIDE AN R-C SUPPRESSOR ACROSS ALL SMC FLEX STARTER OUTPUTS THAT POWER A COIL. ALLEN BRADLEY 199-MSMA1.
8. ALL RELAYS SHALL BE INDUSTRIAL CONTROL RELAYS. ALLEN BRADLEY BULLETIN "700" SERIES OR EQUAL. PROVIDE WITH NUMBER OF AUX CONTACTS AS REQUIRED (MIN. OF 2).
9. SECONDARY SURGE ARRESTOR WITH LED MEETS ANSI/IEEE C62.11-1993. SQUARE D SDSA1175 OR EQUAL.
10. CONTROLS ARE SHOWN FOR A 480V LIFT STATION. MODIFY TRANSFORMERS, FUSES, ETC. IF DIFFERENT LINE VOLTAGE IS USED. USE CONTROL VOLTAGE AS SHOWN.
11. THE NUMBER OF STARTS COUNTER SHALL BE A RED LION P/N CUB30000 OR EQUAL. THE RUN TIME COUNTER SHALL BE AN ETM P/N FWZ72 OR EQUAL.



NOTES:

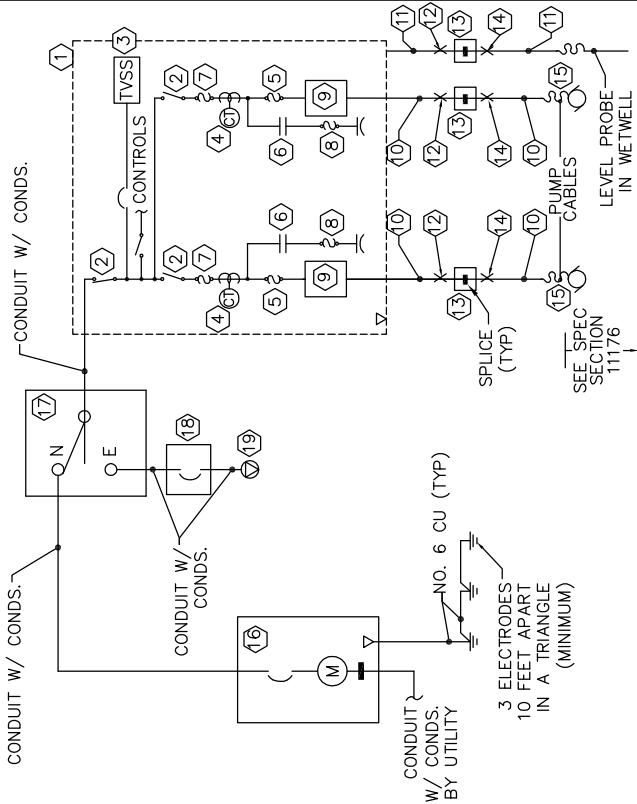
1. ALL DIMENSIONS ARE MINIMUM.
2. THE LOCATION OF ALL EXISTING PIPING, CONDUIT, ETC MAY NOT BE WHERE SHOWN AND MAY NOT BE SHOWN. ALL LOCATIONS THAT ARE SHOWN ARE APPROXIMATE AND SHOULD BE FIELD VERIFIED. OBTAIN UTILITY LOCATES PRIOR TO DIGGING. DIG WITH CAUTION. AVOID WATER, SEWER, DRAINAGE PIPES AND OTHER CONFLICTS.
3. MAINTAIN 12 INCHES MINIMUM SEPARATION (ALL DIRECTIONS) BETWEEN POWER AND OTHER EXISTING CONDUITS, PIPES, ETC.
4. CUT & REPLACE EXISTING ASPHALT, CONCRETE, CONCRETE CURB, GUTTER, SIDEWALK, ETC AS NECESSARY.
5. ALL TRENCHES SHALL BE 18" WIDE MIN. COMPACT BACKFILL TO 95%. TOP 6" OF MATERIAL SHALL BE D-1.

**TRENCH DETAIL**  
NTS

SCALE: NTS	DATE: 1/18/00	CITY AND BOROUGH OF JUNEAU, ALASKA PUMP STATION NOTES & TRENCH DETAIL	
DRAWN BY: STAFF	CHECKED BY: JB/STAFF		
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 220-9	

**EQUIPMENT SCHEDULE**

- ① PUMP CONTROL PANEL.
- ② DISCONNECT: HEAVY DUTY, 3 POLE. SIZE PER APPLICATION.
- ③ TRANSIENT VOLTAGE SURGE SUPPRESSION DEVICE. PROTECTION MODES: L-N, L-L, N-G. LIBERTY AII SERIES OR EQUAL. SIZE PER APPLICATION. PROVIDE LED INDICATORS AND ALARM CONTROLS.
- ④ CURRENT TRANSFORMER
- ⑤ FUSE: HIGH SPEED CLASS J, SHAWMUT OR BUSS SERIES.
- ⑥ CAPACITOR CONTRACTOR: NEMA RATED, SIZE PER APPLICATION.
- ⑦ FUSE: DUAL ELEMENT/TIME DELAY, CLASS RK1. SIZE PER APPLICATION.
- ⑧ POWER FACTOR CORRECTION CAPACITOR W/FUSES & FAILED CELL INDICATORS. SQUARE D CLASS 5810. SIZE PER APPLICATION. PROVIDE FOR PUMPS 7.5HP AND LARGER.
- ⑨ REDUCED VOLTAGE MOTOR STARTER WITH, LINE TRANSIENT VOLTAGE PROTECTION MODULE, ISOLATION CONTACTS, AND PUMP CONTROL. PROVIDE WITH DOOR MOUNTED HUMAN INTERFACE MODULE (HIM). ALLEN BRADLEY SMC-FLEX SERIES. NO SUBSTITUTIONS. SIZE PER APPLICATION.
- ⑩ CONDUIT WITH CABLES (MOTOR FEEDERS). SIZE PER APPLICATION.
- ⑪ CONDUIT WITH CABLE (MULTITRODE). SIZE PER APPLICATION.
- ⑫ CROUSE HINDS EYS CONDUIT SEAL. THE WETWELL IS A CLASS 1, DIV 1 AREA.
- ⑬ STAINLESS STEEL NEMA 4X JUNCTION BOX. 12" X 12" X 6" MIN. SIZE AS REQUIRED. SPLICE CABLES ON POWER DISTRIBUTION BLOCKS IN J-BOX, SQUARE D CLASS 9080 TYPE LB WITH CLEAR COVERS. LABEL COVERS FOR EACH PUMP AND MULTITRODE CABLE.
- ⑭ SPLIT CASE STYLE SEAL OFF. CROUSE HINDS EYSR SERIES.
- ⑮ SEWAGE LIFT PUMPS, SIZE PER APPLICATION.
- ⑯ COMBINATION METER/DISCONNECT. PROVIDE WITH TEST BYPASS SAFETY SOCKET AND MAIN CIRCUIT BREAKER. PROVIDE WITH A STAINLESS STEEL NEMA 3R ENCLOSURE. SIZE PER APPLICATION.

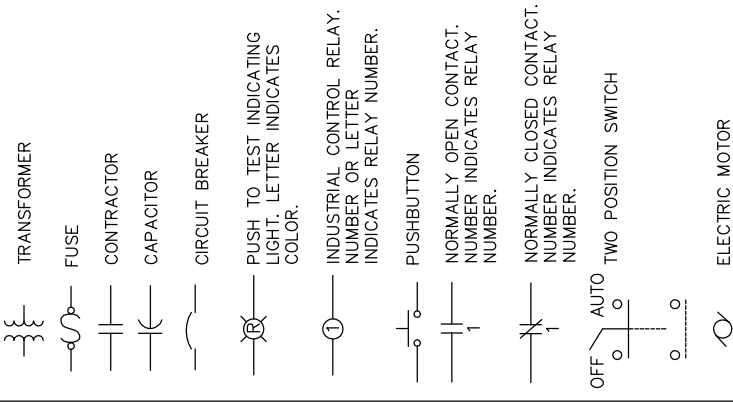


**SINGLE LINE DIAGRAM**  
NO SCALE

**EQUIPMENT SCHEDULE - CONTINUED**

- ⑰ SAFETY SWITCH, 3 POLE, NEUTRAL BUS, DOUBLE THROW. PROVIDE IN A STAINLESS STEEL ENCLOSURE. SIZE PER APPLICATION.
- ⑱ PORTABLE GENSET CIRCUIT BREAKER: MOLDED CASE CIRCUIT BREAKER IN STAINLESS STEEL NEMA 3R ENCLOSURE. SIZE PER APPLICATION.
- ⑲ PORTABLE GENERATOR RECEPTACLE. CROUSE HINDS AREA204126S22, WITH BACK BOX, ANGLE ADAPTER, AND REVERSE SERVICE INSULATORS. SIZE PER APPLICATION.
- ⑳ PROVIDE A 480V, 3Ø, 4W SERVICE TO THE LIFT STATION. OTHER VOLTAGES MAY BE ALLOWED ONLY WITH WRITTEN PERMISSION FROM THE CBJ WASTEWATER DEPARTMENT COLLECTIONS SECTION.
- ㉑ SIZE ALL CONDUCTORS, CONDUIT, EQUIPMENT, ETC. PER APPLICATION. PERFORM ALL WORK PER THE NATIONAL ELECTRICAL CODE AND ALL APPLICABLE LOCAL, STATE, AND FEDERAL CODES.

**CONTROL LEGEND**



**NOTES:**

- 1. PROVIDE STAINLESS STEEL CABLE GRIPS FOR CABLES IN WETWELL. LOCATE ADJACENT TO NEAREST PUMP.
- 2. PROVIDE PHASE INVERTERS AS REQUIRED TO PROVIDE 480V, 3Ø POWER TO THE SEWAGE LIFT PUMPS. SEE NOTE 20, THIS SHEET.

SCALE:

NTS

DATE:

1/18/00

DRAWN BY:

STAFF

CHECKED BY:

JB/STAFF

APPROVED BY:

*DRWA*

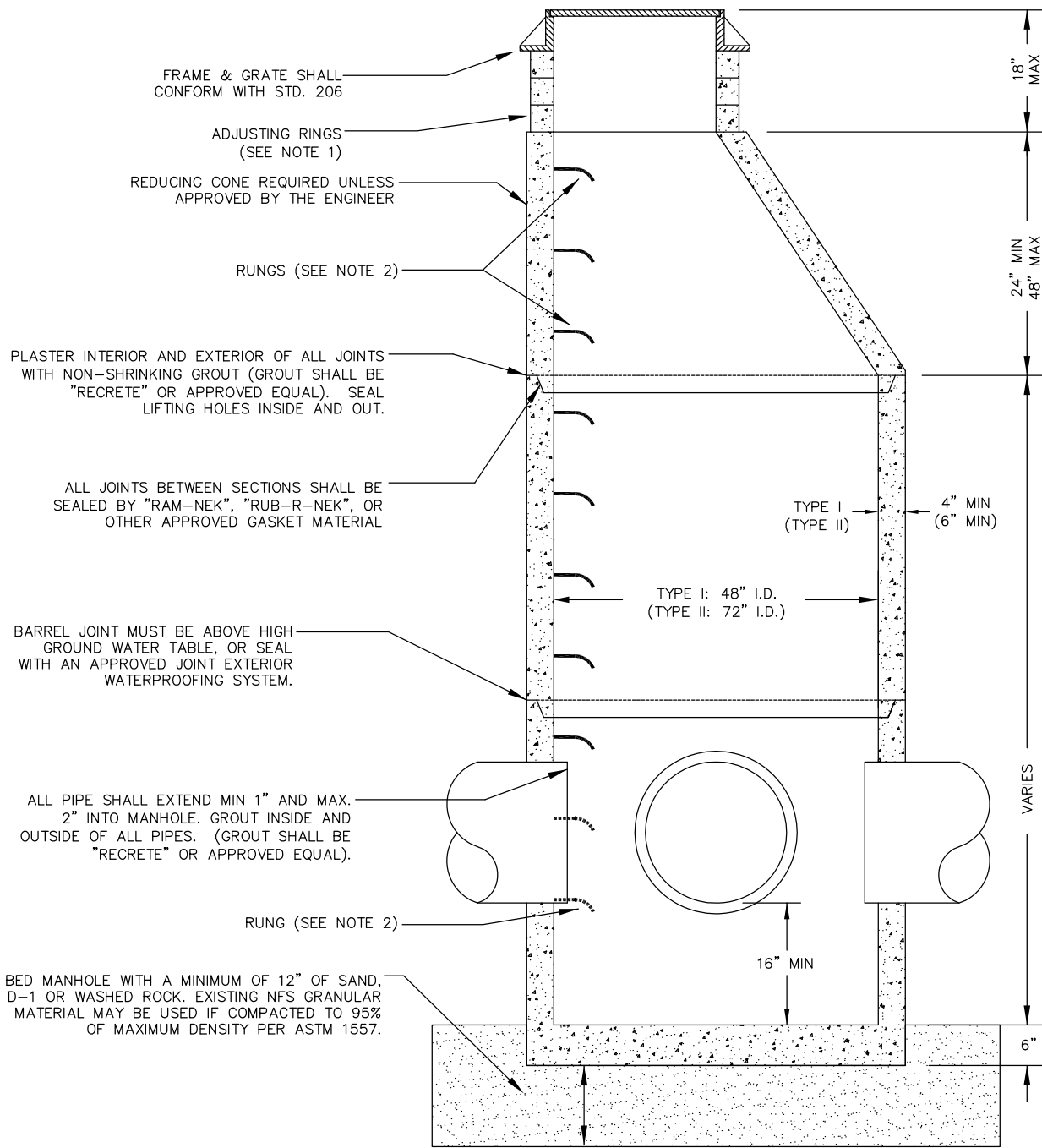
REVISED:

8/14/2011

CITY AND BOROUGH OF JUNEAU, ALASKA

PUMP STATION  
SINGLE LINE DIAGRAM

STANDARD 220-10

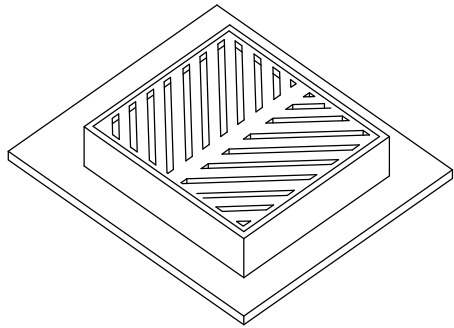


**NOTES**

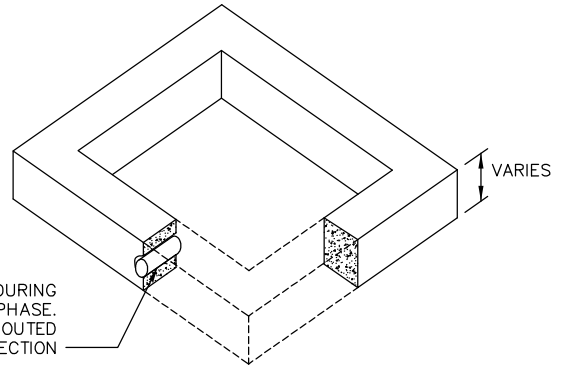
1. THE AREA BETWEEN THE TOP OF THE CATCH BASIN AND THE FRAME SHALL BE FILLED WITH CONCRETE MEETING THE REQUIREMENTS OF CBJ SPECIFICATION 03302-CONCRETE STRUCTURES. NO BRICKS, WOOD, STONES, ADJUSTING RINGS OR OTHER GRADE ADJUSTMENT DEVICES SHALL BE USED. TEMPORARY FORM WORK SHALL BE CONSTRUCTED TO PROVIDE A SMOOTH INSIDE EXPOSED SURFACE FREE OF VOIDS AND PROJECTIONS. THE CONSTRUCTED FRAME SUPPORT MUST MATCH THE INTERIOR OF THE FRAME INSTALLED AS APPROVED BY THE ENGINEER.
2. RUNGS TO BE PLACED 12" O.C. ON UNOBSTRUCTED SIDE OF MANHOLE. LAST RUNG SHALL BE 18" MAX FROM BOTTOM OF MANHOLE, AND TOP RUNG SHALL BE 6" MAXIMUM FROM TOP OF CONE. IF UNOBSTRUCTED SIDE NOT AVAILABLE, LAST RUNG SHALL BE PLACED 6" OVER SMALLEST PIPE. REFER TO A.S.T.M. C-478 FOR DESIGN REQUIREMENTS AND C-478-69 FOR MINIMUM STEEL FOR BARREL. BARREL SHALL BE IMBEDDED IN BASE SO THAT FIRST BARREL SECTION IS CONNECTED WITH BASE. BLOCKOUTS MUST BE FORMED.
4. FOR TYPE I MANHOLE, PRIMARY LEADS SHALL NOT EXCEED 30" C.M.P. OR 27" R.C.P. WITH INCLUDED ANGLE BETWEEN LEADS NO LESS THAN 135°
5. OR PRIMARY LEAD NOT TO EXCEED 24" C.M.P. OR 21" R.C.P. WITH INCLUDED ANGLE LESS THAN 135°.
- FOR TYPE II MANHOLE, PRIMARY LEADS SHALL NOT EXCEED TWO 42" C.M.P. OR 36" R.C.P. WITH INCLUDED ANGLE BETWEEN LEADS NO LESS THAN 135°
6. 135° OR PRIMARY LEADS NOT TO EXCEED TWO 36" C.M.P. OR R.C.P. WITH INCLUDED ANGLE BETWEEN LEADS LESS THAN 135°.

<b>SCALE:</b>	NTS	<b>DATE:</b>	12/6/96
<b>DRAWN BY:</b>	DRW	<b>CHECKED BY:</b>	STAFF
<b>APPROVED BY:</b>		<b>REVISED:</b>	<b>STANDARD 303</b>
		8/14/2011	

