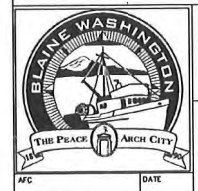


PROJECT BENCH MARKS:  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF BALD EAGLE DRIVE AND CANVASBACK ROAD AS BEING 245.22 FEET.  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF WOOD DUCK WAY AND CANVASBACK ROAD AS BEING 209.60 FEET.  
ELEVATIONS PER THE CITY OF BLAINE GIS MAPPING SYSTEM.



CARNOUSTIE - SEMIAHMOO

ROADWAY AND DRAINAGE

SHEET  
16  
OF  
31

PROJECT NUMBER:  
TRLX0107  
DATE: 7/17/07  
DESIGN: BDK  
DRAWN: BEM  
CHECKED:

SCALE:  
SHEET NO.

C11  
OF  
31

BLAINE, WA  
CARNOUSTIE - SEMIAHMOO  
ROADWAY AND STORM DRAINAGE  
PP DRAYTON HARBOR ROAD 1

DAVID EVANS  
AND ASSOCIATES INC.  
119 Grand Avenue, Suite D  
Bellingham Washington 98225  
Phone: 360 647 7151  
Fax: 360 647 7160



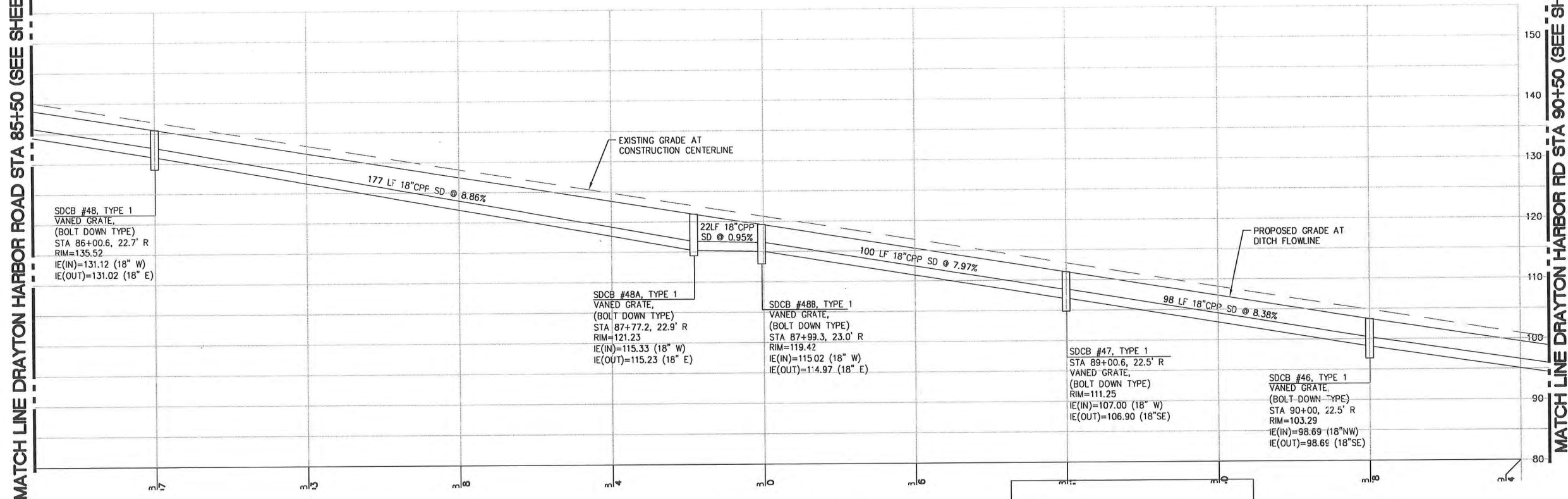
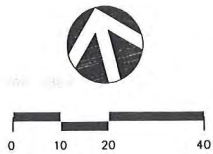
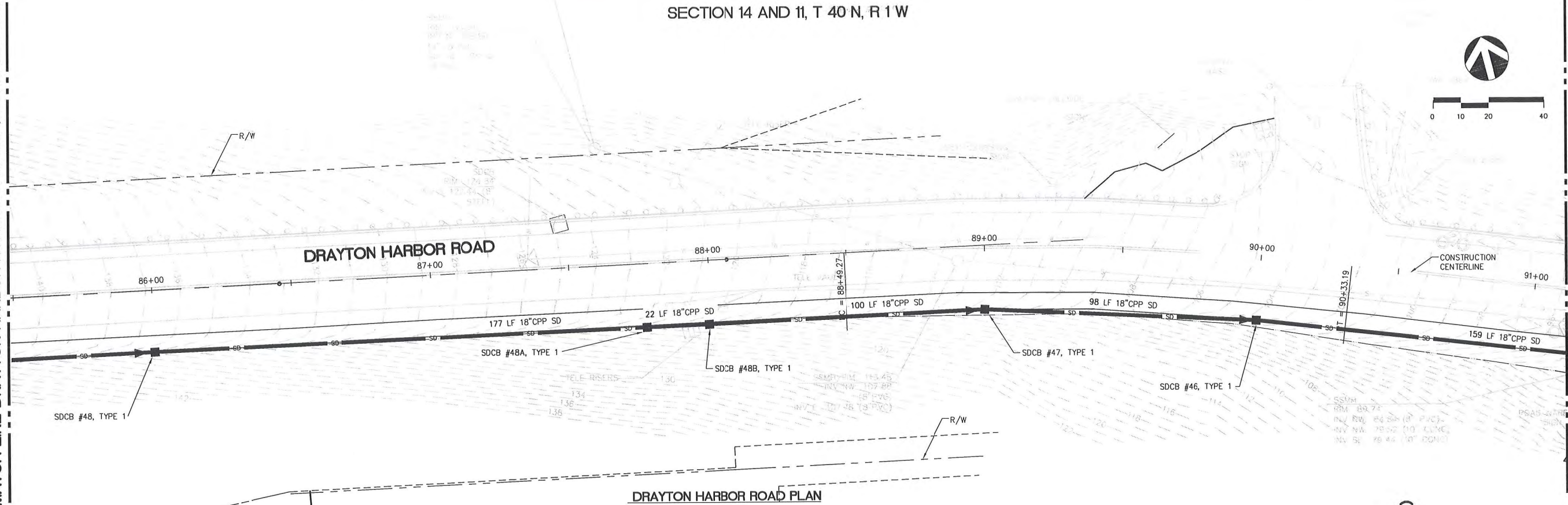
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APPD.