**CITY AND BOROUGH OF JUNEAU, ALASKA  
STORM DRAIN MANHOLE  
TYPES I & II**

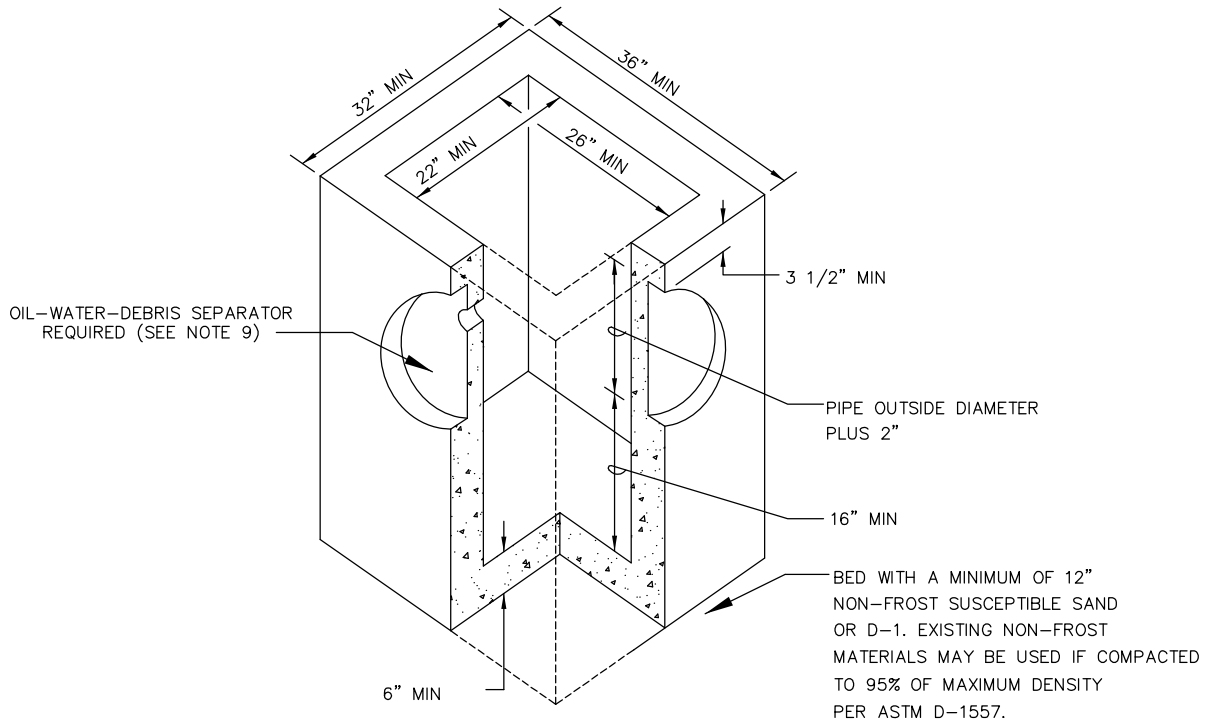


FRAME & GRATE



1" PVC PERMITTED DURING CONSTRUCTION PHASE. PLUGGED AND GROUTED PRIOR TO FINAL INSPECTION

CONCRETE SECTION

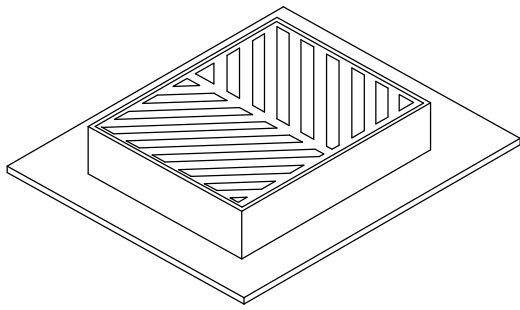


CATCH BASIN

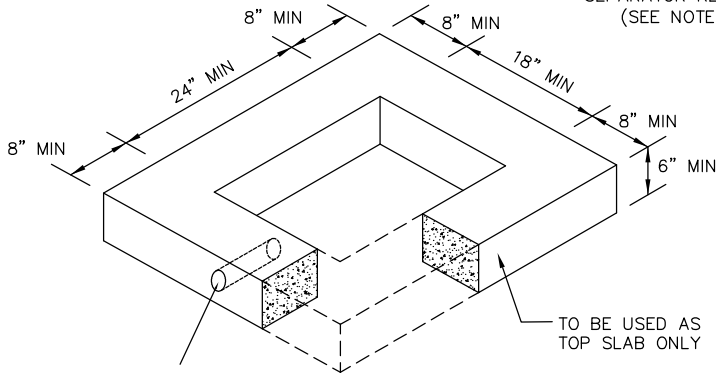
NOTES

1. FOR USE WITH TWO INLET/OUTLET PIPES OF DIAMETER 12" OR SMALLER. FOR LARGER AND/OR MORE INLET/OUTLET PIPES OR IF CATCH BASIN IS DEEPER THAN 4' FROM FINISH GRADE TO SUMP, INSTALL A TYPE I OR TYPE II STORM DRAIN MANHOLE (SEE STANDARD 303).
2. ENTIRE KNOCKOUT IS TO BE REMOVED AND SEALED SHUT AROUND PIPE. ALL PIPES ARE TO EXTEND MIN 1" AND MAX 3" INTO CATCH BASIN. GROUT INTERIOR AND EXTERIOR BETWEEN FRAME, SECTIONS, AND CATCH BASIN.
3. FRAME AND GRATE SHALL BE DUCTILE IRON. FRAME MAY BE CAST INTO THE TOP UNIT OR PLACED OVER THE OPENING AS APPROVED BY THE ENGINEER. FRAME AND GRATE SHALL BE OF A TYPE THAT WILL NOT CREATE A HAZARD FOR BICYCLE TRAFFIC.
4. CATCH BASIN SHALL MEET HIGHWAY STANDARD-20 LOAD REQUIREMENTS.
5. MINIMUM STEEL SHALL BE SPECIFIED BY ASTM C-478-69.
6. MINIMUM SUMP DEPTH SHALL BE 16".
7. ADJUSTING RING SHALL BE THE SAME SIZE AS THE CATCH BASIN.
8. THE AREA BETWEEN THE TOP OF THE CATCH BASIN AND THE FRAME SHALL BE FORMED AND FILLED WITH CONCRETE MEETING THE REQUIREMENTS OF CBJ SPECIFICATION 03302 - CONCRETE STRUCTURES. NO BRICKS, WOOD OR OTHER MATERIALS PERMITTED FOR ADJUSTING GRADE.
9. ALL CATCH BASINS THAT EMPTY INTO AN OPEN DRAINAGE SHALL BE FITTED WITH AN OIL-WATER-DEBRIS SEPARATOR DEVICE AS DIRECTED BY THE ENGINEER.

SCALE: NTS	DATE: 12/6/96	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: DRW	CHECKED BY: STAFF	TYPE III CATCH BASIN	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 304A	



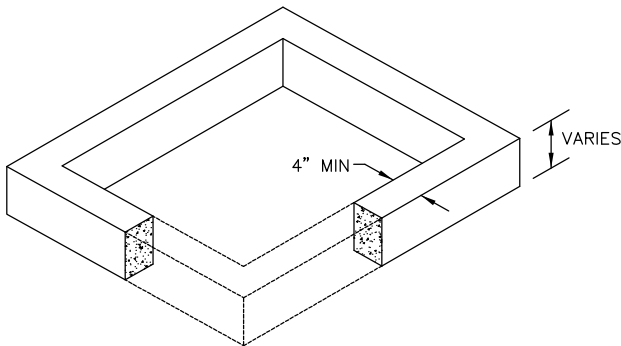
FRAME & GRATE



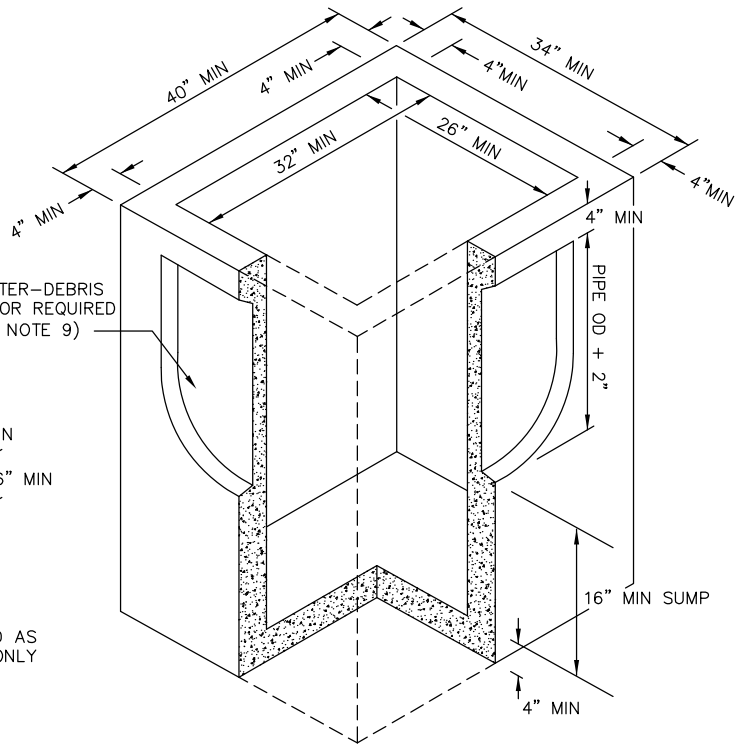
TOP SLAB

1" PVC PERMITTED DURING CONSTRUCTION PHASE. PLUGGED AND GROUTED PRIOR TO FINAL INSPECTION

TO BE USED AS TOP SLAB ONLY



ADJUSTING RING



CATCH BASIN

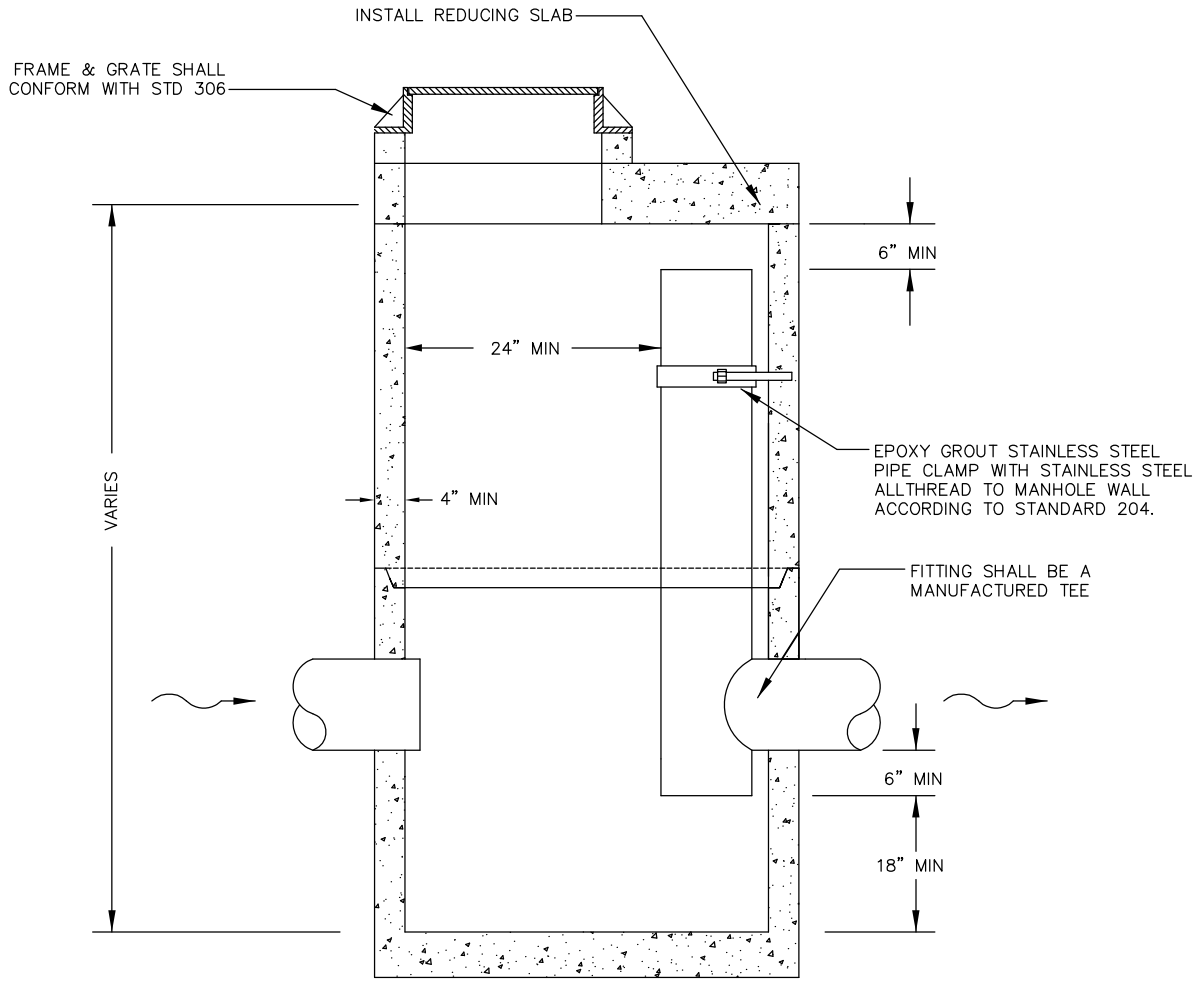
BED WITH A MINIMUM OF 12" NFS SAND OR D-1. OTHER MATERIALS MAY BE USED IF COMPACTED TO 95% OF MAXIMUM PER ASTM C-478-69.

NOTES

1. FOR USE WITH TWO INLET/OUTLET PIPES OF DIAMETER 15" OR 18". FOR LARGER AND/OR MORE INLET/OUTLET PIPES OR IF CATCH BASIN IS GREATER THAN 5' DEEP FROM FINISH GRADE TO SUMP, INSTALL A TYPE I OR II STORM DRAIN MANHOLE (SEE STANDARD 303).
2. ALL JOINTS BETWEEN SECTIONS AND BETWEEN FRAME AND CONCRETE SECTIONS SHALL BE GROUTED INSIDE AND OUTSIDE.
3. ENTIRE KNOCKOUT IS TO BE REMOVED AND SEALED SHUT AROUND PIPE. ALL PIPES ARE TO EXTEND MIN. 1" AND MAX. 2" INTO CATCH BASIN.
4. FRAME AND GRATE SHALL BE DUCTILE IRON. FRAME MAY BE CAST INTO THE TOP UNIT OR PLACED OVER THE OPENING AS APPROVED BY THE ENGINEER. FRAME AND GRATE MUST BE OF A TYPE THAT WILL NOT CREATE A HAZARD FOR BICYCLE TRAFFIC.
5. CATCH BASIN SHALL MEET HIGHWAY STANDARD-20 LOAD REQUIREMENTS.
6. MINIMUM STEEL REQUIRED AS PER ASTM C-478-69.
7. MINIMUM SUMP DEPTH SHALL BE 16".
8. ADJUSTING RING SHALL BE THE SAME SIZE AS THE CATCH BASIN. THE AREA BETWEEN THE TOP OF THE CATCH BASIN AND THE FRAME SHALL BE FORMED AND FILLED WITH CONCRETE MEETING THE REQUIREMENTS OF CBJ SPECIFICATION 03302-CONCRETE STRUCTURES. NO BRICKS, WOOD OR OTHER MATERIALS ARE PERMITTED AND ANY FORM WORK SHALL BE REMOVED.
9. ALL CATCH BASINS THAT EMPTY INTO AN OPEN DRAINAGE SHALL BE FITTED WITH AN OIL-WATER-DEBRIS SEPARATOR DEVICE AS DIRECTED BY THE ENGINEER.

SCALE: NTS	DATE: 12/6/96	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: DRW	CHECKED BY: STAFF	TYPE IV CATCH BASIN	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 304B	

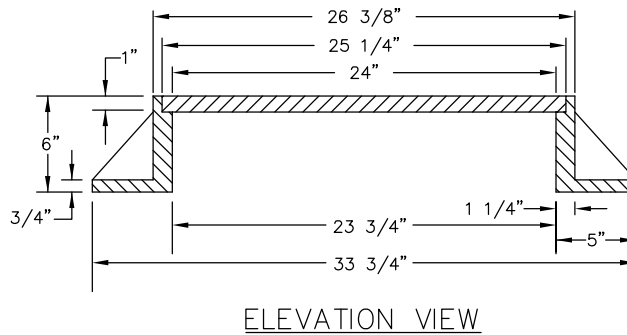
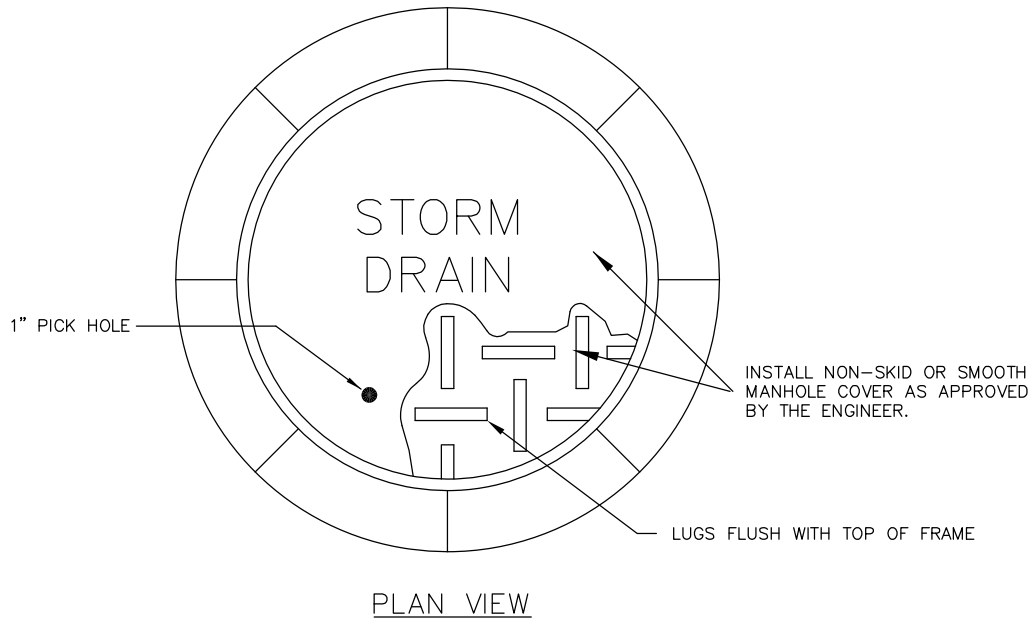




**NOTES**

1. ACCESS TO THE MANHOLE SHALL BE CONSTRUCTED TO ALLOW FOR MAINTENANCE AND PUMPING.
2. MANHOLE SHALL CONFORM IN ALL OTHER ASPECTS TO A TYPE I OR TYPE II STORM DRAIN MANHOLE AS SHOWN IN STANDARD 303.
3. INLET, OUTLET, AND RISER PIPE SHALL BE THE SAME DIMENSION.

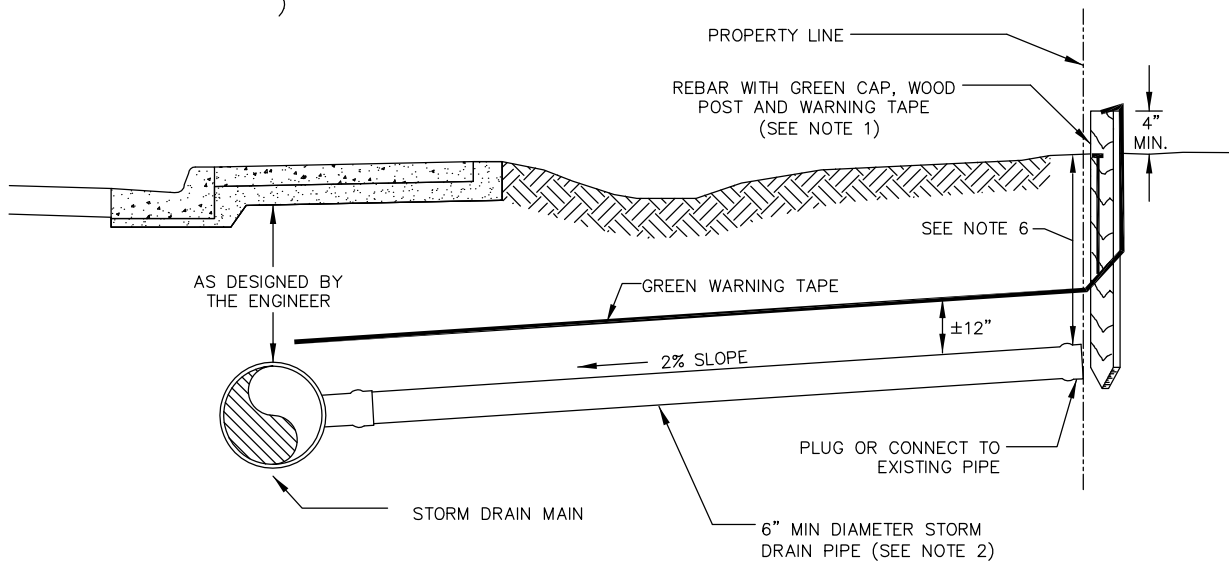
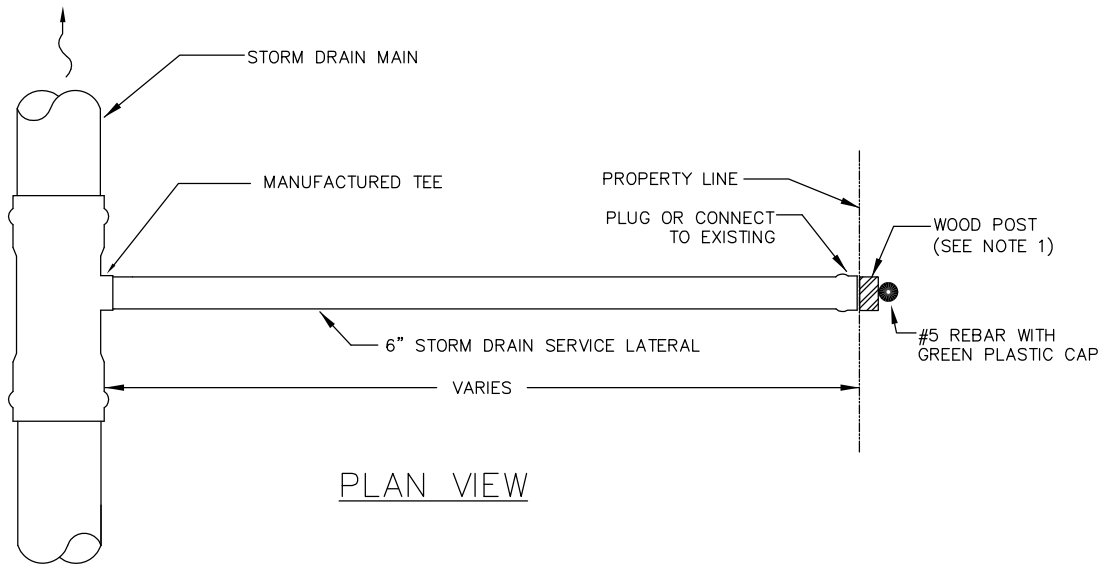
SCALE: NTS	DATE: 12/6/96	CITY AND BOROUGH OF JUNEAU, ALASKA OIL-WATER SEPARATOR STORM DRAIN MANHOLE
DRAWN BY: DRW	CHECKED BY: STAFF	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 305



**NOTES**

1. COVER SHALL HAVE THE WORDS "STORM DRAIN" CAST IN.
2. FRAME AND COVER DIMENSIONS SHALL BE IN ACCORDANCE WITH OLYMPIC CONSTRUCTION CASTINGS NO. MH30A OR AN APPROVED EQUAL.
3. FRAME AND COVER SHALL BE DUCTILE IRON.
4. FRAME AND COVER SHALL BE OF A TYPE THAT WILL NOT CREATE A HAZARD FOR BICYCLE TRAFFIC.