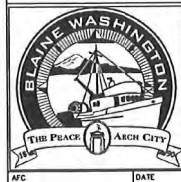
SECTION 14 AND 11, T 40 N, R 1 W

MATCH LINE DRAYTON HARBOR ROAD STA 85+50 (SEE SHEET C11)

MATCH LINE DRAYTON HARBOR ROAD STA 85+50 (SEE SHEET C11)



PROJECT BENCH MARKS:  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF BALD EAGLE DRIVE AND  
CANVASBACK ROAD AS BEING 245.22 FEET.  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF WOOD DUCK WAY AND  
CANVASBACK ROAD AS BEING 209.60 FEET.  
ELEVATIONS PER THE CITY OF BLAINE GIS MAPPING SYSTEM.



CARNOUSTIE - SEMIAHMOO

ROADWAY AND DRAINAGE



MATCH LINE DRAYTON HARBOR ROAD STA 91+50 (SEE SHEET C13)

RECORD DRAWING - 7/04/08

BLAINE, WA

CARNOUSTIE - SEMIAHMOO

ROADWAY AND STORM DRAINAGE

PP DRAYTON HARBOR ROAD 2

PROJECT NUMBER:  
TRLX0107

DATE: 7/17/07  
DESIGN: BDK  
DRAWN: BEM  
CHECKED:

SCALE:

SHEET  
17  
OF  
31

C12

OF 31



DAVID EVANS  
AND ASSOCIATES INC.

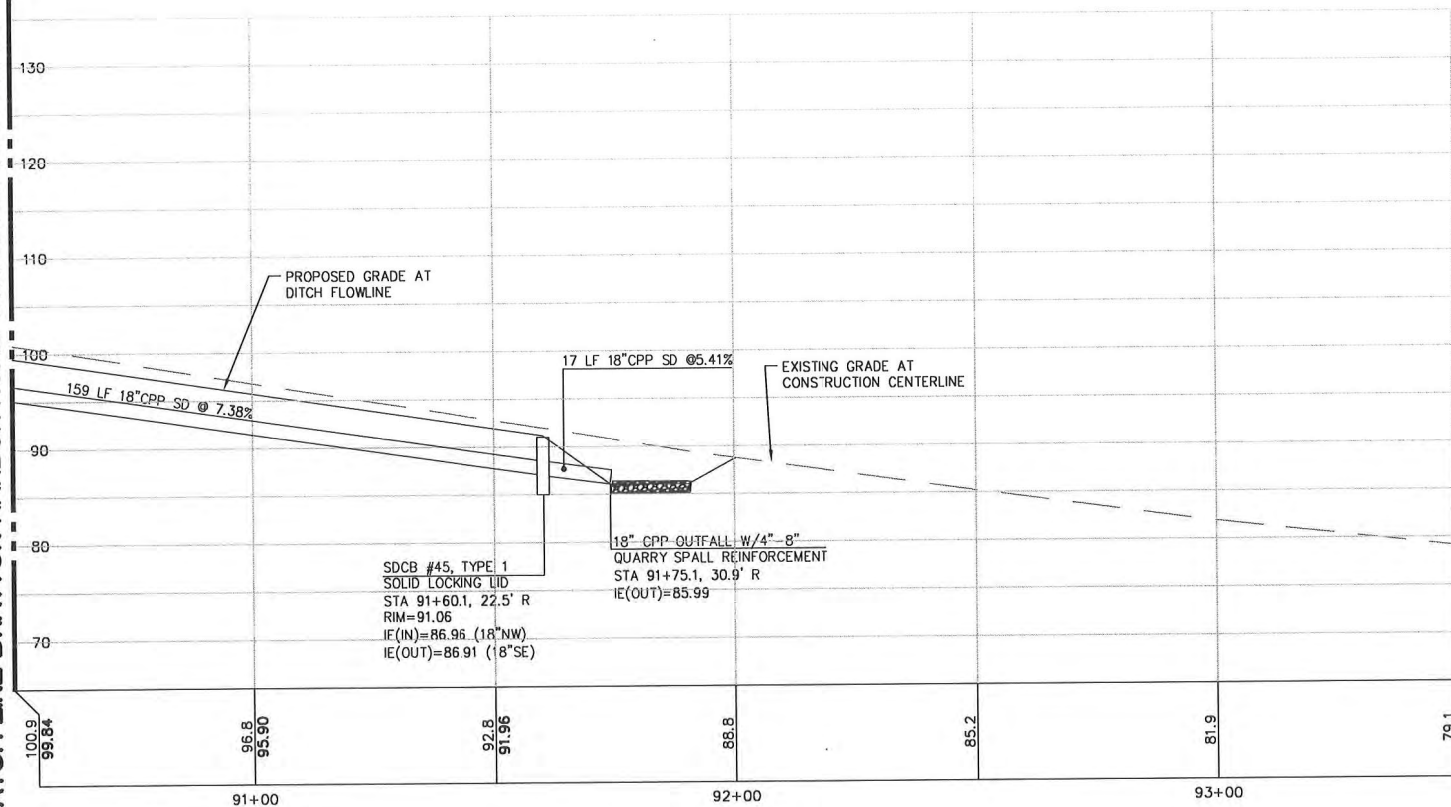
119 Grand Avenue, Suite D  
Bellingham Washington 98225  
Phone: 360 547 7151  
Fax: 360 547 7161