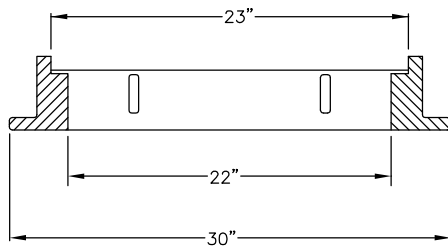
<b>SCALE:</b>	NTS	<b>DATE:</b>	9/11/95	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b> <b>STORM DRAIN</b> <b>MANHOLE COVER &amp; FRAME</b>
<b>DRAWN BY:</b>	DRW	<b>CHECKED BY:</b>	STAFF	
<b>APPROVED BY:</b>			<b>REVISED:</b>	<b>STANDARD 306</b> 8/14/2011



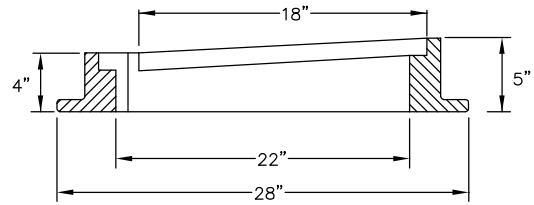
**NOTES:**

1. MARK SERVICE WITH GREEN PAINTED 2"x4" POST. POST SHALL EXTEND TO DEPTH OF SERVICE LATERAL. REBAR SHALL BE DRIVEN TO GROUND LEVEL. WRAP WARNING TAPE AROUND POST AND STAPLE TO TOP OF POST.
2. ACCEPTABLE PIPE FOR USE WITHIN R.O.W. INCLUDES C900 PVC, SDR 35 PVC, AND HD CPP.
3. MINIMUM CLEARANCE OF 18" REQUIRED BENEATH DITCH LINE.
4. DISTANCE FROM THE TEE TO THE CATCH BASIN AND TWO MEASURED DISTANCES FROM END OF SERVICE PIPE TO PERMANENT OBJECTS SHALL BE NOTED ON THE AS BUILT PLANS.
5. THE SERVICE LATERAL SHALL END AT THE PROPERTY LINE WITH A BELL END OF PIPE.
6. LATERALS SHALL BE CONSTRUCTED AT 2% SLOPE UNLESS APPROVED BY THE ENGINEER.
7. PIPE CONNECTIONS IN THE RIGHT OF WAY THAT DO NOT USE BELL AND SPIGOT SHALL CONFORM TO STANDARD 218.

SCALE: NTS	DATE: 2/1/10	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: STAFF	CHECKED BY: STAFF	STORM DRAIN SERVICE LATERAL	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 307	



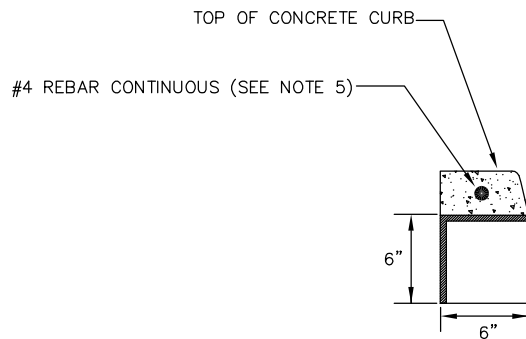
FRONT VIEW



NOTE: FRAME SHALL BE SET LEVEL.

SIDE VIEW

FRAME & GRATE

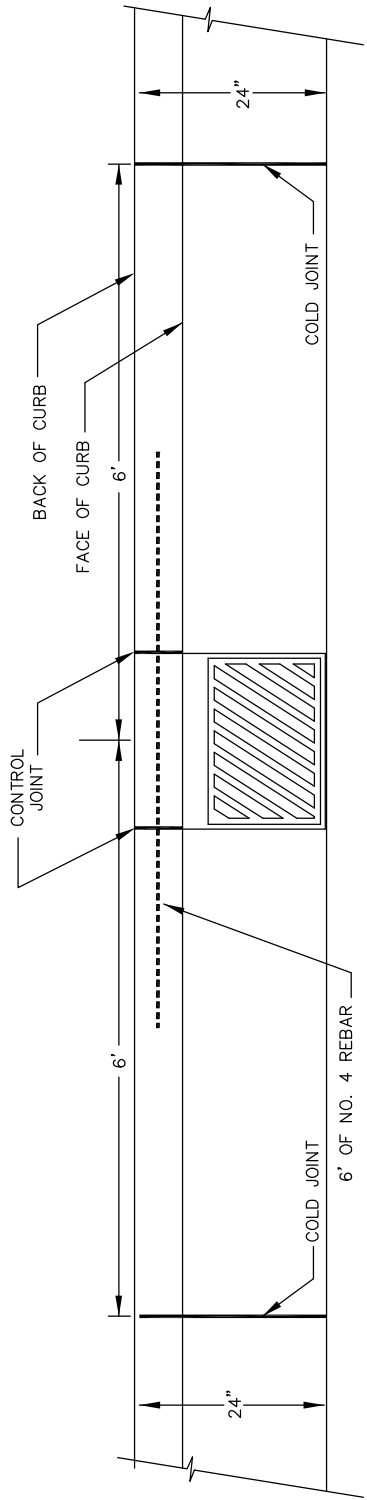


TYPE B HOOD

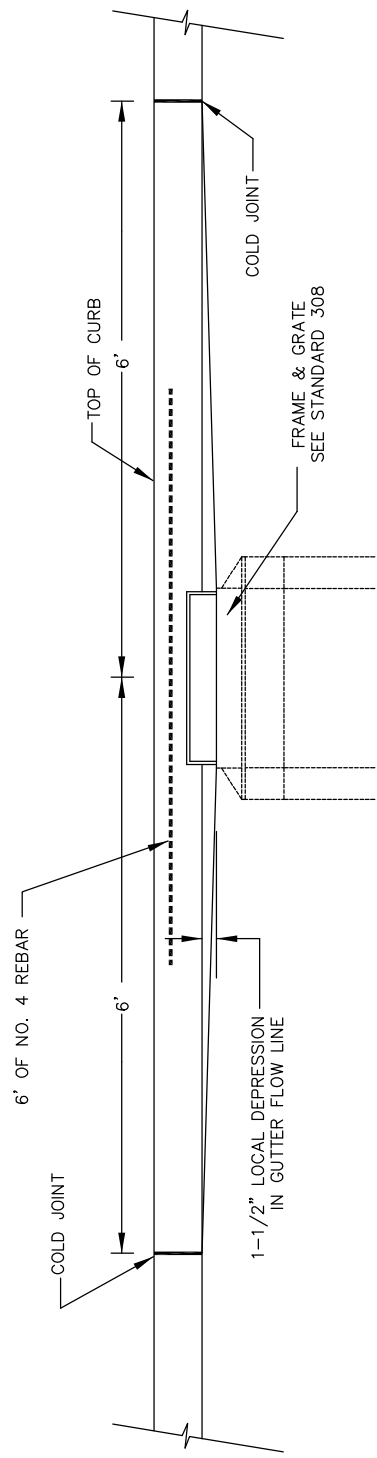
NOTES

1. FRAME AND GRATE SHALL BE DUCTILE IRON AND SHALL BE IFCO 571 OR AN APPROVED EQUAL.
2. GRATE SHALL HAVE 1" DIAGONAL BARS WITH 1 1/2" OPENINGS.
3. FRAME AND GRATE SHALL BE OF A TYPE THAT WILL NOT CREATE A HAZARD FOR BICYCLE TRAFFIC.
4. INSTALL RIGHT OR LEFT GRATES FOR BICYCLE SAFETY AS DETERMINED BY THE ENGINEER.
5. USE TYPE B HOOD ONLY. A TYPE B HOOD REQUIRES A MINIMUM OF 6 FEET OF # 4 REBAR CONTINUOUS, CENTERED ON THE HOOD.
6. FRAME SHALL BE SET ON SOLID RISER OR FORMED AND POURED IN PLACE USING CONCRETE MEETING THE REQUIREMENTS OF CBJ SPECIFICATION 03302 - CONCRETE STRUCTURES. NO BRICK, WOOD, OR OTHER MATERIAL IS PERMITTED FOR ADJUSTING GRADE.
7. 1/4" GROUT MAXIMUM MAY BE USED TO BED FRAME.

SCALE: NTS	DATE: 12/6/96	CITY AND BOROUGH OF JUNEAU, ALASKA CURB INLET FRAME, GRATE & HOOD
DRAWN BY: DRW	CHECKED BY: STAFF	
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 308



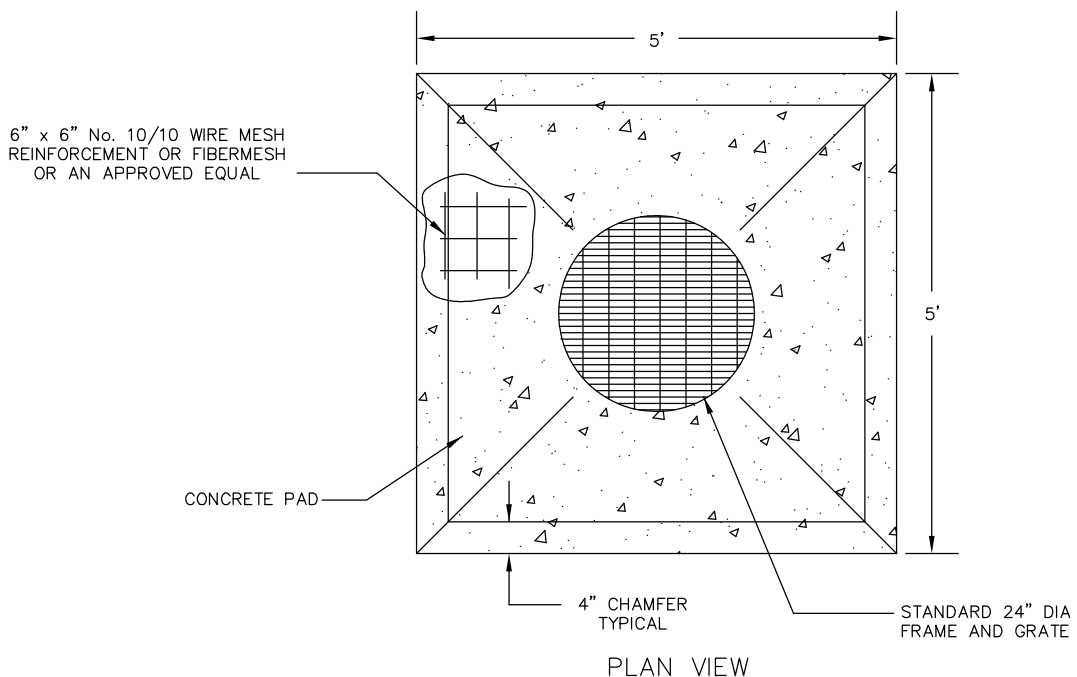
PLAN VIEW



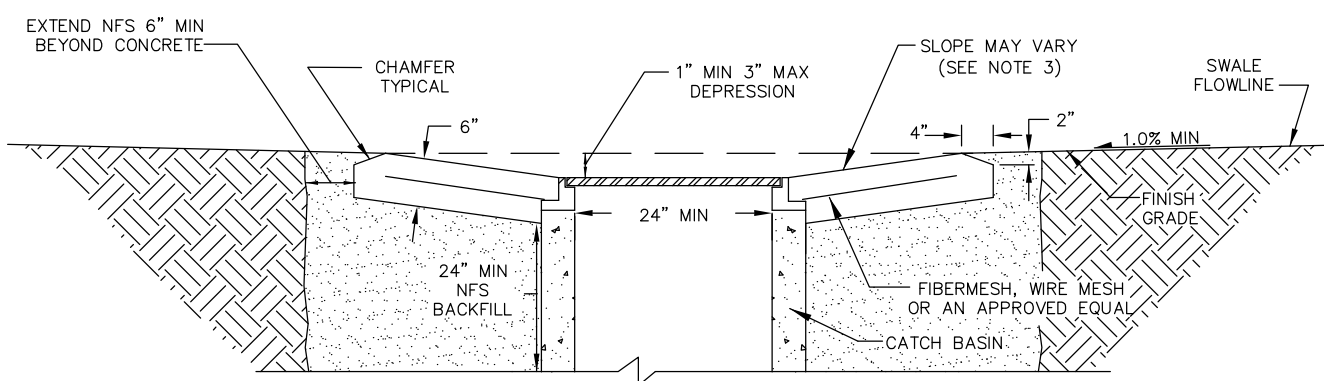
ELEVATION VIEW

- NOTES:
1. INSTALL LEFT OR RIGHT GRATES FOR BICYCLE SAFETY AS DETERMINED BY THE ENGINEER.
  2. INSTALL STORM DRAIN MANHOLE TYPE I OR II, OR CATCH BASIN TYPE III OR TYPE IV AS APPROVED BY THE ENGINEER. SEE STANDARDS 303, 304A, AND 304B.
  3. FOR DETAILS ON CURB INLET FRAME & GRATE SEE STANDARD 308.
  4. CURB & GUTTER SHALL CONFORM WITH STANDARD 111A.

SCALE: NTS	DATE: 12/12/96	CITY AND BOROUGH OF JUNEAU, ALASKA LOCAL DEPRESSION AT CATCH BASIN	
DRAWN BY: DRW	CHECKED BY: STAFF		
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 309	



PLAN VIEW

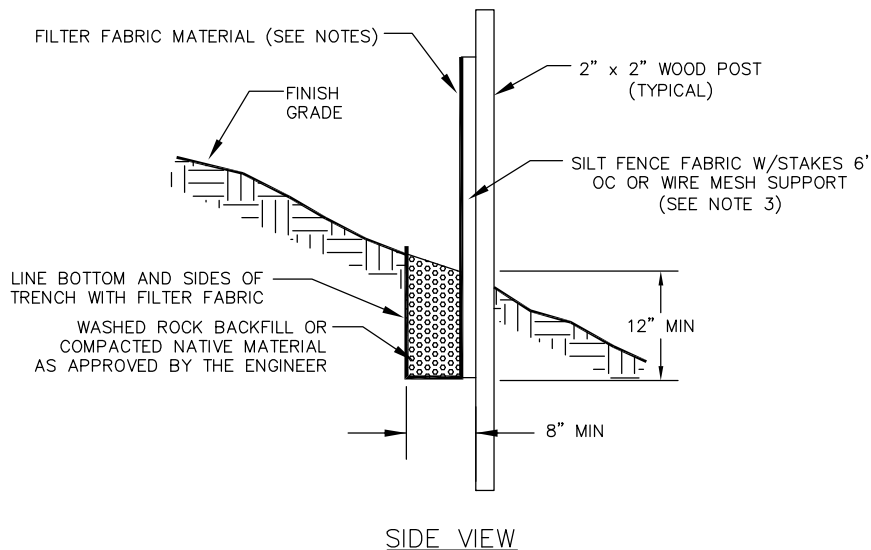
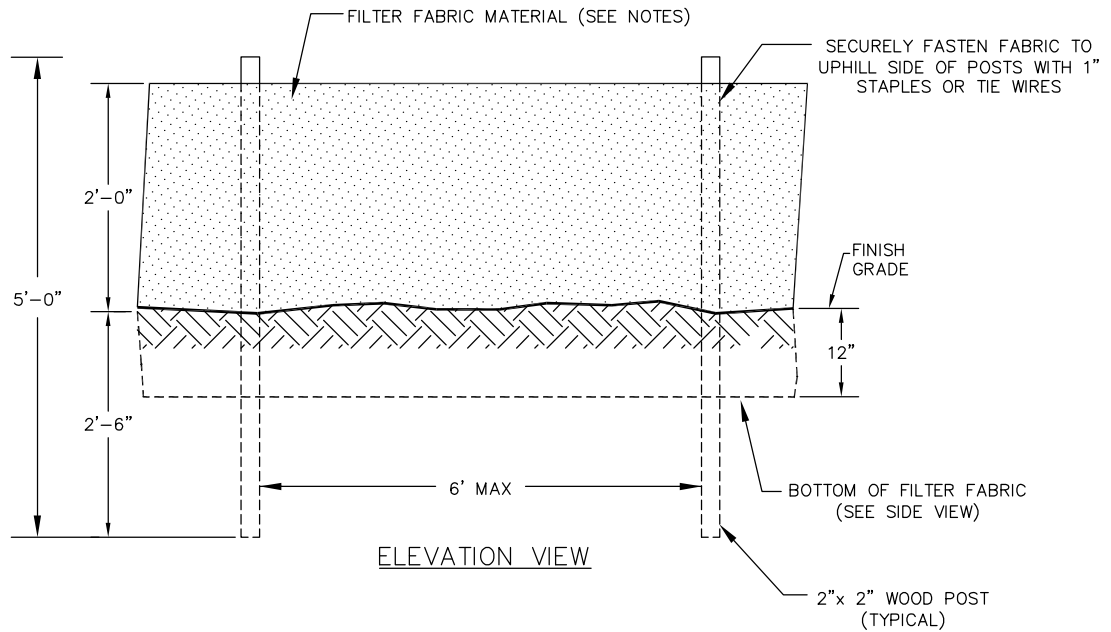


ELEVATION VIEW

NOTES:

1. FRAME AND GRATE TO BE DUCTILE IRON AND A TYPE THAT WILL NOT CREATE A HAZARD FOR A BICYCLE TRAFFIC.
2. COMPACT NON FROST SUSCEPTIBLE (NFS) BACKFILL TO 95% OF MAXIMUM DENSITY.
3. SLOPE MAY VARY TO MATCH SWALE FLOWLINE. FINAL GRADE AS DIRECTED BY THE ENGINEER.