NO. REVISIONS:

APPD.



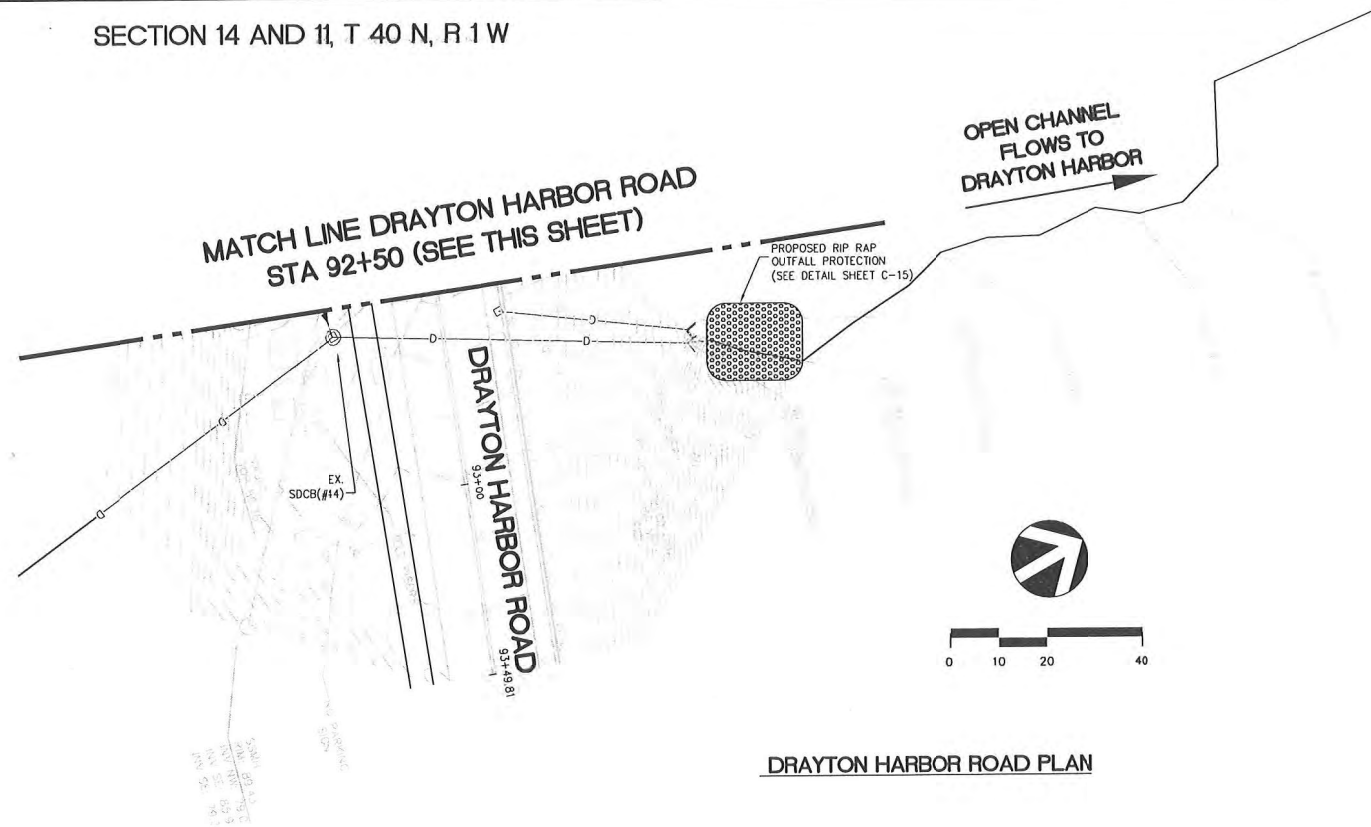
MATCH LINE DRAYTON HARBOR ROAD STA 90+50 (SEE SHEET C12)