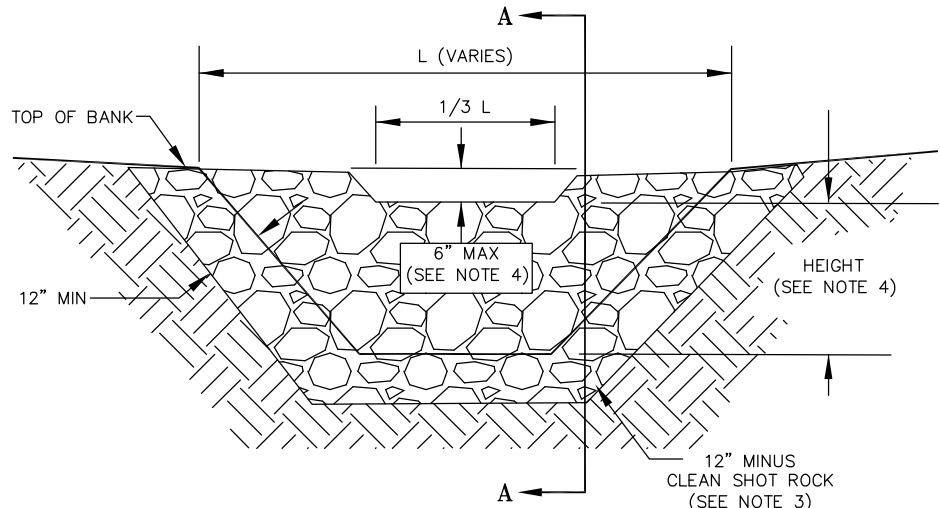
SCALE: NTS	DATE: 12/12/96	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: DRW	CHECKED BY: STAFF	AREA DRAIN DETAIL	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 310	



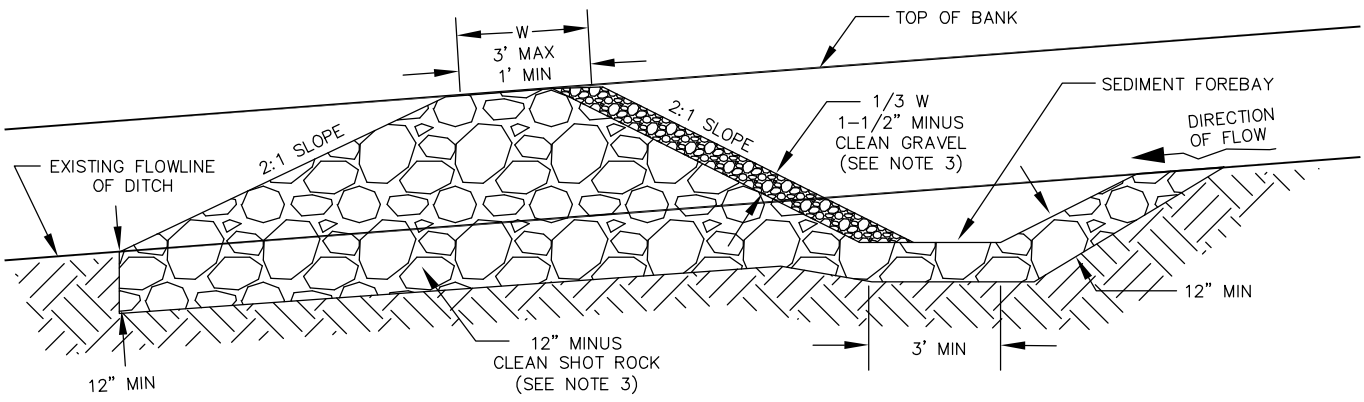
**NOTES:**

1. INSTALL FENCE AT THE APPROPRIATE LOCATION BY CONSIDERING TERRAIN, SLOPE, WATER FLOW AND DISTURBANCE AREA. PLACE THE FENCE AWAY FROM THE TOE OF SLOPE LEAVING ROOM TO ACCUMULATE SEDIMENT AND PERFORM WORK.
2. SILT FENCE FABRIC SHALL BE UV RESISTANT POLYPROPYLENE WITH OPENINGS LESS THAN A NO. 30 SIEVE. OR APPROVED BY THE ENGINEER.
3. SILT FENCE FABRIC SHALL BE CUT FROM A CONTINUOUS ROLL WITH JOINTS KEPT TO A MINIMUM. JOINTS SHALL BE SECURED AT SUPPORT POSTS WITH A MINIMUM OF 6" OF OVERLAP. LESS POSTS MAY BE INSTALLED WHEN WIRE MESH IS USED TO SUPPORT THE SILT FENCE FABRIC AS APPROVED BY THE ENGINEER.
4. AN 8" WIDE BY 12" DEEP TRENCH SHALL BE CONSTRUCTED ALONG THE ENTIRE LENGTH OF THE UPHILL SIDE OF THE SILT FENCE. THE TRENCH SHALL BE BACKFILLED WITH WASHED ROCK OR COMPACTED NATIVE MATERIAL.
5. THE SILT FENCE SHALL BE MAINTAINED UNTIL THE ENTIRE DISTURBANCE AREA HAS BEEN STABILIZED. THE SILT FENCE MAY BE REMOVED ONLY AFTER THE RETAINED MATERIALS HAVE BEEN PROPERLY DISPOSED OF.

<b>SCALE:</b>	NTS	<b>DATE:</b>	10/30/95	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>
<b>DRAWN BY:</b>	DRW	<b>CHECKED BY:</b>	STAFF	<b>SILT FENCE</b>
<b>APPROVED BY:</b>			<b>REVISED:</b>	<b>STANDARD 311</b>
			8/14/2011	



ELEVATION



SECTION A-A

ROCK SIZE TABLE

AMOUNT	ROCK SIZE
100%	< 12"
100%	> 2"

UPSTREAM FACE OF STORMWATER MANAGEMENT ROCK CHECK DAM TO BE CLEAN 1-1/2" MINUS GRAVEL

ROCK CHECK DAM SPACING TABLE

DITCH GRADE	SPACING
1 %	200 FT
2 %	100 FT
4 %	50 FT
6 %	33 FT
8 %	25 FT

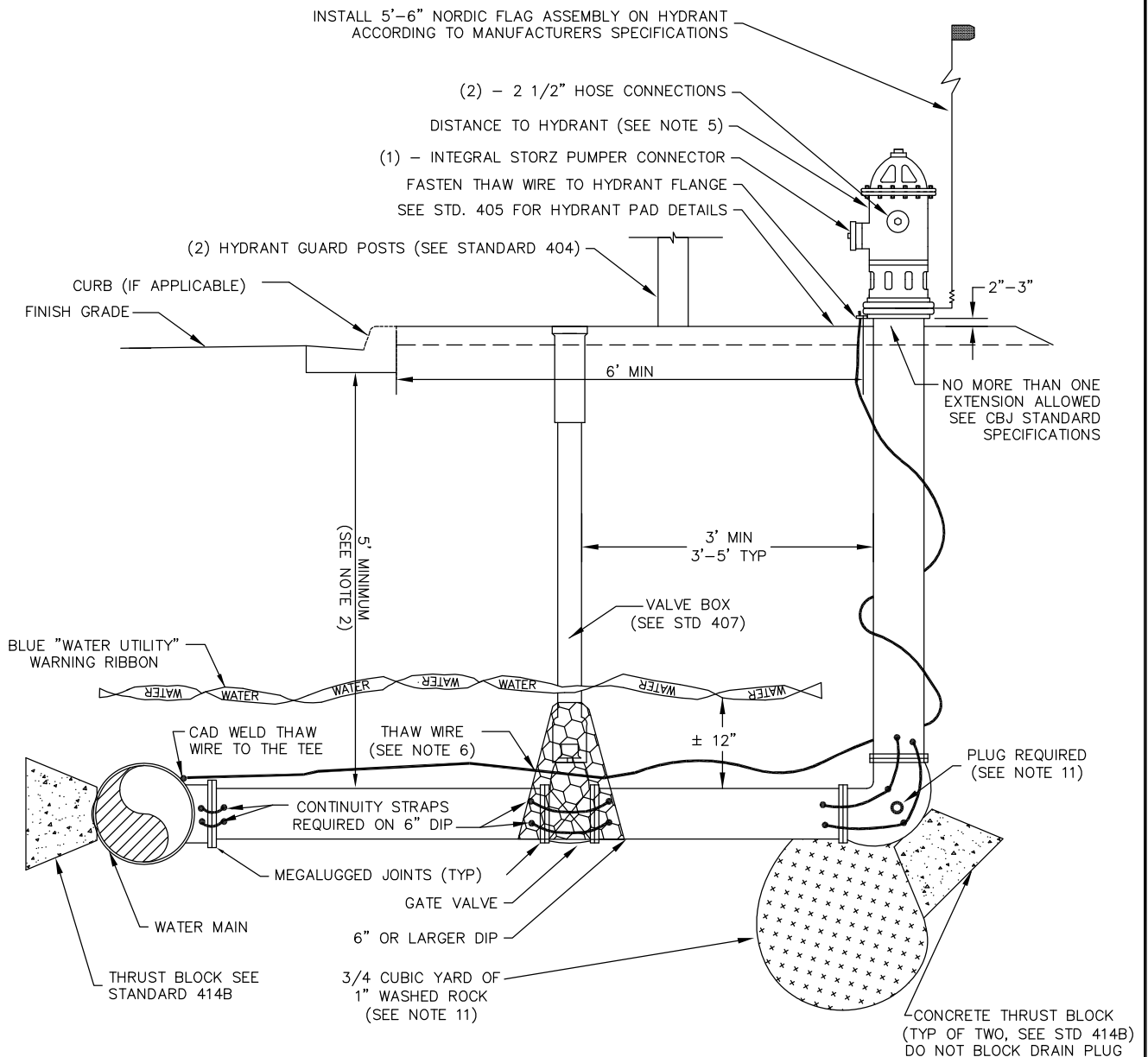
DITCH SLOPES GREATER THAN 8% SPACING MUST BE APPROVED BY THE ENGINEER

NOTES:

- ROCK CHECK DAMS ARE NOT ALLOWED IN ANDRONOMUS FISH STREAMS WITHOUT PERMISSION OF THE APPLICABLE STATE & FEDERAL AGENCIES AND THE CBJ DEPARTMENT OF ENGINEERING.
- ROCK CHECK DAMS DESIGNATED AS STORMWATER MANAGEMENT ITEMS ARE TO REMAIN IN PLACE. TEMPORARY ROCK CHECK DAMS INSTALLED FOR SEDIMENT CONTROL DURING CONSTRUCTION MUST REMAIN IN PLACE UNTIL SOILS ARE STABILIZED AND REVEGETATION IS COMPLETE AS APPROVED BY THE ENGINEER.
- STORMWATER MANAGEMENT ROCK CHECK DAMS SHALL BE CONSTRUCTED WITH CLEAN, WELL-GRADED MATERIAL (NO FINES), PER ROCK SIZE TABLE AND FACED ON THE UPSTREAM SIDE WITH CLEAN 1-1/2" MINUS GRAVEL. TEMPORARY ROCK CHECK DAMS MAY OMIT THE 1-1/2" GRAVEL FACE.
- THE HEIGHT OF THE ROCK CHECK DAM SPILLWAY SHALL BE NO GREATER THAN 3'. THE TOP OF DAM SHALL BE NO MORE THAN 3'-6". THE HEIGHT OF THE SPILLWAY SHALL BE PROPORTIONATE TO THE HEIGHT OF THE DAM BUT NO LESS THAN 2".
- ALL ROCK CHECK DAMS SHALL BE SPACED PER TABLE ABOVE AT A MINIMUM OR AS DIRECTED BY THE ENGINEER.

SCALE: NTS	DATE: 1/25/96	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: RDK	CHECKED BY: STAFF	ROCK CHECK DAM	
APPROVED BY: <i>[Signature]</i>	REVISED: 8/14/2011	STANDARD 312	

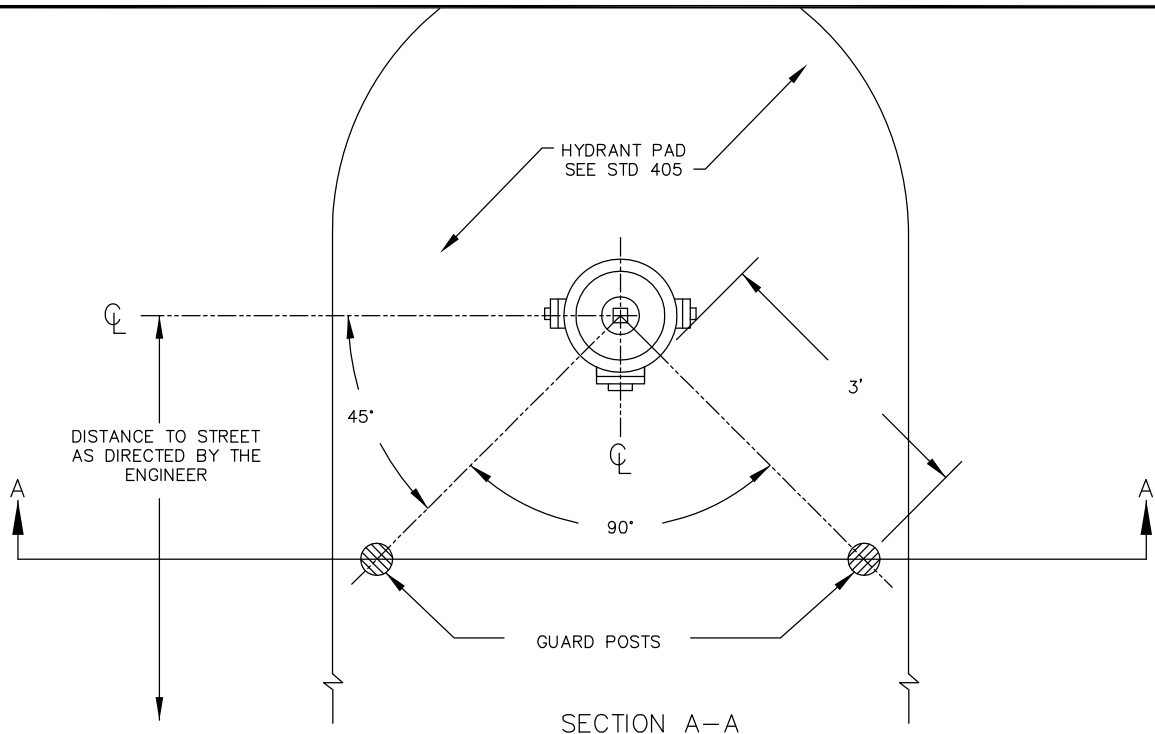




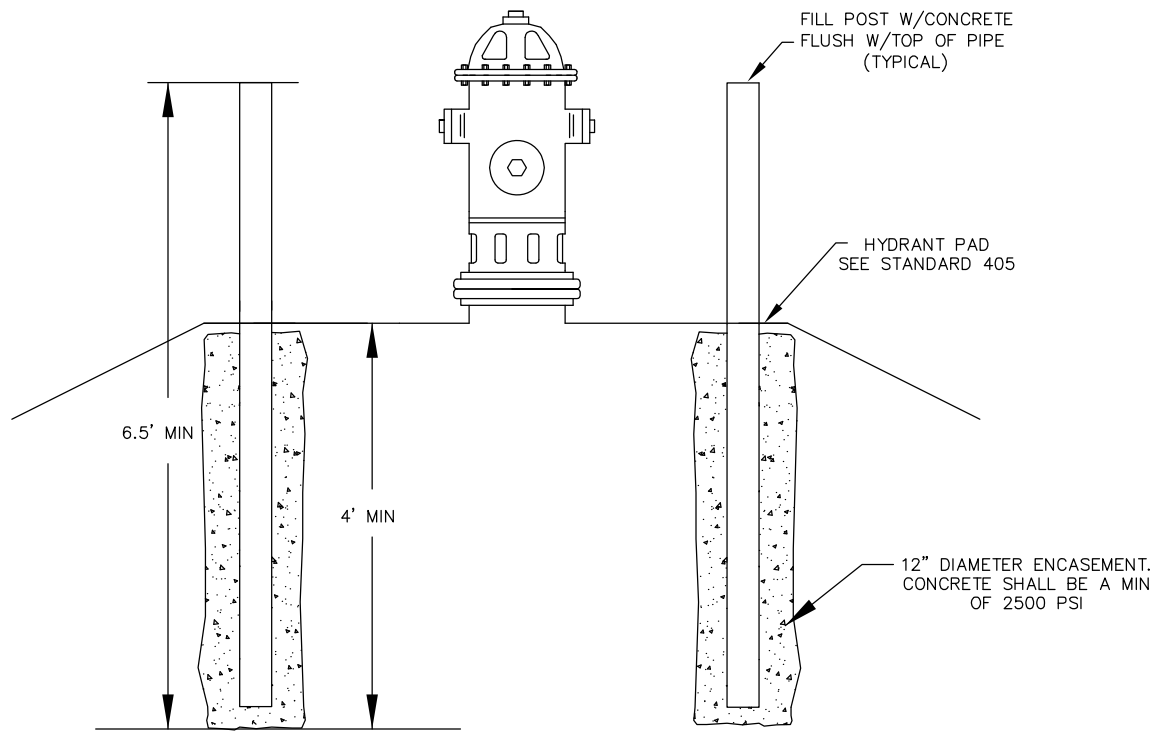
**NOTES**

1. HYDRANT BARREL AND VALVE BOX SHALL BE PLUMB.
2. GROUND COVER SHALL BE 5' MINIMUM. ADDITIONAL COVER (MORE THAN 5') MAY BE REQUIRED BY THE ENGINEER.
3. WATER PIPE SHALL BE 6" MIN. D.I.P. AND ALL CONNECTIONS SHALL BE MEGALUGGED OR CONNECTED WITH LOCKING FIELD GASKETS.
4. BENDS BETWEEN THE HYDRANT AND THE MAIN SHALL NOT EXCEED 11 1/4" UNLESS APPROVED BY ENGINEER.
5. ALL HYDRANTS SHALL BE PAINTED CATERPILLAR YELLOW, AND THE NUMBER OF FEET TO VALVE SHALL BE PRINTED IN BLACK 1/2" BLOCK LETTERS JUST BELOW TOP BONNET. PORT CAPS SHALL BE COLOR CODED PER NFPA STANDARD 291 AS DIRECTED BY THE CBJ WATER UTILITIES DEPARTMENT.
6. THAW WIRE SHALL BE #2 COPPER WITH TYPE THW INSULATION. THAW WIRE SHALL BE BOLTED OR CAD WELDED TO THE TEE AT THE MAIN. CONTINUITY STRAPS ARE REQUIRED ON 6" DIP. CONTINUITY AND ARRANGEMENT FOR TESTING BY CBJ WATER UTILITIES IS THE RESPONSIBILITY OF THE INSTALLER/CONTRACTOR.
7. INSTALL A PAVED HYDRANT PAD PER STANDARD 405 AND GUARD POSTS PER STANDARD 404.
8. HYDRANT SHALL BE MUELLER CENTURION 200 OR 250 WITH INTEGRAL STORZ PUMPER CONNECTION OR APPROVED EQUAL. CLOW F2500 SERIES HYDRANTS ARE NO LONGER ACCEPTED BY CBJ.
9. THIS STANDARD TO BE USED FOR ALL HYDRANTS AND BLOW-OFFS. ALTERNATE BLOW-OFF TYPE HYDRANTS ARE NO LONGER ACCEPTED BY CBJ.
10. FIRE HYDRANT TO THE VALVE SHALL BE TESTED TO A MINIMUM OF 200 PSI FOR TWO (2) HOURS PER STANDARD SPECIFICATION SECTION 02601 ARTICLE 3.5 PARAGRAPH B 2.
11. CBJ WATER UTILITIES DEPARTMENT SHALL DETERMINE FOR EACH HYDRANT INSTALLATION IF HYDRANT PLUGS SHALL BE REMOVED FOR SELF DRAINING. DO NOT BLOCK PLUG WITH THE THRUST BLOCK.

<b>SCALE:</b> NTS		<b>DATE:</b> 11/20/96		<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>  <b>FIRE HYDRANT</b>	
<b>DRAWN BY:</b> DRW		<b>CHECKED BY:</b> STAFF			
<b>APPROVED BY:</b> <i>DRW</i>			<b>REVISED:</b> 8/14/2011		<b>STANDARD 403</b>



SECTION A-A

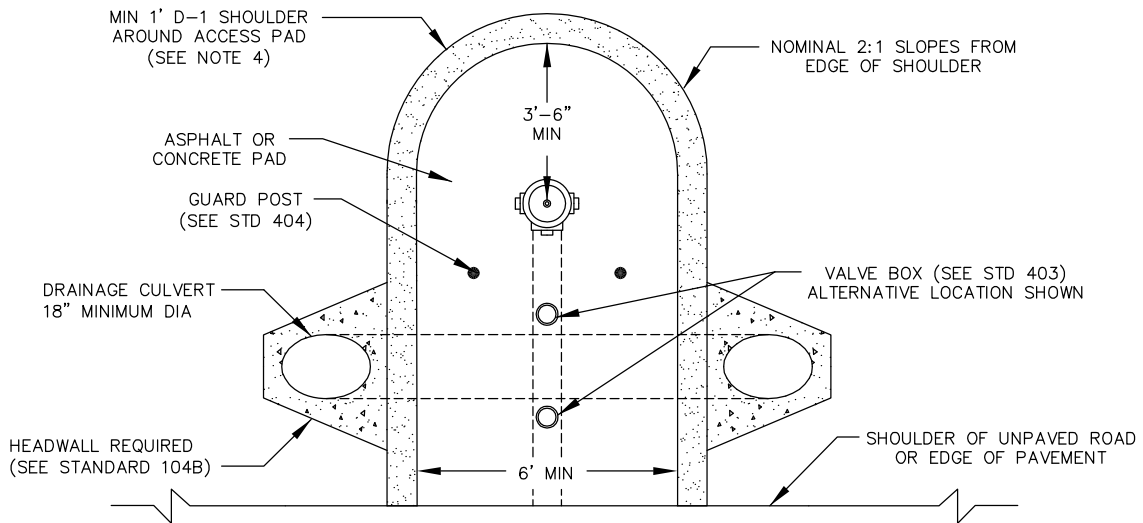


ELEVATION VIEW

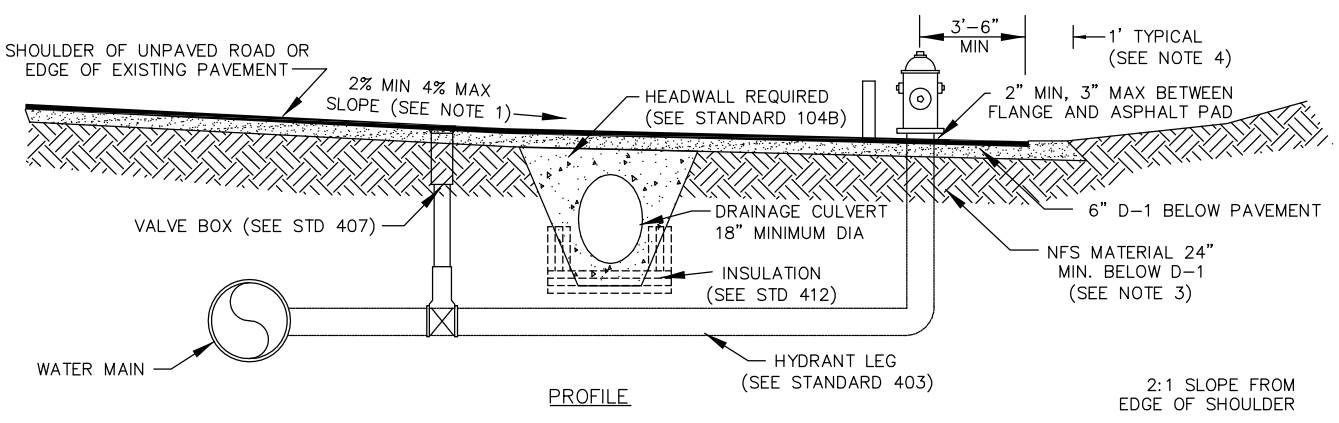
NOTES

1. GUARD POST ARE REQUIRED ON ALL HYDRANTS EXCEPT THOSE IN SIDEWALKS, ALONG STATE HIGHWAYS OR AS DIRECTED BY THE ENGINEER.
2. GUARD POST SHALL BE 4" DIAMETER, SCHEDULE 40 STEEL PIPE WITH A MINIMUM 4 FEET OF BURIAL AND 2-1/2 FEET OF EXPOSURE.
3. POSTS SHALL BE FILLED FLUSH WITH CONCRETE AND PAINTED WITH 4C-184 CATERPILLAR YELLOW ENAMEL AFTER INSTALLATION.
4. POSTS SHALL NOT BLOCK OPERATION OF VALVE.