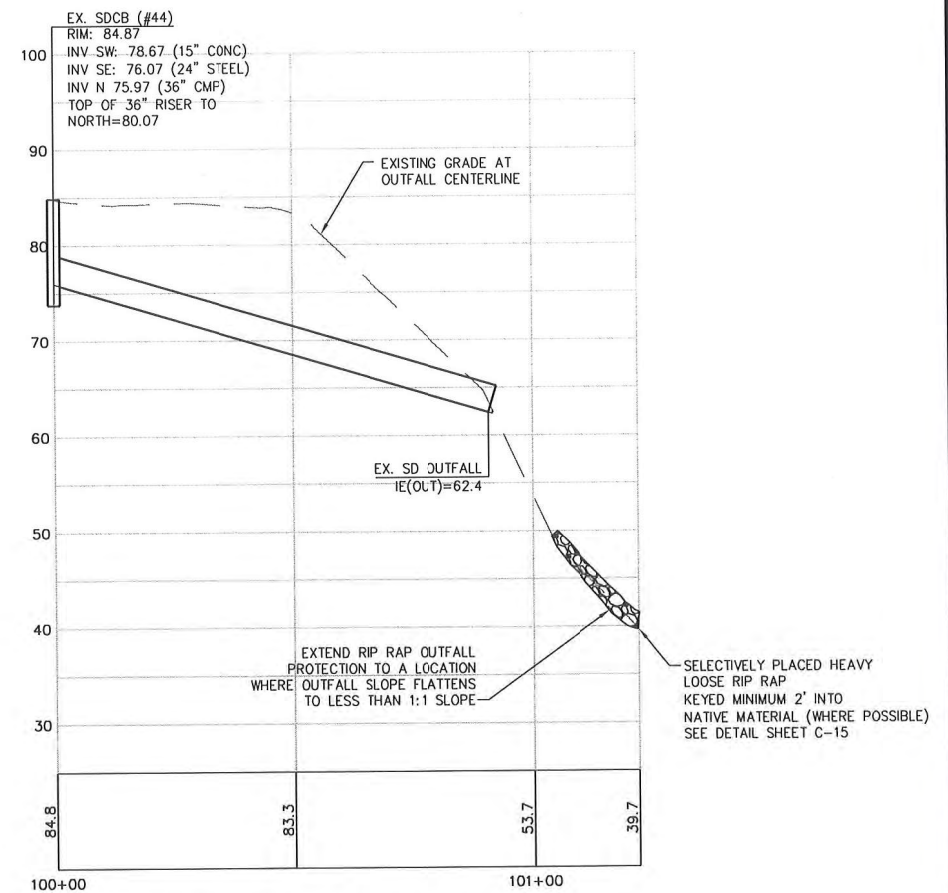
DRAYTON HARBOR ROAD PROFILE  
1"=20' H; 1"=10' V

PROJECT BENCH MARKS:  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF BALD EAGLE DRIVE AND CANVASBACK ROAD AS BEING 245.22 FEET.  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF WOOD DUCK WAY AND CANVASBACK ROAD AS BEING 209.60 FEET.  
ELEVATIONS PER THE CITY OF BLAINE GIS MAPPING SYSTEM.

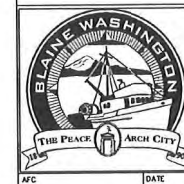
SECTION 14 AND 11, T 40 N, R 1 W



DRAYTON HARBOR ROAD PLAN



DRAYTON HARBOR ROAD PROFILE  
1"=20' H; 1"=10' V



CARNOUSTIE - SEMIAHMOO

ROADWAY AND DRAINAGE

RECORD DRAWING - 7/04/08

BLAINE, WA  
CARNOUSTIE - SEMIAHMOO  
ROADWAY AND STORM DRAINAGE PP  
DRAYTON ROAD 3

PROJECT NUMBER:

TRLX0107

DATE: 7/17/07

DESIGN: BDK

DRAWN: BEM

CHECKED:

SCALE:

SHEET NO.

C13

OF 31



DAVID EVANS  
AND ASSOCIATES INC.  
119 Grand Avenue, Suite D  
Bellingham Washington 98225  
Phone: 360.647.7151  
Fax: 360.647.7160

NO. REVISIONS:

APPD.

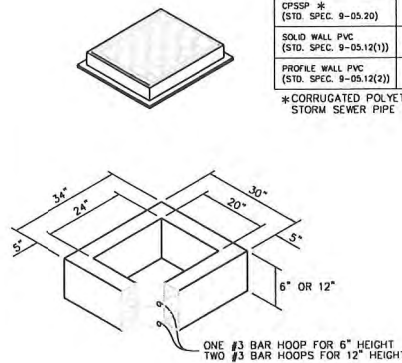


# GENERAL NOTES (STORM DRAIN CONSTRUCTION)

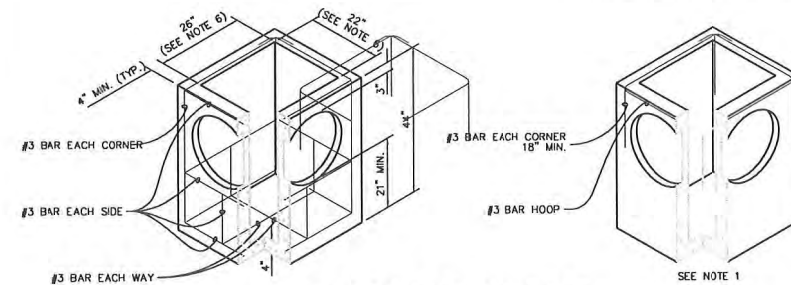
- All workmanship and materials shall be in accordance with City of Blaine standards and the most current copy of the State of Washington Standard Specifications for Road, Bridge and Municipal Construction (WSDOT/APWA).
- Temporary erosion/water pollution measures shall be required in accordance with Section 1-07.15 of the Standard Specifications and the STORMWATER MANAGEMENT MANUAL FOR THE PUGET SOUND BASIN (The Technical Manual)?
- Comply with all other permits and other requirements by the City of Blaine or other governing authority or agency.
- A preconstruction meeting shall be held with the City of Blaine, Engineering Department prior to the start of construction.
- All storm mains and retention/detention areas shall be staked for grade and alignment by an engineering or surveying firm capable of performing such work.
- Storm drain pipe shall meet the following requirements:
  - Plain concrete pipe conforming to the requirements of AASHTO M 86, Class 2.
  - Reinforced concrete pipe conforming to the requirements of AASHTO M 170.
  - PVC pipe conforming to ASTM D 3034 SDR 35 or ASTM F 789 with joints and gaskets conforming to ASTM D 3212 and ASTM F477.
  - Ductile iron pipe conforming to the requirements of AWWA C 151 thickness class as shown on the plans.
  - Polyethylene smooth wall pipe per Advanced Drainage Systems (ADS) N-12 constructed per WSDOT/APWA Standard Specifications 7-04.
- Special structures, oil/water separators and outlet controls shall be installed per plans and manufacturers recommendations.
- Provide traffic control plan(s) as required in accordance with MUTCD.
- Call underground locate line 1-800-424-5555 minimum 48 hours prior to any excavations.

PIPE ALLOWANCES	
PIPE ALLOWANCES	MAXIMUM INSIDE DIAMETER
REINFORCED OR PLAIN CONCRETE	12"
ALL METAL PIPE	15"
CPSP # (STD. SPEC. 9-05.20)	12"
SOLID WALL PVC (STD. SPEC. 9-05.12(1))	15"
PROFILE WALL PVC (STD. SPEC. 9-05.12(2))	15"
*CORRUGATED POLYETHYLENE STORM SEWER PIPE	

- As acceptable alternatives to the rebar shown in the PRECAST BASE SECTION, fibers (placed according to the Standard Specifications), or wire mesh having a minimum area of 0.12 square inches per foot shall be used with the minimum required rebar shown in the ALTERNATIVE PRECAST BASE SECTION. Wire mesh shall not be placed in the knockouts.
- The knockout diameter shall not be greater than 20". Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum. Provide a 1.5" minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with Standard Specification 9-04.3.
- The maximum depth from the finished grade to the pipe invert shall be 5'.
- The frame and grate may be installed with the flange up or down. The frame may be cast into the adjustment section.
- The precast base section may have a rounded floor, and the walls may be sloped at a rate of 1:24 or steeper.
- The opening shall be measured at the top of the precast base section.
- All pickup holes shall be grouted full after the basin has been placed.



\* ALL CATCH BASIN GRATES SHALL BE BOLT DOWN TYPE.



## CATCH BASIN TYPE 1

# STORM DRAIN CONSTRUCTION GENERAL NOTES

CITY OF BLAINE  
DEPT. OF PUBLIC WORKS

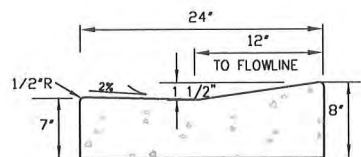
- No steps are required when height is 4' or less.
- The bottom of the precast catch basin may be sloped to facilitate cleaning.
- Frame and grate may be installed with flange down or cast into adjustment section.
- Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum. Provide a 1.5" minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with Std. Spec. 9-04.3.

CATCH BASIN DIAMETER	WALL THICKNESS	BASE THICKNESS	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS	BASE REINFORCING STEEL #3/A IN EACH DIRECTION
48"	4"	6"	36"	8"	0.15 0.23
54"	4.5"	6"	42"	8"	0.19 0.19
60"	5"	6"	48"	8"	0.25 0.25
72"	6"	6"	60"	12"	0.24 0.35
84"	8"	12"	72"	12"	0.29 0.39
96"	8"	12"	84"	12"	0.29 0.39

CATCH BASIN DIAMETER	PIPE MATERIAL WITH MAXIMUM INSIDE DIAMETER
	CONCRETE ALL METAL CPSP # SOLID WALL PVC # PROFILE WALL PVC #
48"	24" 30" 24" 27" 30"
54"	30" 36" 30" 27" 36"
60"	36" 42" 36" 36" 42"
72"	42" 54" 42" 36" 48"
84"	54" 60" 54" 36" 48"
96"	60" 72" 60" 36" 48"

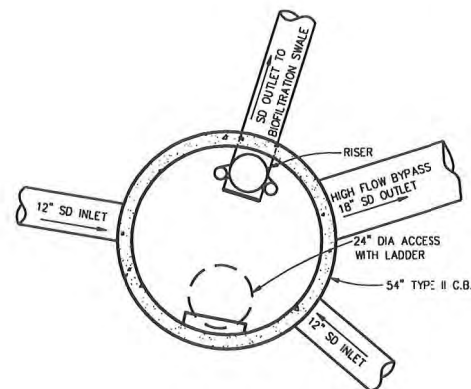
\*CORRUGATED POLYETHYLENE STORM SEWER PIPE (Std. Spec. 9-05.20)  
\* (Std. Spec. 9-05.12(1))  
\* (Std. Spec. 9-05.12(2))

## CATCH BASIN TYPE 2

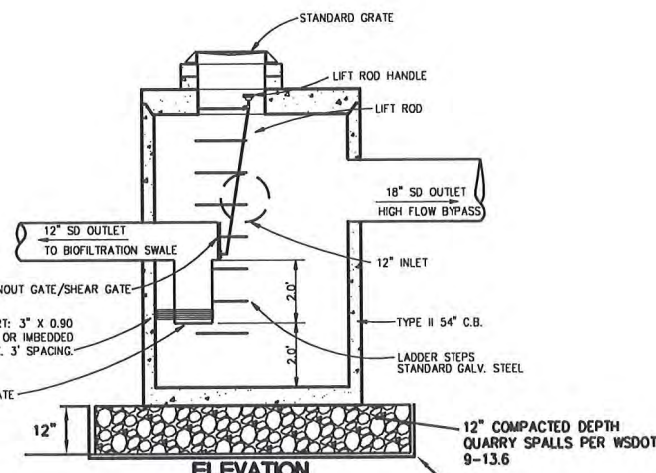


## CEMENT CONCRETE GUTTER

N.T.S.