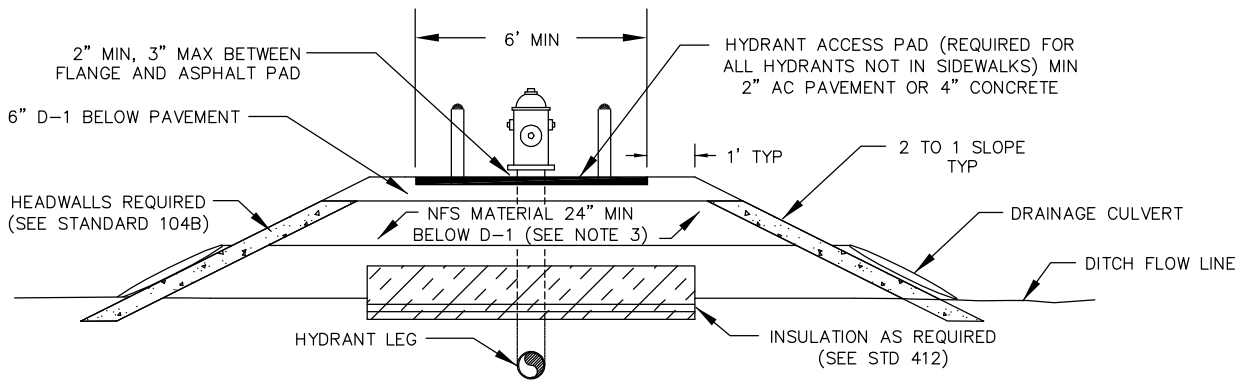
SCALE: NTS	DATE: 11/20/96	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: DRW	CHECKED BY: STAFF	HYDRANT GUARD POSTS	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 404	



PLAN VIEW



PROFILE

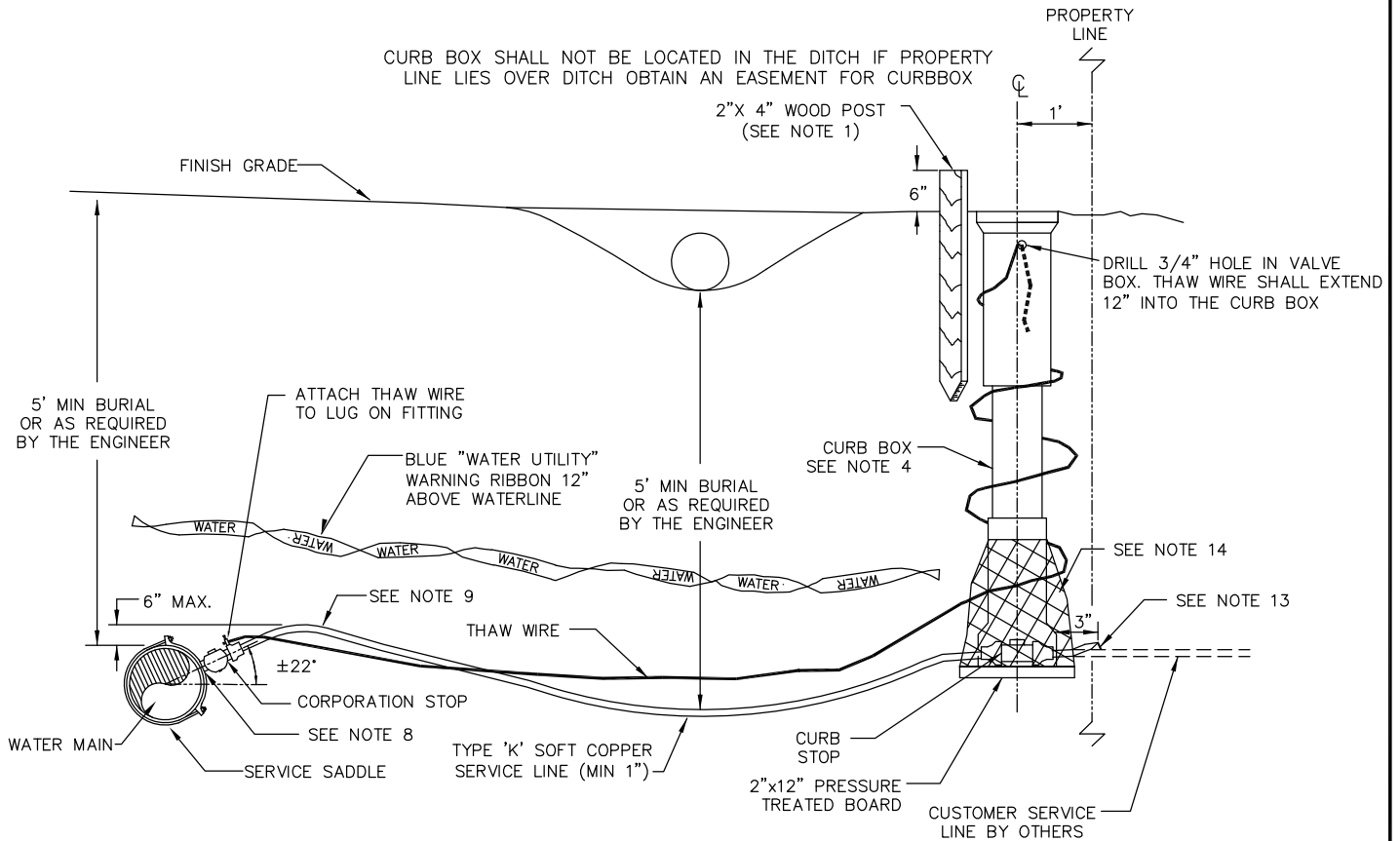


ELEVATION VIEW

NOTES:

1. FROM EDGE OF ROAD TO DITCH LINE, SLOPE SURFACE OF HYDRANT PAD TO MATCH EXTENSION OF ROADWAY CROWN.
2. SEED SIDE SLOPES IN ACCORDANCE WITH SECTION 02710.
3. NFS BACKFILL AND D-1 IN PAD SHALL CONFORM WITH MATERIALS AND COMPACTION REQUIREMENTS OF STANDARD 102A.
4. EXTEND LAYER OF D-1 TO EDGE OF PAD SHOULDER MINIMUM 1 FOOT.
5. 1 FOOT MINIMUM OFFSET FROM EDGE OF PAVEMENT TO TOP OR TOE OF SLOPE.
6. NO HEADWALLS ARE TO BE CONSTRUCTED WITHIN THE ADOT RIGHT-OF-WAY UNLESS APPROVED BY THE ENGINEER.
7. MINIMUM 2" AC PAVEMENT OR 4" CONCRETE REQUIRED ON ALL HYDRANT PADS.

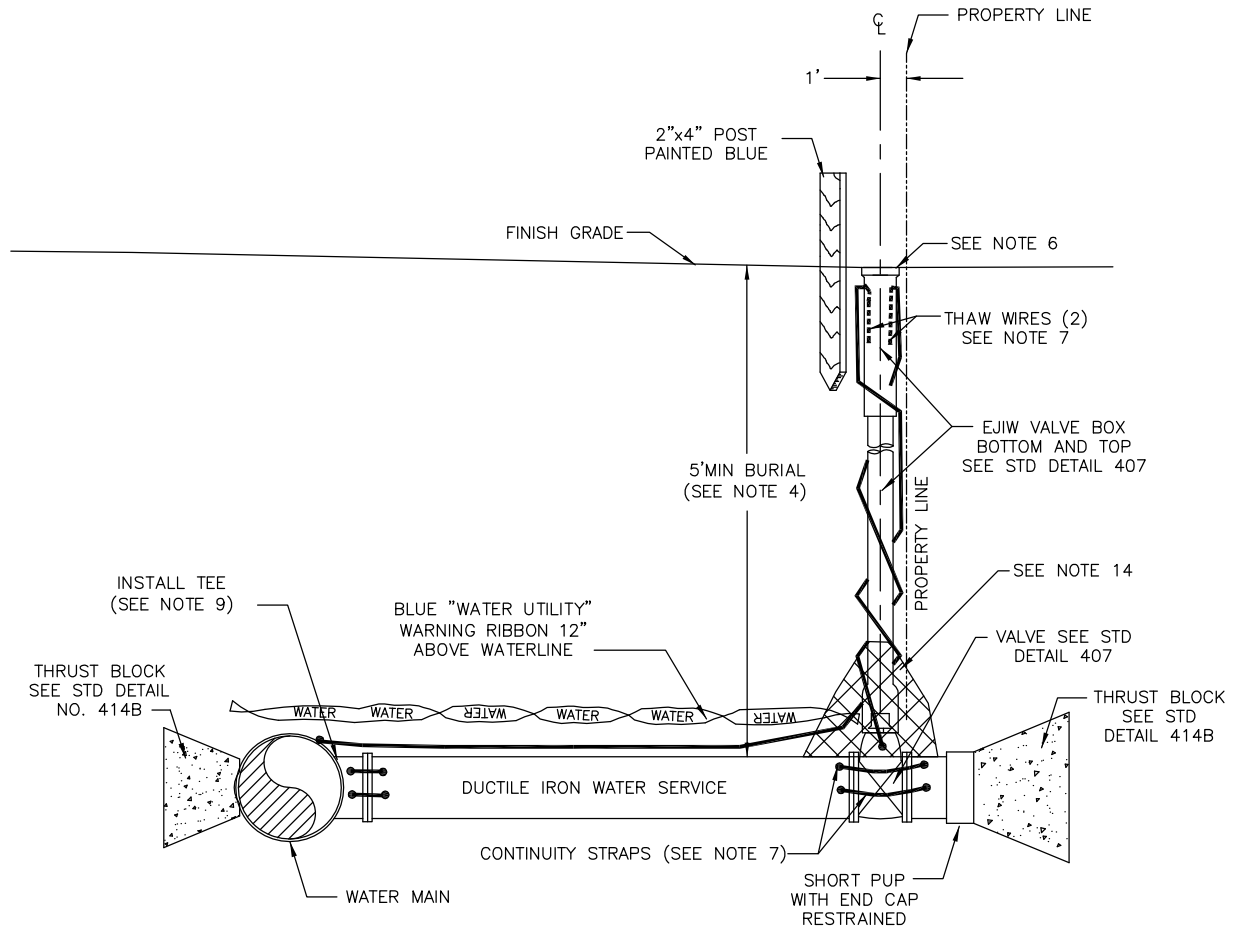
SCALE: NTS	DATE: 12/16/96	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY:	CHECKED BY: STAFF	HYDRANT PAD	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 405	



**NOTES:**

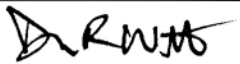
1. AT CURB STOP MARK CURB BOX WITH BLUE 2' X 4" WOOD POST OR MARK "W" ON CONCRETE CURB ABOVE THE SERVICE LINE OR CONNECT TO EXISTING LINE.
2. USE MUELLER CORPORATION STOP NO. B25025, FORD CORPORATION STOP NO. FB700-4, OR APPROVED EQUAL. CORPORATION STOP SHALL BE MALE IRON PIPE THREAD INLET BY FLARED COPPER OUTLET.
3. USE MUELLER CURB STOP NO. H15201, OR NO. H15204, FORD CURB STOP B22-444 OR APPROVED EQUAL.
4. CURB BOX SHALL BE KEJRIWAL PACIFIC 145R 49"-62" LID, TOP, MIDDLE AND BOTTOM OR APPROVED EQUIVALENT.
5. ALL COPPER TUBE CONNECTIONS FOR 1" TO 2" PIPE SHALL BE FLARED UNIONS. MUELLER 100 OR FORD GRIP JOINT COMPRESSION FITTINGS MAY BE USED FOR REPAIR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS ON 3/4" TO 2" COPPER PIPE. WHEN COMPRESSION FITTINGS ARE USED FOR REPAIR, A CONTINUITY TEST SHALL BE REQUIRED.
6. THAW WIRE SHALL BE WOUND AROUND OUTSIDE OF CURB BOX AND EXTEND 12" INTO THE CURBBOX THROUGH A DRILLED 3/4" HOLE.
7. ALL SERVICES MUST HAVE A MINIMUM OF 5' OF COVER BELOW EXISTING CULVERTS AND DITCHES. ADDITIONAL DEPTH MAY BE REQUIRED BY THE ENGINEER.
8. HOLE DRILLED IN THE MAIN FOR THE CORPORATION STOP SHALL BE THE SAME DIAMETER AS THE SERVICE PIPE.
9. PROVIDE AN ADDITIONAL 12" OF SERVICE PIPE BEYOND STRAIGHT LINE LENGTH REQUIRED. LOOP AS SHOWN AT THE CORP STOP. MAINTAIN 5' MINIMUM BURIAL AT HIGH POINT OF SERVICE LINE.
10. MAINTAIN A MINIMUM OF 18" OF SEPARATION BETWEEN VALVE BOXES, AND BETWEEN VALVE BOXES AND OTHER STRUCTURES.
11. CURB BOXES IN PAVED DRIVEWAYS SHALL CONFORM WITH STANDARD 419.
12. ALL NEW SERVICES SHALL BE TESTED FOR ELECTRICAL CONTINUITY AND CURB BOX LOCATION WITH SWING-TIES DELIVERED TO THE ENGINEER.
13. CONNECT A SCRAP PIECE OF COPPER TO THE CURB STOP AND EXTEND A MINIMUM OF 3" BEYOND THE CURB BOX AND CRIMP END.
14. WRAP BOTTOM OF CURB BOX WITH FABRIC OR PLASTIC PRIOR TO BACKFILLING TO KEEP MATERIAL FROM INFILTRATING THE BOX.

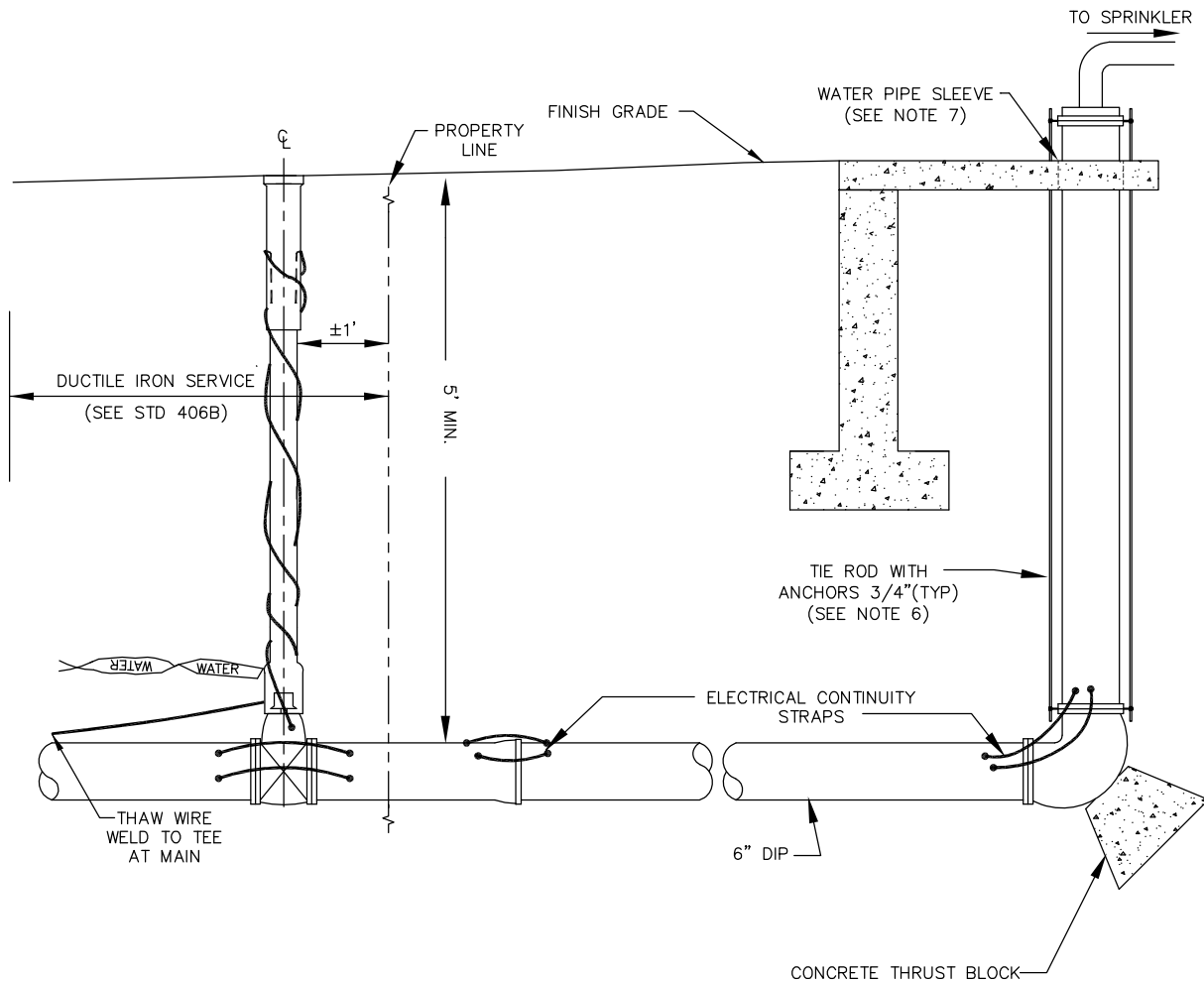
<b>SCALE:</b>	NTS	<b>DATE:</b>	11/22/96	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>
<b>DRAWN BY:</b>	DRW	<b>CHECKED BY:</b>	STAFF	<b>WATER SERVICE</b>
<b>APPROVED BY:</b>			<b>REVISED:</b>	<b>STANDARD 406A</b>
			8/14/2011	



**NOTES:**

1. AT PROPERTY LINE CONNECT TO EXISTING LINE OR MARK WITH BLUE 2' X 4" TIMBER OR SCRIBE "W" ON CONCRETE CURB.
2. VALVE SHALL BE IRON BODY, NON-RISING BRONZE STEM, RESILIENT WEDGE TYPE. VALVE SHALL BE MUELLER, CLOW, KENNEDY, OR M&H AND SHALL MEET ALL REQUIREMENTS OF AWWA C509.
3. VALVE BOX SHALL BE CONSTRUCTED IN ACCORDANCE TO MAINLINE VALVE STANDARD 407.
4. ALL SERVICES MUST HAVE A MINIMUM OF 5' OF COVER BELOW GRADE OR UNDER EXISTING CULVERTS. ADDITIONAL DEPTH MAY BE REQUIRED BY THE ENGINEER.
5. MAINTAIN A MINIMUM OF 18" OF SEPARATION BETWEEN VALVE BOXES, ALSO BETWEEN VALVE BOXES AND OTHER STRUCTURES.
6. VALVE BOXES IN PAVED AREAS SHALL BE SET 3/8" TO 1/2" BELOW FINISHED PAVEMENT.
7. DUCTILE IRON SERVICES 6" OR LESS SHALL HAVE A THAW WIRE BOLTED TO A SADDLE OR CAD WELDED TO THE MAIN/TEE THAT RUNS ALONG THE PIPE AND WOUND AROUND THEN INTO A DRILLED 3/4" HOLE ON THE SAME SIDE OF THE VALVE BOX AS THE MAIN, A SECOND THAW WIRE SHALL BE CAD WELDED TO THE VALVE BODY AND WOUND AROUND THEN INTO THE VALVE BOX ON THE SAME SIDE AS THE PRIVATE PROPERTY. CONTINUITY STRAPS SHALL BE CAD WELDED ACROSS THE VALVE.
8. THE THAW WIRES SHALL BE TESTED FOR ELECTRICAL CONTINUITY AND CONSTRUCTED IN ACCORDANCE WITH CBJ STANDARD 406A.
9. A MANUFACTURED TEE IS REQUIRED FOR SERVICE INSTALLATION ON ALL MAIN LINES LESS THAN 18" IN DIAMETER.
10. ALL JOINTS TO BE MECHANICAL (MEGALUG TYPICAL).
11. CBJ PUBLIC WORKS WATER UTILITY MUST BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE BEFORE TAPPING MAIN.
12. ALL VALVE BOXES SHALL BE RECORDED WITH SWING-TIES AND SUBMITTED TO THE ENGINEER.
13. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST ADDITION OF CBJ STANDARDS AND SPECIFICATIONS.
14. WRAP BOTTOM OF VALVE BOX WITH FABRIC OR PLASTIC TO PREVENT MATERIAL FROM INFILTRATING THE VALVE BOX.