## PLAN



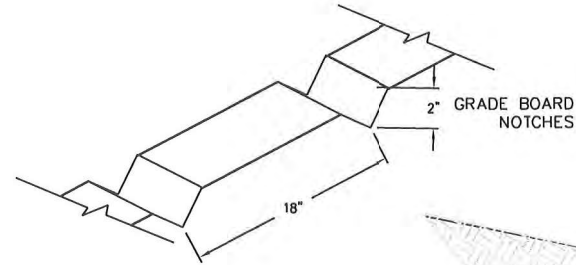
## ELEVATION

## 54' FLOW SPLITTER DETAIL

NO SCALE

4"x4" SUPPORT POST

NOTCHED GRADE BOARD  
2"x2" NOTCHES, 18" O.C.



4"x4" SUPPORT POST

2"x12" PRESSURE TREATED GRADE BOARD

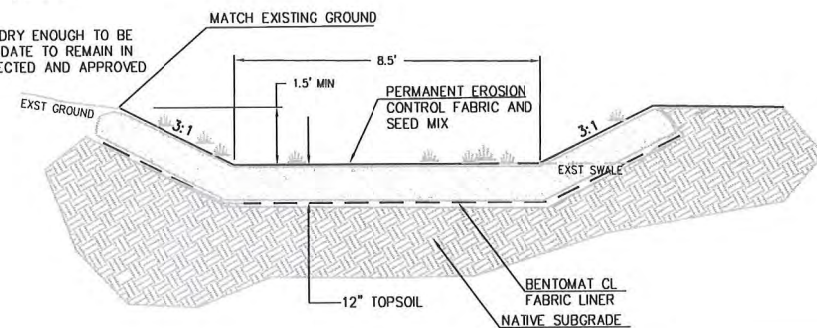
STAKES PENETRATING BENTOMAT SHALL BE SEALED WITH BENTONITE CLAY

## BIOFILTRATION SWALE SECTION w/ NOTCHED GRADE BOARD

N.T.S.

# CONSTRUCTION NOTES:

- BENTOMAT CL SHALL PROVIDE CONTINUOUS IMPERMEABLE BARRIER INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND SHALL BE PLACED BETWEEN ECOBLOCKS AT SPILLWAY LOCATIONS.
- PERMANENT EROSION CONTROL SHALL BE C-350 BY NORTH AMERICAN GREEN OR APPROVED EQUAL AND SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
- TOPSOIL MATERIAL MUST BE DRY ENOUGH TO BE PLACED AND ROLLED TO CONSOLIDATE TO REMAIN IN PLACE. PLACEMENT TO BE INSPECTED AND APPROVED BY THE PROJECT ENGINEER.



## TYPICAL BIOFILTRATION SWALE SECTION

CALL BEFORE YOU DIG  
Call: TOLL FREE  
1-800-424-5555



CARNOUSTIE - SEMIAHMOO

STORM DRAINAGE DETAILS

RECORD DRAWING - 7/04/08

BLAINE, WA  
CARNOUSTIE - SEMIAHMOO  
ROADWAY AND STORM DRAINAGE DETAILS AND NOTES

PROJECT NUMBER:

TRLX0107

DATE: 7/17/07

DESIGN: BOK

DRAWN: BEM

CHECKED:

SCALE: AS SHOWN

SHEET NO.

C14

OF 31

DAVID EVANS  
AND ASSOCIATES INC.  
119 Grand Avenue, Suite D  
Bellingham Washington 98225  
Phone: 360 647 7151  
Fax: 360 647 7160

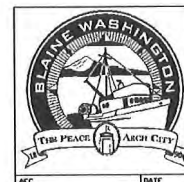
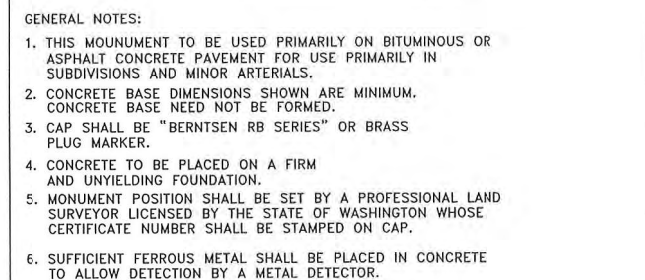


NO. REVISIONS:

EXPIRES: 05/04/10

APPD.





### STORM DRAINAGE DETAILS

RECORD DRAWING - 7/04/08



**BLAINE, WA  
CARNOUSTIE - SEMIAHMOO  
ROADWAY AND STORM DRAINAGE  
DETAILS**

OF 31

APPD.

NO. REVISIONS:

EXPIRES 01/02/5x

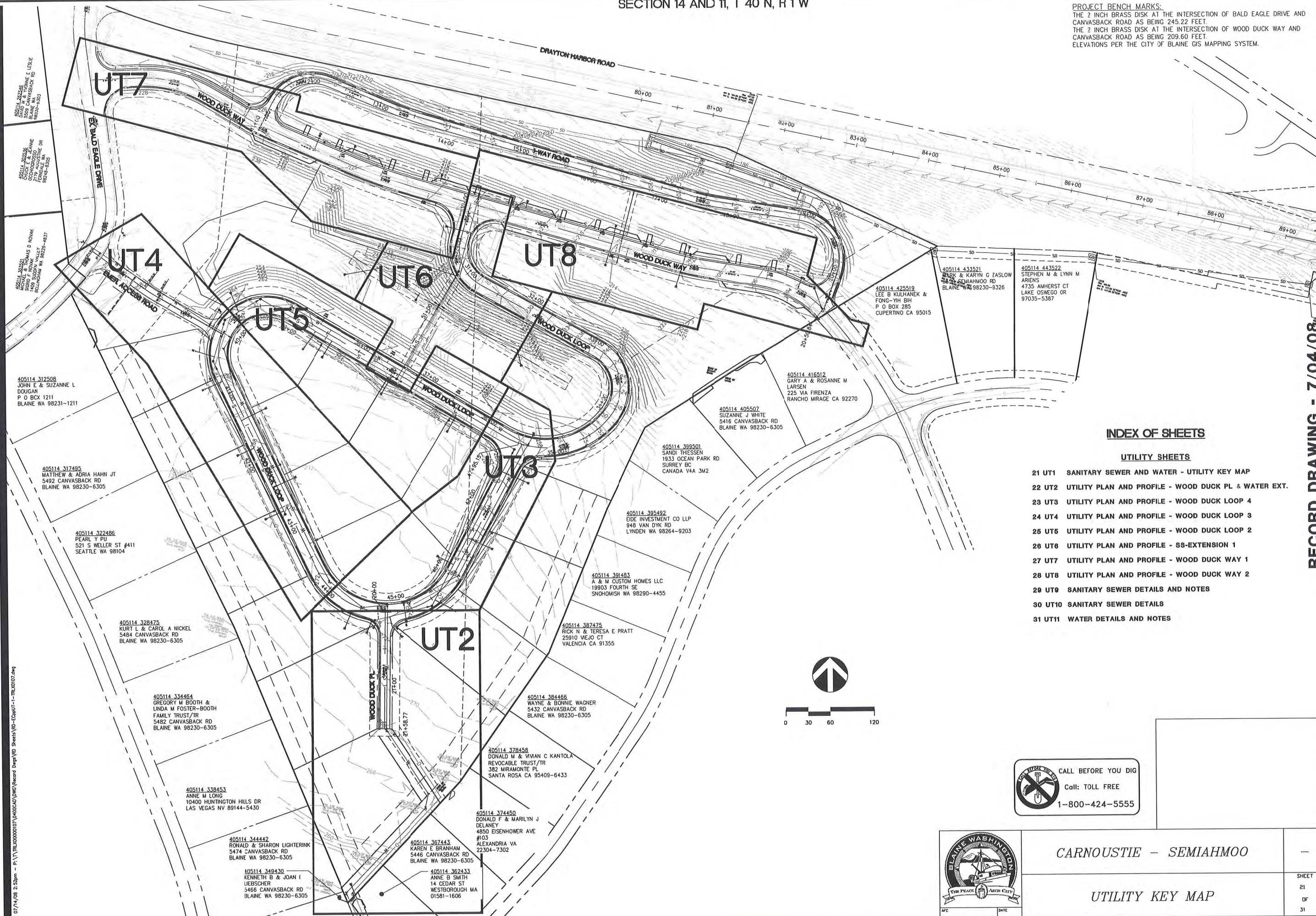
**ellingham Washington 98225**  
**Phone: 360.647.7151**  
**Fax: 360.647.7160**

ingham Washington 982  
 Phone: 360.647.7151  
 Fax: 360.647.7160

ellin



PROJECT BENCH MARKS:  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF BALD EAGLE DRIVE AND  
CANVASBACK ROAD AS BEING 245.22 FEET.  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF WOOD DUCK WAY AND  
CANVASBACK ROAD AS BEING 209.60 FEET.  
ELEVATIONS PER THE CITY OF BLAINE GIS MAPPING SYSTEM.



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- 22 UT2 UTILITY PLAN AND PROFILE - WOOD DUCK PL & WATER EXT.
- 23 UT3 UTILITY PLAN AND PROFILE - WOOD DUCK LOOP 4
- 24 UT4 UTILITY PLAN AND PROFILE - WOOD DUCK LOOP 3
- 25 UT5 UTILITY PLAN AND PROFILE - WOOD DUCK LOOP 2
- 26 UT6 UTILITY PLAN AND PROFILE - SS-EXTENSION 1
- 27 UT7 UTILITY PLAN AND PROFILE - WOOD DUCK WAY 1
- 28 UT8 UTILITY PLAN AND PROFILE - WOOD DUCK WAY 2
- 29 UT9 SANITARY SEWER DETAILS AND NOTES
- 30 UT10 SANITARY SEWER DETAILS
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RECORD DRAWING - 7/04/08



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AND ASSOCIATES INC.  
119 Grand Avenue, Suite D  
Bellingham Washington 98225  
Phone: 360.647.7151  
Fax: 360.647.7160

BLAINE, WA  
CARNOUSTIE - SEMIAHMOO  
SANITARY SEWER AND WATER -  
UTILITY KEY MAP

PROJECT NUMBER:  
TRLX0107

DATE: 7/17/07  
DESIGN: BDK  
DRAWN: BEM  
CHECKED:

SCALE:

SHEET NO.