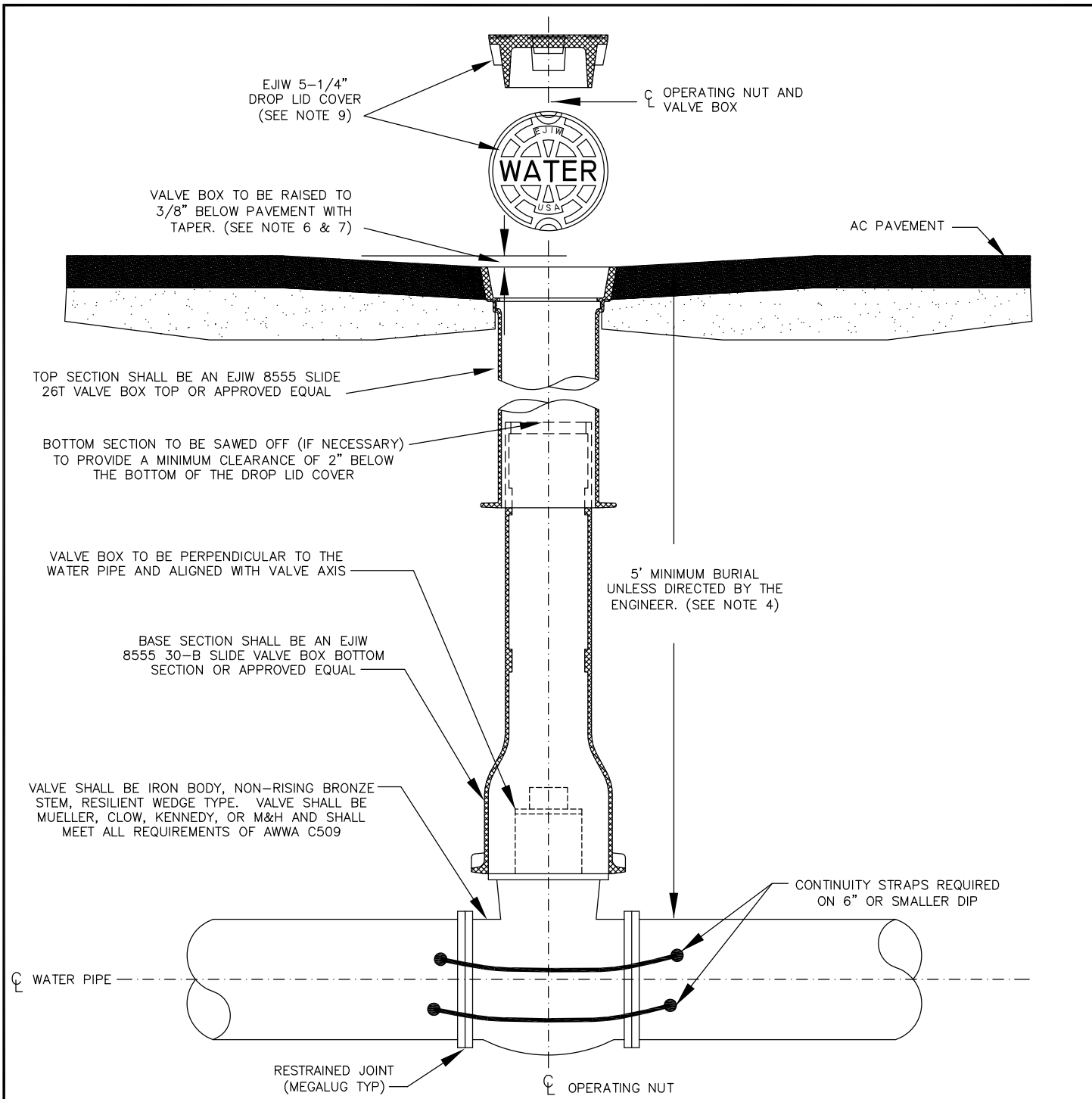
<b>SCALE:</b> NTS	<b>DATE:</b> 7/8/09	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>	
<b>DRAWN BY:</b> STAFF	<b>CHECKED BY:</b> STAFF	<b>DUCTILE IRON WATER SERVICE</b>	
<b>APPROVED BY:</b> 	<b>REVISED:</b> 8/14/2011	<b>STANDARD 406B</b>	



NOTES:

1. VERTICAL SECTION OF THE D.I.P. STAND PIPE SHALL BE PLUMB.
2. GROUND COVER SHALL BE 5' MINIMUM BURIAL.
3. FIRE LINE CONSTRUCTED OF DUCTILE IRON SHALL BE:
  - a. RESTRAINED WITH EBBA IRON "MEGALUG SYSTEM," OR APPROVED EQUAL AT ALL MECHANICAL FITTINGS.
  - b. CONNECTED WITH FIELD LOCKING GASKETS AT ALL PUSH-ON JOINTS.
  - c. FLUSHED, DISINFECTED, TESTED, (ALL PRIVATE FIRE LINES SHALL BE TESTED HYDROSTATICALLY AT NOT LESS THAN 200psi PRESSURE FOR TWO HOURS).
4. THAW WIRE AND CONTINUITY STRAPS (2EA) SHALL BE #2 COPPER WITH TYPE THW INSULATION. THAW WIRE SHALL BE BOLTED OR CAD WELDED TO THE TEE AT THE MAIN. ALL WELDED OR BOLTED WIRE SHALL BE ASPHALTIC COATED.
5. CONTINUITY FOR 6" PIPE AND UNDER SHALL BE (2) JUMPER STRAPS ACROSS ALL VALVES, MECHANICAL FITTINGS AND PUSH-ON JOINTS.
6. TIE RODS WITH ANCHORS SHALL BE THREADED BLACK IRON OR MILD STEEL WITH A 12-MIL MINIMUM ASPHALTIC COATING.
7. SLEEVES SHALL BE PROVIDED TO PROTECT ALL PIPE PENETRATIONS THROUGH CONCRETE AND MASONRY WALLS AND CONCRETE FLOORS, UNLESS OPENINGS ARE DRILLED OR BORED.

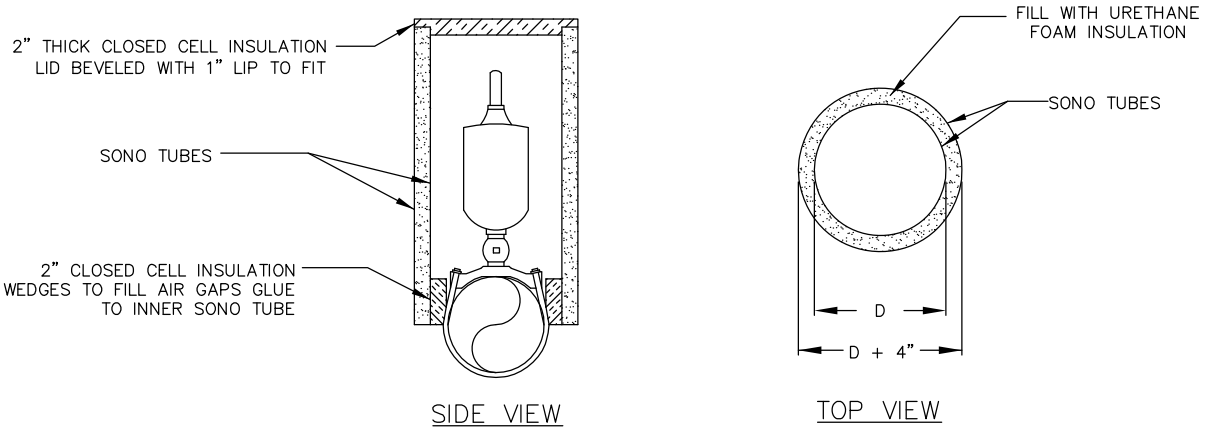
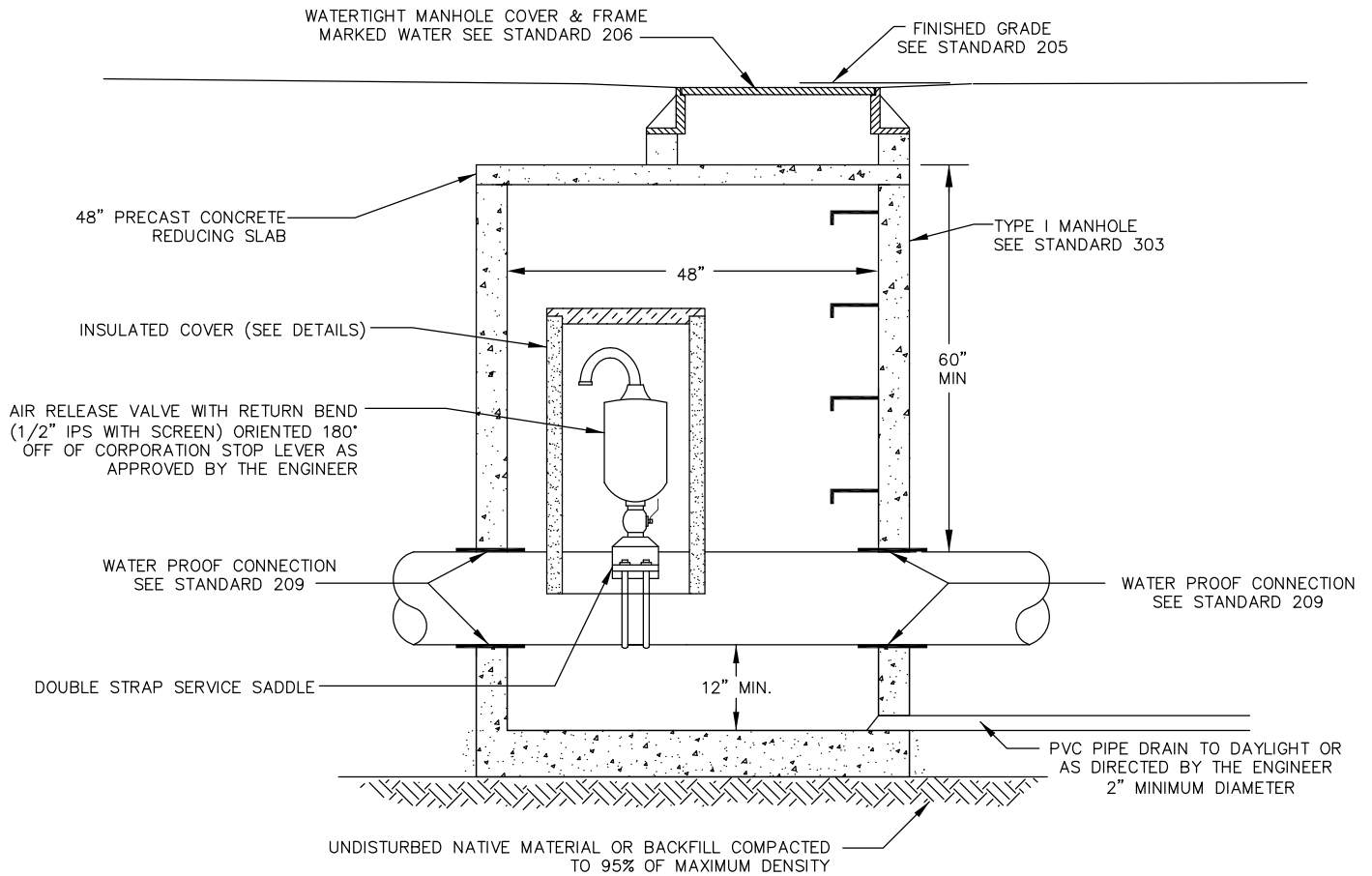
SCALE: NTS	DATE: 2/4/09	CITY AND BOROUGH OF JUNEAU, ALASKA FIRE LINE CONNECTION	
DRAWN BY: MRM	CHECKED BY: STAFF		
APPROVED BY: <i>DRW</i>		REVISED: 8/14/2011	STANDARD 406C



**NOTES:**

1. A VALVE IS REQUIRED FOR EVERY 500' OF STRAIGHT MAINLINE OR AS DIRECTED BY THE ENGINEER.
2. A MINIMUM OF 2 VALVES ARE REQUIRED AT ALL TEES IN A MAINLINE. A MINIMUM OF 3 VALVES ARE REQUIRED AT ALL 4-WAY CROSSES IN A MAINLINE. TEES AND CROSSES THAT FEED SERVICES AND FIRE HYDRANTS ARE PLACED AS DIRECTED BY THE ENGINEER.
3. MAINLINE VALVES REQUIRE THRUST BLOCKS AT THE DIRECTION OF THE ENGINEER.
4. IF WATER MAIN IS MORE THAN 6' DEEP, USE 4" ID CAST IRON SOIL PIPE WITH TOP SECTION EJIW 8555 SLIDE (26T OR 16T) VALVE BOX.
5. THIS DETAIL APPLIES TO ALL MAINLINE VALVES AND ALL WATER VALVES 4" IN DIAMETER OR GREATER.
6. VALVE BOXES ARE TO BE RAISED DURING PAVING OPERATIONS A MINIMUM OF 3/8", MAXIMUM OF 5/8" BELOW FINISHED PAVEMENT. VALVE BOXES THAT DO NOT MEET GRADE SPECIFICATIONS SHALL BE SAWCUT, RAISED TO GRADE WITH 4" AC PAVEMENT (NO CONCRETE).
7. VALVE BOXES WITHIN GRAVEL ROADWAYS ARE TO BE SET 6" TO 8" BELOW FINISHED GRADE.
8. NO MORE THAN 1 VALVE BOX PAVING RISER IS ALLOWED PER VALVE.
9. VALVE BOX COVER SHALL BE 5-1/4" DROP LID TYPE WITH 1" RAISED LETTERING (RECESSED FLUSH) AND 2 CLOSED PICKHOLES.

SCALE: NTS	DATE: 9/8/98	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: TAD	CHECKED BY: STAFF	MAINLINE VALVE	
APPROVED BY: <i>[Signature]</i>	REVISED: 8/14/2011	STANDARD 407	



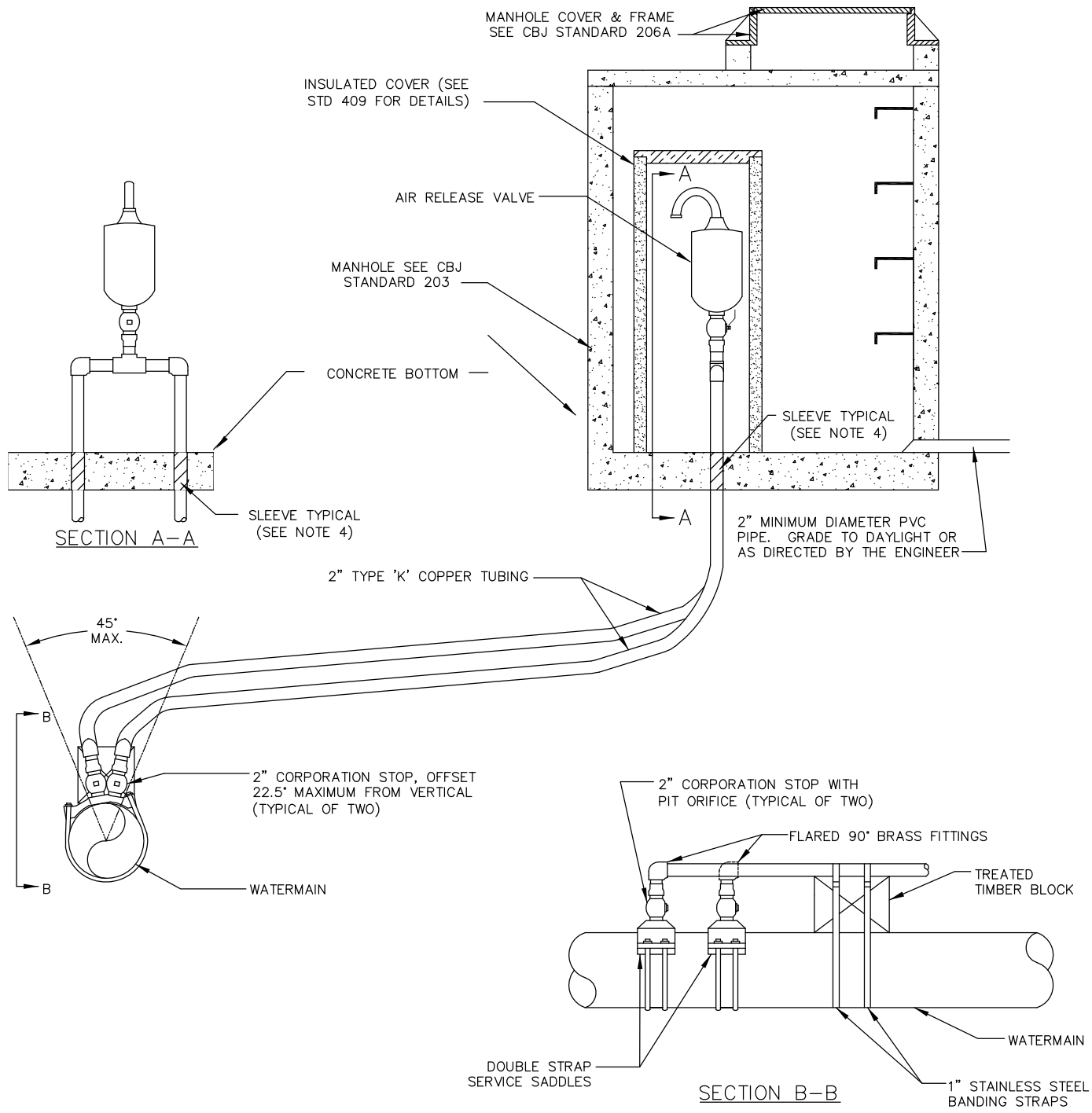
INSULATED COVER DETAILS

NOTES

1. PVC DRAIN TO DAYLIGHT OR AS DIRECTED BY THE ENGINEER.
2. SONO TUBES SHALL BE CONCENTRIC TO INSURE A MINIMUM OF 2" OF INSULATION AT ALL POINTS. TRIM TUBES AND INSULATION TO FIT CURVATURE OF PIPE.
3. ADVANCED THERMAL CORP AIR RELEASE VALVE COVER OR APPROVED EQUAL MAY BE SUBSTITUTED. PRIOR TO THE INSTALLATION OF THE AIR RELEASE VALVE THE DAYLIGHT DRAIN SHALL BE PLUGGED AND THE MANHOLE TESTED PER STANDARD SPECIFICATIONS 02403 3.1.

<b>SCALE:</b>	NTS	<b>DATE:</b>	7/5/95	<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>	
<b>DRAWN BY:</b>	DRW	<b>CHECKED BY:</b>	STAFF	<b>AIR RELEASE VALVE</b>	
<b>APPROVED BY:</b>		<b>REVISED:</b>	8/14/2011	<b>STANDARD 409</b>	

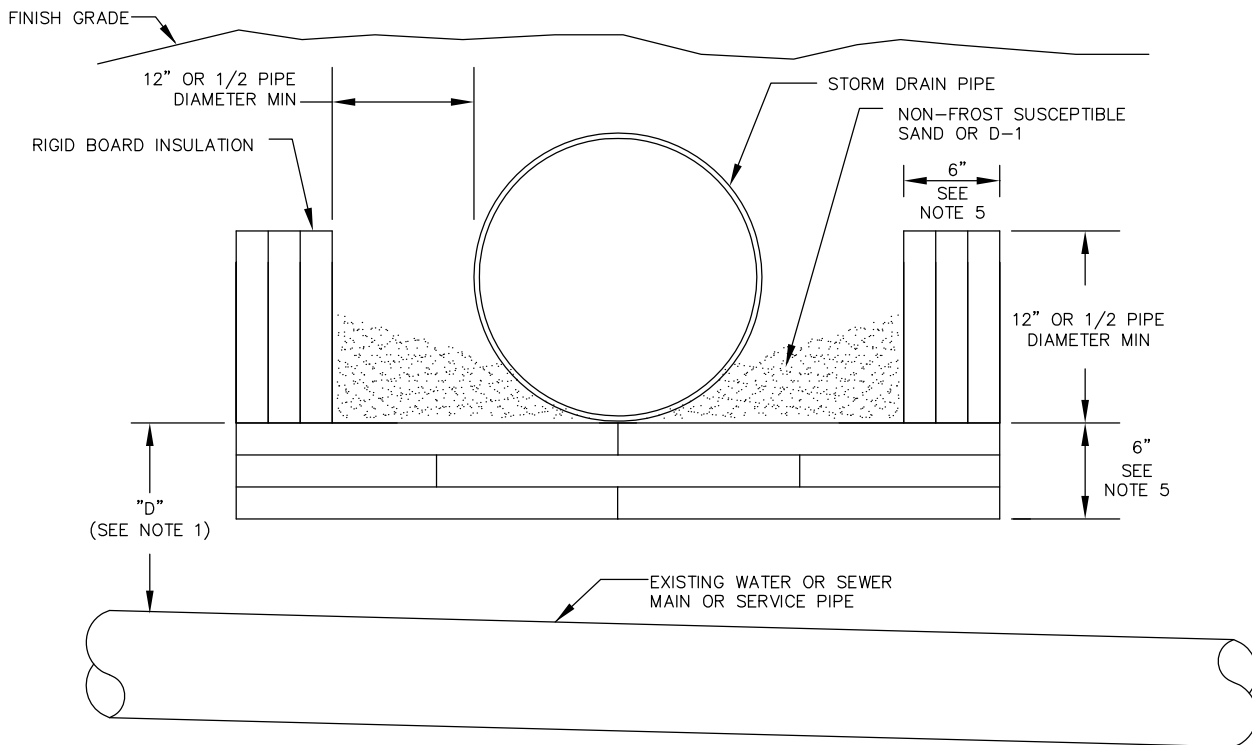




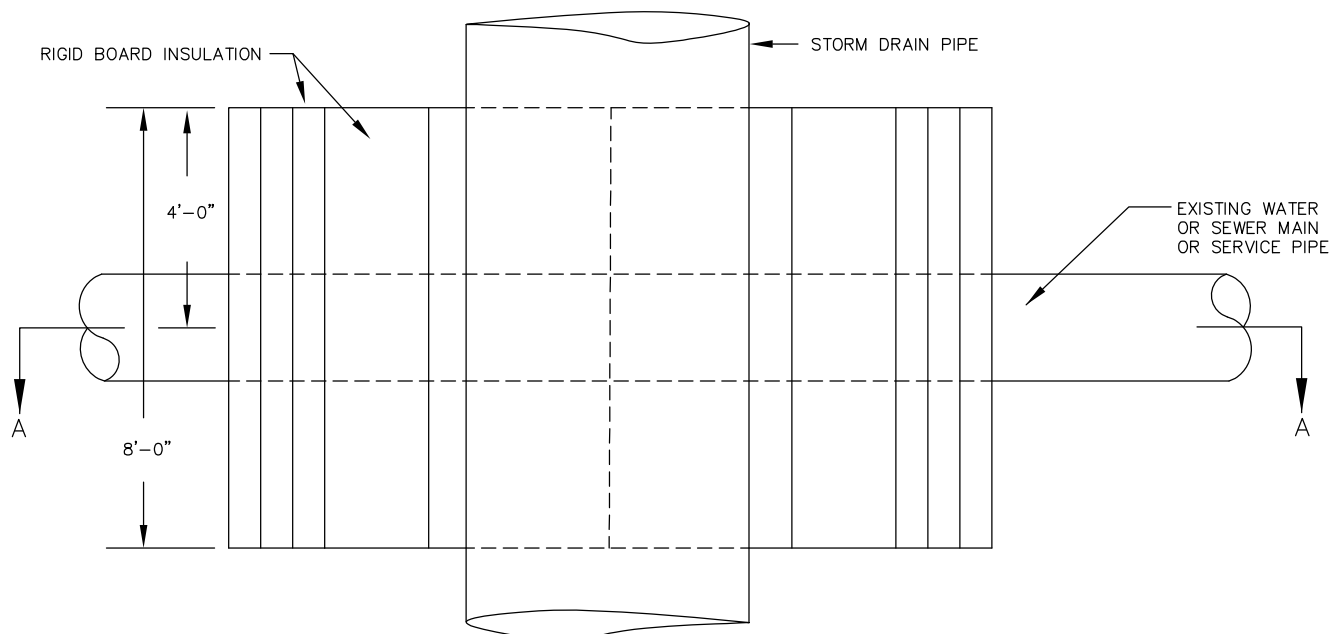
**NOTES**

1. MANHOLE, COVER & FRAME CONSTRUCTION SHALL COMPLY WITH STANDARD 206A.
2. COPPER TUBING SHALL MAINTAIN A POSITIVE GRADE FROM THE WATERMAIN TO THE AIR RELEASE VALVE. CONNECTIONS IN COPPER TUBING SHALL BE FLARED UNIONS.
3. A 60" MINIMUM COVER SHALL BE MAINTAINED OVER THE COPPER TUBING AND WATERMAIN AT ALL LOCATIONS.
4. PROVIDE A PROTECTIVE SLEEVE FOR PENETRATIONS THROUGH CONCRETE BOTTOM AND SEAL AROUND TUBING TO PREVENT GROUND WATER INFILTRATION.
5. PVC DRAIN, AIR RELEASE VALVE, AND INSULATED COVER SHALL COMPLY WITH STANDARD 409.

<b>SCALE:</b>	NTS	<b>DATE:</b>	7/5/95
<b>DRAWN BY:</b>	DRW	<b>CHECKED BY:</b>	STAFF
<b>APPROVED BY:</b> <i>DRW</i>		<b>REVISED:</b>	8/14/2011
<b>CITY AND BOROUGH OF JUNEAU, ALASKA</b>			<b>STANDARD 410</b>
<b>AIR RELEASE VALVE</b>			
<b>OFFSET LOCATION</b>			



SECTION A-A



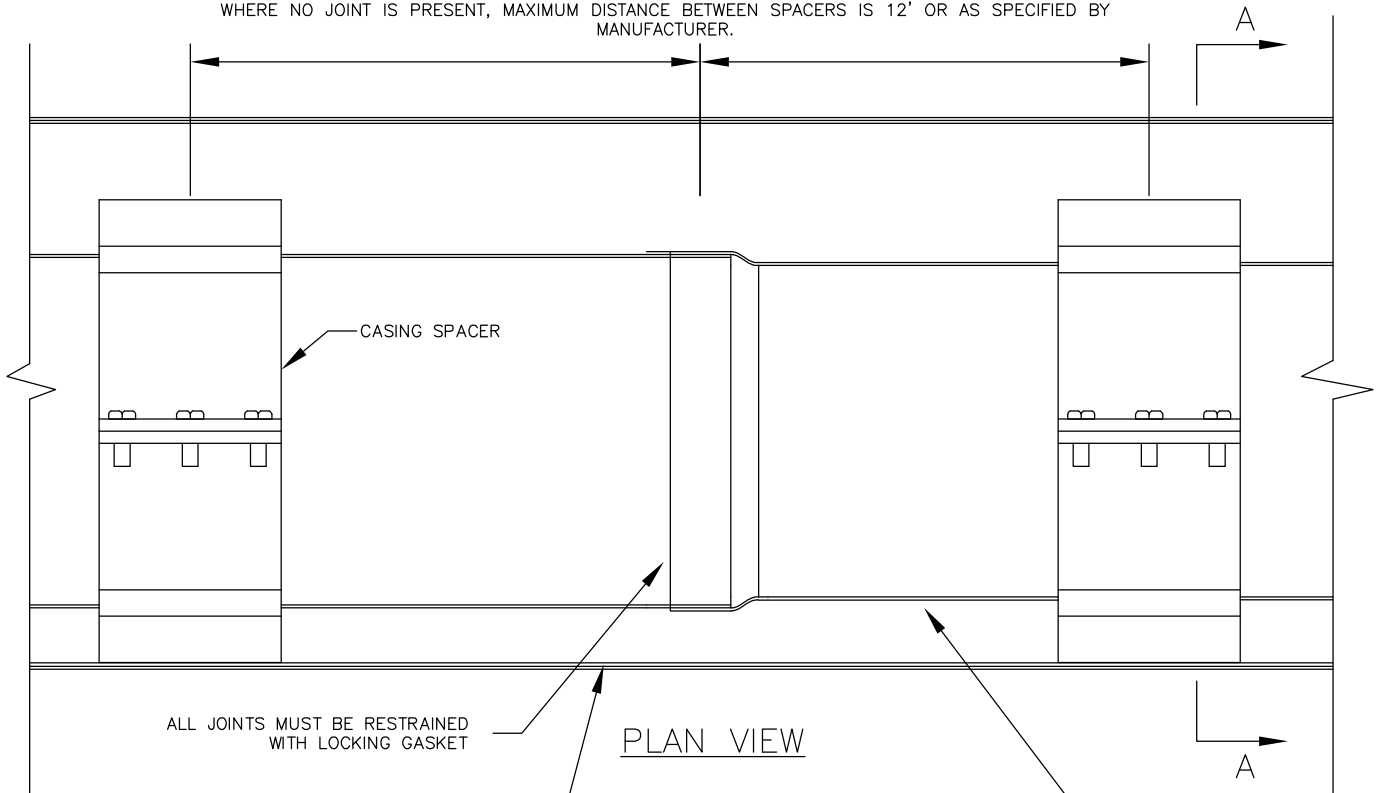
PLAN VIEW

NOTES

1. INSTALL INSULATION AS SHOWN WHEN "D" IS LESS THAN 5'-0" FOR WATER PIPE OR 3'8" FOR SEWER PIPE.
2. INSULATION SHALL CONFORM TO SECTION Q2607 OF THE STANDARD SPECIFICATIONS.
3. PIPE INSULATION SHALL BE 8'-0" IN LENGTH, CENTERED OVER EXISTING WATER OR SEWER PIPE.
4. PIPE INSULATION WITH R-FACTOR EQUAL TO RIGID BOARD MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.
5. CROSSING SHALL BE PROTECTED WITH A MINIMUM 6" OF INSULATION BOARDS WITH A 12" OVER LAP AS SHOWN.

SCALE: NTS	DATE: 7/5/95	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: DRW	CHECKED BY: STAFF	RIGID INSULATION	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 412	

CASING SPACER REQUIRED WITHIN 1' EITHER SIDE OF JOINT OR AS SPECIFIED BY MANUFACTURER.  
 WHERE NO JOINT IS PRESENT, MAXIMUM DISTANCE BETWEEN SPACERS IS 12' OR AS SPECIFIED BY  
 MANUFACTURER.



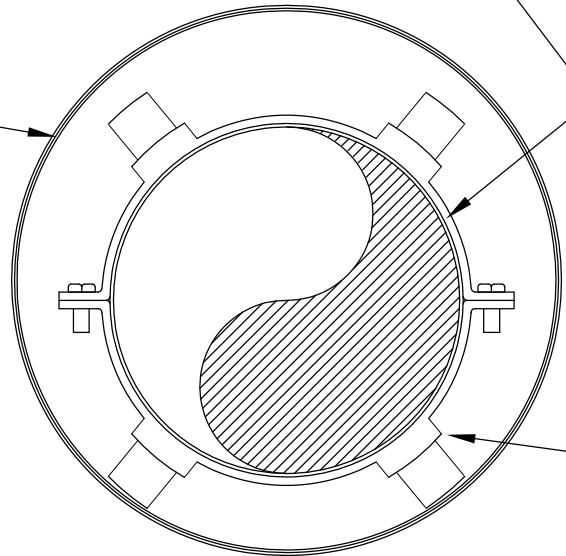
ALL JOINTS MUST BE RESTRAINED  
 WITH LOCKING GASKET

PLAN VIEW

CASING PIPE

SEWER OR  
 WATER PIPE

CASING SPACER

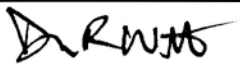


SECTION A-A

CASING PIPE DIAMETER	MIN. WALL THICKNESS
4"	0.237"
6" - 24"	0.250"
26" - 30"	0.312"

NOTES:

1. CASING SPACERS SHALL BE "ADVANCE PRODUCT AND SYSTEMS" HIGH-DENSITY POLYETHYLENE OR APPROVED EQUAL.
2. ENDS OF CASING PIPE SHALL BE PERMANENTLY SEALED AGAINST THE ENTRY OF FOREIGN MATERIAL.

SCALE: NTS	DATE: 1/5/99	CITY AND BOROUGH OF JUNEAU, ALASKA  BORED ENCASEMENT
DRAWN BY: TAD	CHECKED BY: STAFF	
APPROVED BY: 	REVISED: 8/14/2011	STANDARD 413

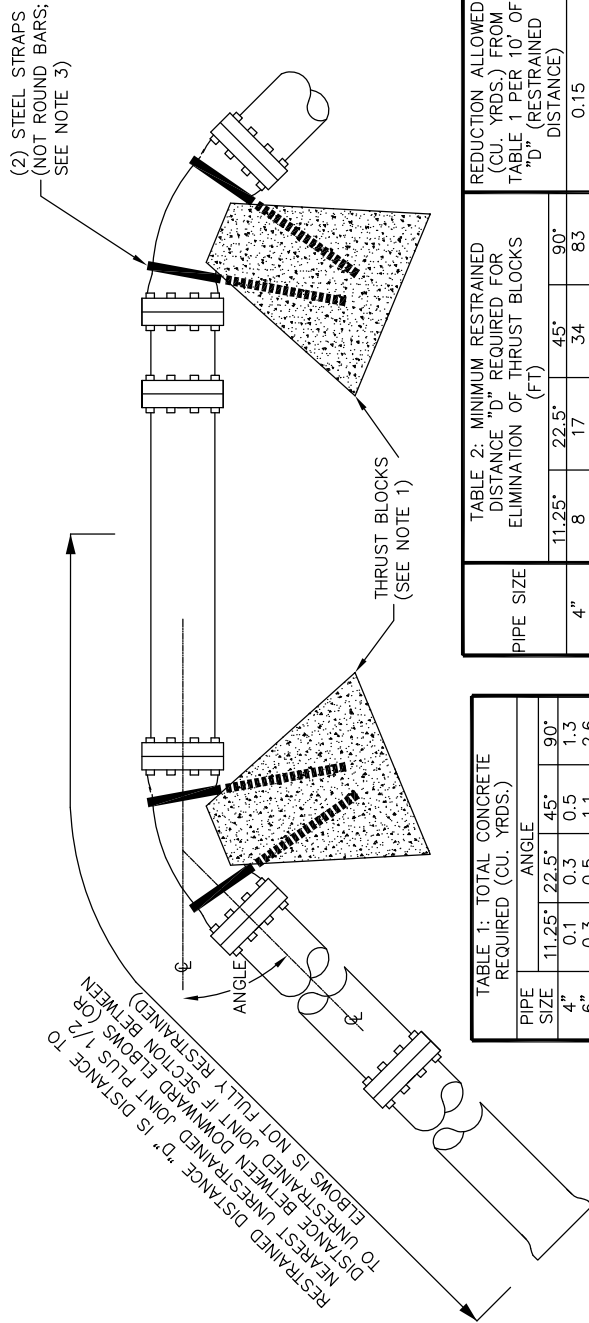


TABLE 2: MINIMUM RESTRAINED DISTANCE "D" REQUIRED FOR ELIMINATION OF THRUST BLOCKS

PIPE SIZE	ELIMINATION OF THRUST BLOCKS (FT)			REDUCTION ALLOWED (CU. YRDS.) FROM TABLE 1 PER 10' OF "D" (RESTRAINED DISTANCE)
	11.25°	22.5°	45°	
4"	8	17	34	0.15
6"	11	23	48	0.22
8"	15	31	64	0.29
10"	18	37	77	0.37
12"	22	44	91	0.44
14"	25	50	104	0.51
16"	28	56	117	0.59
18"	31	62	130	0.67
20"	34	69	143	0.75
24"	40	81	168	0.90

TABLE 1: TOTAL CONCRETE REQUIRED (CU. YRDS.)

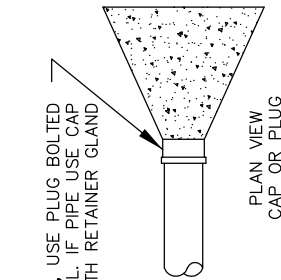
PIPE SIZE	ANGLE		
	11.25°	22.5°	45°
4"	0.1	0.3	0.5
6"	0.3	0.5	1.1
8"	0.4	0.9	1.9
10"	0.7	1.3	2.8
12"	0.9	1.9	4.0
14"	1.3	2.6	5.3
16"	1.6	3.3	6.9
18"	2.1	4.2	8.7
20"	2.5	5.1	10.6
24"	3.6	7.3	15.2

**NOTES**

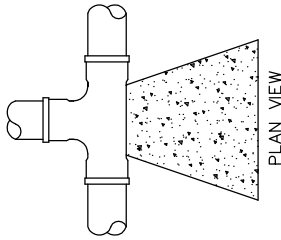
- ALL DOWNWARD CONCAVE BENDS MUST EITHER BE CONNECTED TO A CONCRETE THRUST BLOCK AT LEAST AS LARGE AS INDICATED IN TABLE 1, BE CONNECTED TO RESTRAINED PIPE FOR THE MINIMUM DISTANCE GIVEN IN TABLE 2, OR A COMBINATION OF THE TWO. EXAMPLE OF COMBINATION: 45 DEGREE BEND IN 16" PIPE 16' FROM ANOTHER CONCAVE DOWNWARD BEND AND 4 STICKS (18' EACH) FROM NEAREST UNRESTRAINED JOINT- IF NOT RESTRAINED, THE VOLUME OF THE REQUIRED THRUST BLOCK WOULD BE 6.9 CU. YRDS. AS GIVEN BY TABLE 1. HOWEVER SINCE THERE IS A RESTRAINED LENGTH "D" =  $(1/2 \times 16') + (4 \times 18') = 80'$  THE SIZE OF THE BLOCK CAN BE REDUCED. THIS REDUCTION IS GIVEN BY THE LAST COLUMN OF TABLE 2 TO BE 8 x 0.59 CU. YRDS. = 4.7 CU. YRDS. SO THAT THE BLOCK NEEDS TO BE ONLY 6.9 - 4.7 = 2.2 CU. YRDS.
- THRUST BLOCKS SHALL BE POURED SO THAT JOINTS OF FITTINGS, INCLUDING ALL NUTS AND FOLLOWERS, REMAIN ACCESSIBLE.
- CENTER OF MASS OF THRUST BLOCK MUST BE BELOW PIPE AND CONNECTED TO PIPE WITH TWO STEEL STRAPS. EACH STRAP IS TO HAVE A CROSS-SECTIONAL AREA OF AT LEAST 1/2 SQUARE INCH PER 4 CUBIC YARDS OF CONCRETE. IF STRAPS ARE NOT STAINLESS, PIPE AND STRAPS SHALL BE ISOLATED FROM DIRECT CONTACT WITH A PLASTIC INSULATOR.
- REGARDLESS OF SIZE OF THRUST BLOCK, WATER PIPE JOINTS AT ANGLE MUST BE RESTRAINED.
- CONCRETE THRUST BLOCKS SHALL BE 2500 P.S.I. AND ARE BASED ON 150 P.S.I. WATER PRESSURE. ALL OTHER CONDITIONS ARE SUBJECT TO THE ENGINEER'S REVIEW AND APPROVAL.
- DEDUCTION D IS ALLOWED ONLY WHEN CONDITIONS LISTED IN NOTE 5 ARE MET, ENTIRE SECTION D IS BURIED AT LEAST 5' DEEP, AND PIPE IS BEDDED IN CLEAN SAND FOR ENTIRE LENGTH OF D.
- THIS STANDARD APPLIES TO DOWNWARD CONCAVE ELBOWS. UPWARD CONCAVE ELBOWS SHALL HAVE THRUST BLOCKS AS SHOWN ON STANDARD 414B.
- FIELD-LOCK GASKETS, MEGA-LUG COUPLINGS, AND FORD UNIFLANGE COUPLINGS ARE THE ONLY APPROVED MEANS OF RESTRAINING JOINTS.
- RESTRAINED LENGTHS USED IN PLACE OF THRUST BLOCKS IN STANDARDS 414A AND 414B MAY NOT OVERLAP.

SCALE:	NTS	DATE:	8/25/99	CITY AND BOROUGH OF JUNEAU, ALASKA DOWNWARD CONCAVE THRUST BLOCK	
DRAWN BY:	TAD	CHECKED BY:	STAFF		
APPROVED BY:			REVISED:	8/14/2011	STANDARD 414A

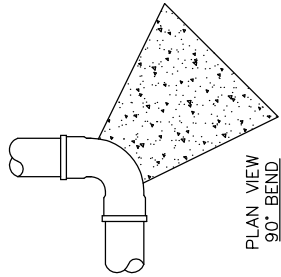
IF FITTING, USE PLUG BOLTED TO BELL. IF PIPE USE CAP WITH RETAINER GLAND



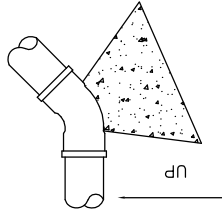
PLAN VIEW  
CAP OR PLUG



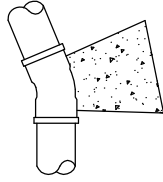
PLAN VIEW  
TEE



PLAN VIEW  
90° BEND



ELEVATION VIEW  
45° CONCAVE UPWARD BEND  
(FOR CONCAVE DOWNWARD BEND SEE STD 414A)



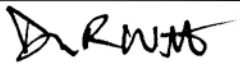
PLAN VIEW  
22-1/2° BEND

PIPE SIZE	TEES, CAPS, & PLUGS		90° BENDS		ALTERNATIVE RESTRAINED LENGTH IN ALL DIRECTIONS (FEET) - SEE NOTE 5	
	MIN. CONCRETE VOL. (YD;)	MIN. BEARING AREA (FT <sup>2</sup> )	MIN. CONCRETE VOL. (YD;)	MIN. BEARING AREA (FT <sup>2</sup> )	TEES	90° BENDS
4"	0.1	1.7	0.1	2.4	11	16
6"	0.2	3.5	0.4	4.9	15	23
8"	0.5	6.0	0.9	8.5	20	30
10"	1.0	9.1	1.7	12.8	24	37
12"	1.7	12.8	2.9	18.1	29	44
14"	2.6	17.2	4.5	24.4	33	50
16"	3.9	22.3	6.6	31.5	38	57
18"	5.5	28.0	9.2	39.6	42	63
20"	7.5	34.4	12.5	48.6	47	70
24"	12.7	49.0	21.4	69.3	56	83

SMALL ANGLE ADJUSTMENT	
FOR ANGLES LESS THAN 90° MULTIPLY VOLUMES, AREAS, AND LENGTHS FOR 90° ANGLE BY THIS FACTOR	
ANGLE	FACTOR
45°	0.414
22-1/2°	0.199
11-1/4°	0.098

**NOTES**

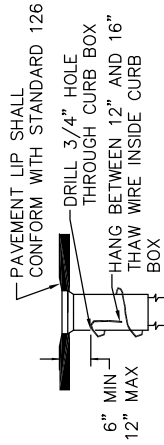
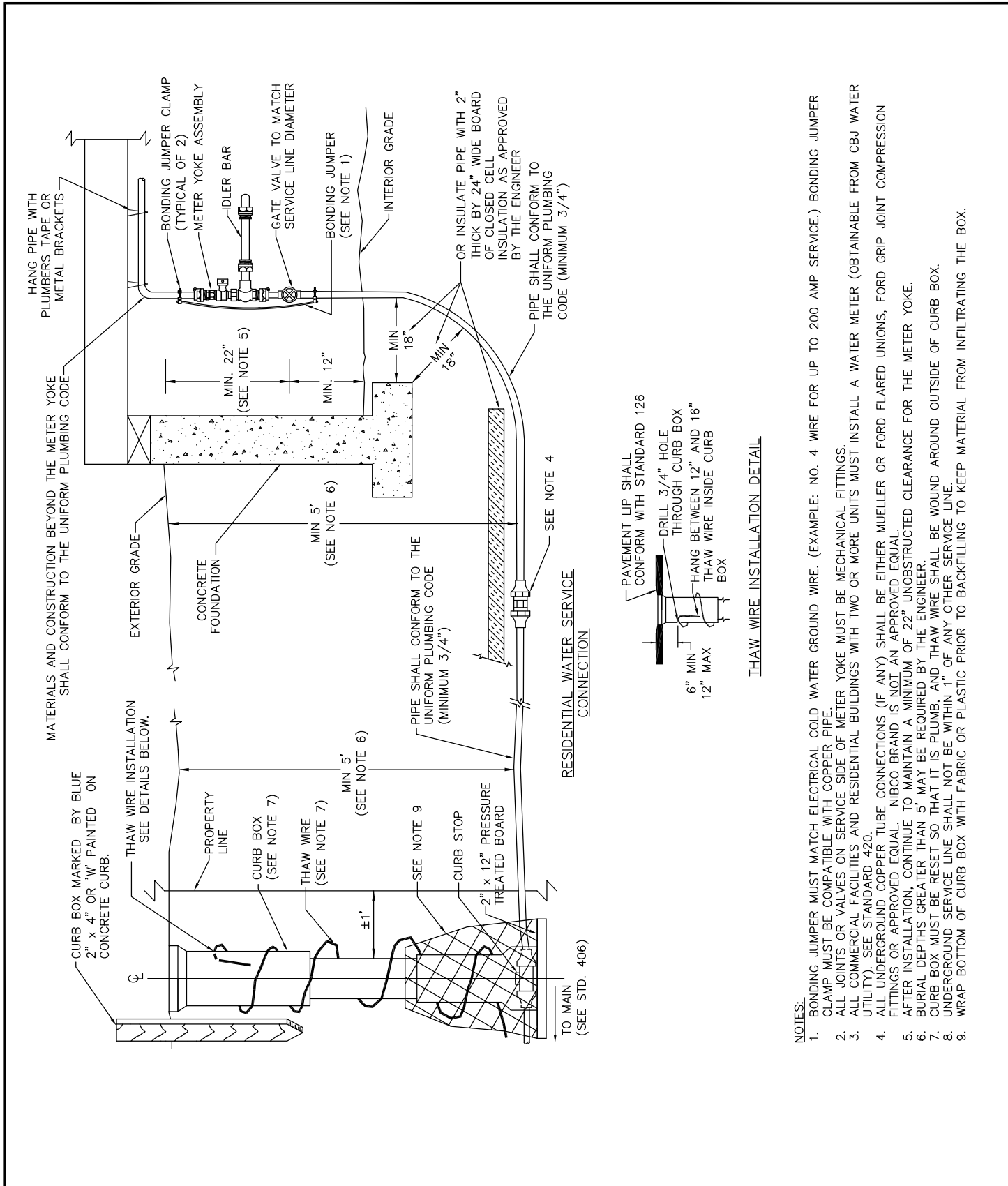
- CENTER OF MASS OF THRUST BLOCK MUST LAY OPPOSITE TO AND ALIGNED AGAINST THE DIRECTION OF THRUST.
- THRUST BLOCKS SHALL BE POURED SO THAT JOINTS OF FITTINGS, INCLUDING ALL NUTS AND FOLLOWERS REMAIN ACCESSIBLE.
- CONCRETE THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED EARTH. UNSTABLE OR UNSUITABLE MATERIALS SHALL BE REMOVED, REPLACED AND/OR COMPACTED AS DETERMINED BY THE ENGINEER.
- VOLUME AND BEARING SURFACE OF 2500 P.S.I. CONCRETE THRUST BLOCKS ARE BASED ON 150 P.S.I. WATER PRESSURE AND SOIL BEARING CAPACITY OF 2000 P.S.F. ALL OTHER PRESSURE AND/OR SOIL CONDITIONS ARE SUBJECT TO THE ENGINEER'S REVIEW AND APPROVAL.
- THRUST BLOCKS MAY BE OMITTED IF ALL JOINTS WITHIN MINIMUM DISTANCE GIVEN BY ABOVE TABLE ARE RESTRAINED AND PIPE IS BEDDED IN SAND. THE DISTANCES APPEARING IN THE TABLE ASSUME THAT THE PIPE IS BURIED AT LEAST 5' DEEP AND THAT SOIL CONDITIONS ARE AS LISTED IN NOTE 4. THE INFORMATION IN THE TABLE IS BASED ON DIPRA'S "THRUST RESTRAINT FOR DUCTILE IRON PIPE" WHICH SHOULD BE CONSULTED IF THESE ASSUMPTIONS ARE NOT MET. SUBJECT TO THE CONDITIONS LISTED IN NOTE 4, A COMBINATION OF A SMALLER THRUST BLOCK AND A REDUCED LENGTH OF RESTRAINED PIPE IS ALLOWED PER THE FOLLOWING FORMULA:  
$$\text{ACTUAL BEARING AREA OF BLOCK} + \frac{\text{ACTUAL RESTRAINED LENGTH OF PIPE}}{\text{RESTRAINED LENGTH REQUIRED BY TABLE}} \geq 1.1$$
- THRUST BLOCKS ARE REQUIRED FOR ALL BENDS, TEES, PLUGS, AND CAPS IN PIPE 4" AND LARGER EXCEPT AS LISTED IN NOTE 5.
- REGARDLESS OF SIZE OF THRUST BLOCKS ALL JOINTS AT CAPS, PLUGS, BENDS, AND TEES MUST BE RESTRAINED.
- RESTRAINED LENGTHS USED IN PLACE OF THRUST BLOCKS IN STANDARDS 414A AND 414B MAY NOT OVERLAP.
- FIELD-LOCK GASKETS, MEGA-LUG AND UNIFLANGE COUPLINGS ARE THE ONLY APPROVED MEANS OF RESTRAINING PIPE.

SCALE:	NTS	DATE:	8/24/99
DRAWN BY:	TAD	CHECKED BY:	STAFF
APPROVED BY:			

CITY AND BOROUGH OF JUNEAU, ALASKA  
HORIZONTAL AND CONCAVE  
UPWARD THRUST BLOCKS

REVISED:  
8/14/2011

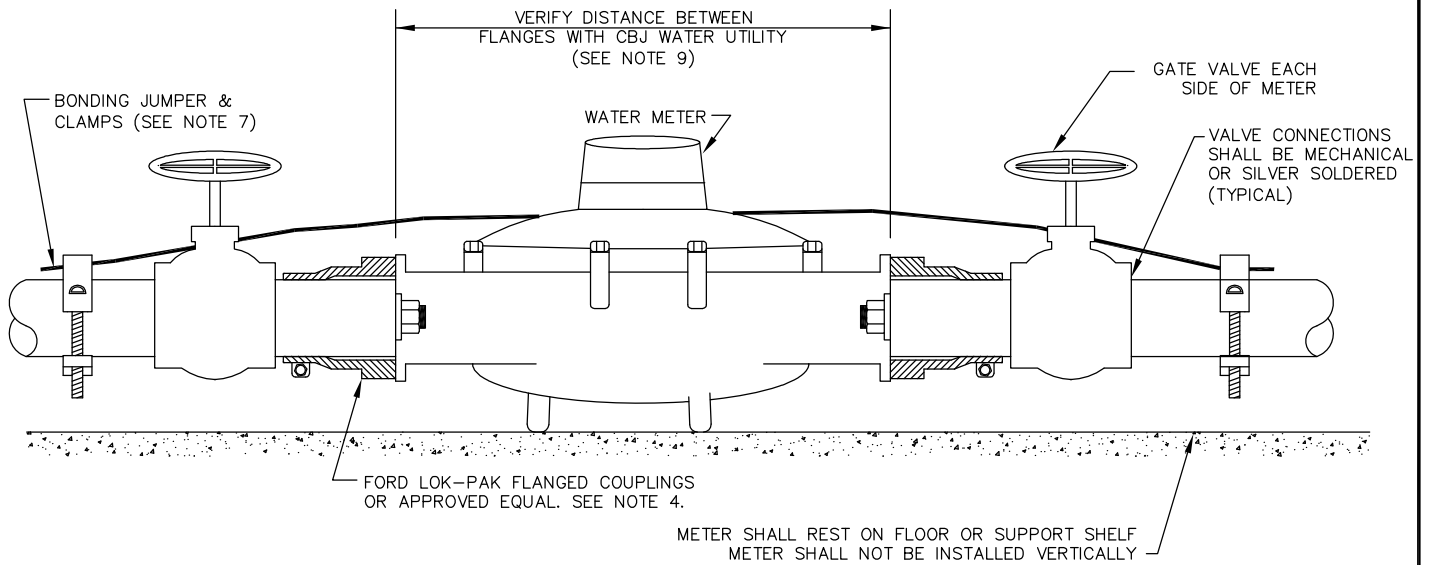
STANDARD 414B



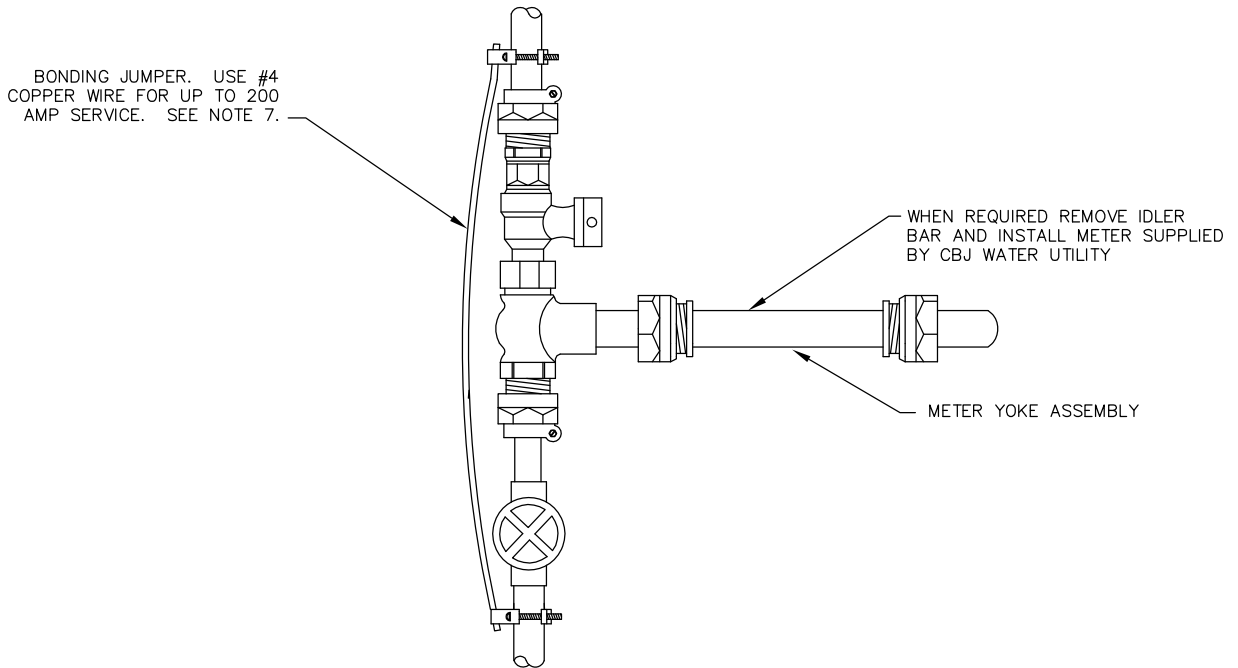
THAW WIRE INSTALLATION DETAIL

- NOTES:
1. BONDING JUMPER MUST MATCH ELECTRICAL COLD WATER GROUND WIRE. (EXAMPLE: NO. 4 WIRE FOR UP TO 200 AMP SERVICE.) BONDING JUMPER CLAMP MUST BE COMPATIBLE WITH COPPER PIPE.
  2. ALL JOINTS OR VALVES ON SERVICE SIDE OF METER YOKES MUST BE MECHANICAL FITTINGS.
  3. ALL COMMERCIAL FACILITIES AND RESIDENTIAL BUILDINGS WITH TWO OR MORE UNITS MUST INSTALL A WATER METER (OBTAINABLE FROM CBJ WATER UTILITY). SEE STANDARD 420.
  4. ALL UNDERGROUND COPPER TUBE CONNECTIONS (IF ANY) SHALL BE EITHER MUELLER OR FORD FLARED UNIONS, FORD GRIP JOINT COMPRESSION FITTINGS OR APPROVED EQUAL. NIBCO BRAND IS NOT AN APPROVED EQUAL.
  5. AFTER INSTALLATION, CONTINUE TO MAINTAIN A MINIMUM OF 22" UNOBSTRUCTED CLEARANCE FOR THE METER YOKE.
  6. BURIAL DEPTHS GREATER THAN 5' MAY BE REQUIRED BY THE ENGINEER.
  7. CURB BOX MUST BE RESET SO THAT IT IS PLUMB, AND THAW WIRE SHALL BE WOUND AROUND OUTSIDE OF CURB BOX.
  8. UNDERGROUND SERVICE LINE SHALL NOT BE WITHIN 1" OF ANY OTHER SERVICE LINE.
  9. WRAP BOTTOM OF CURB BOX WITH FABRIC OR PLASTIC PRIOR TO BACKFILLING TO KEEP MATERIAL FROM INFILTRATING THE BOX.

SCALE:	NTS	DATE:	12/12/96	CITY AND BOROUGH OF JUNEAU, ALASKA RESIDENTIAL WATER SERVICE CONNECTION	
DRAWN BY:	DRW	CHECKED BY:	STAFF		
APPROVED BY:			REVISED:	8/14/2011	STANDARD 419



1.5" or LARGER METER



3/4" or 1" METER YOKE

**NOTES:**

1. ALL COMMERCIAL FACILITIES AND RESIDENTIAL BUILDINGS WITH TWO OR MORE UNITS MUST INSTALL A WATER METER.
2. INSTALL WITH BASE OF METER PARALLEL TO FLOOR.
3. INSTALL THREE 22 GAUGE MULTICOLORED CONDUCTORS IN 1/2" ELECTRICAL CONDUIT FROM MAIN ENTRANCE OF BUILDING TO WITHIN 12" OF METER REGISTER (NOT TO EXCEED 100'). ALLOW AN EXTRA 2 FEET OF WIRE FOR METER CONNECTIONS.
4. PROVIDE MINIMUM 18" CLEARANCE ABOVE METER, AND MINIMUM 12" CLEARANCE EACH SIDE AND BELOW METER.
5. FOR 1.5" OR 2" METERS, COUPLINGS SHALL BE FORD LOK-PAK METER COUPLING CF34 (COPPER), CF35 (IRON), CF37 (PVC), OR AN APPROVED EQUAL WITH IDLER BAR.
6. WATER METERING SHALL BE COORDINATED WITH AND APPROVED BY THE CBJ WATER UTILITY.
7. BONDING JUMPER MUST MATCH ELECTRICAL COLD WATER GROUND WIRE. CLAMPS SHALL BE COMPATIBLE WITH COPPER PIPE.
8. NO SERVICE TAPS ALLOWED PRIOR TO METER INSTALLATION.
9. INSTALL IDLER BAR BETWEEN FLANGES AND VERIFY METER DIMENSION WITH CBJ WATER UTILITY PRIOR TO INSTALLATION.

SCALE: NTS	DATE: 12/12/96	CITY AND BOROUGH OF JUNEAU, ALASKA	
DRAWN BY: DRW	CHECKED BY: STAFF	METER INSTALLATION	
APPROVED BY: <i>DRW</i>	REVISED: 8/14/2011	STANDARD 420	