UT1  
OF 31



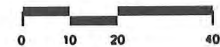
CARNOUSTIE - SEMIAHMOO

UTILITY KEY MAP

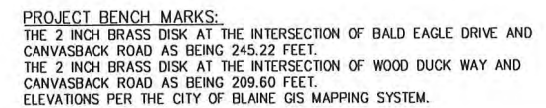








PVI STA = 47+33.15  
PVI ELEV = 259.80  
A.D. = 4.00  
K = 12.50



 CALL BEFORE YOU DIG  
Call: TOLL FREE  
1-800-424-5555



### UTILITY PLAN AND PROFILE

**CARNOUSTIE - SEMIAHMOO  
BLAINE, WA  
UTILITY PLAN AND PROFILE -  
WOOD DUCK LOOP 4**

UT3  
OF 31

**DE**  
**AND ASSOCIATES INC.**

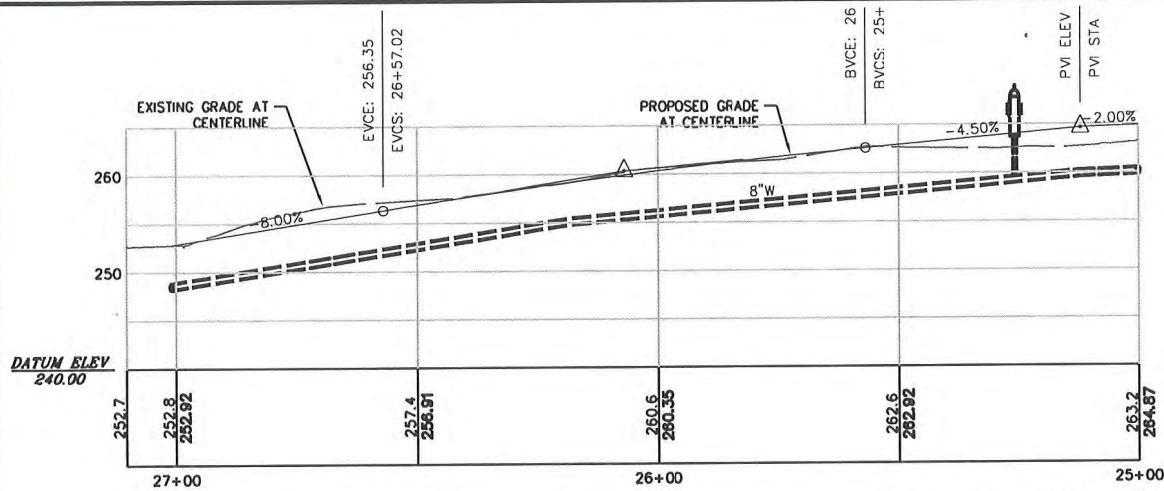
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119 Grand Avenue, Suite D  
Bellingham Washington 98225  
Phone: 360 647 7151  
Fax: 360 647 7160

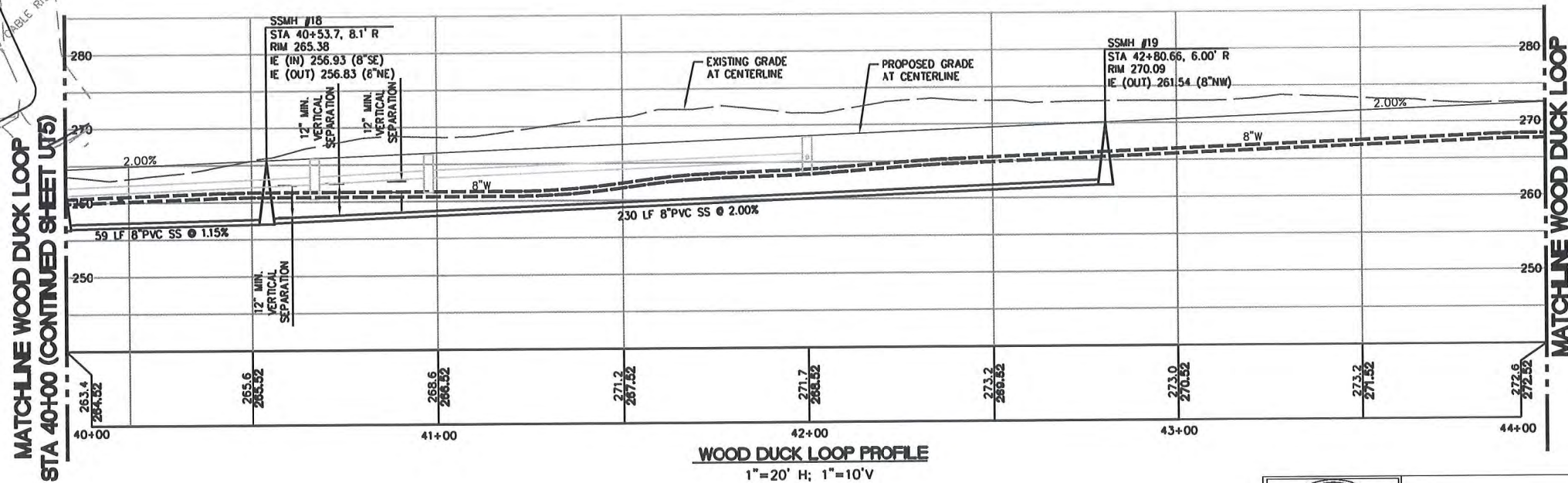
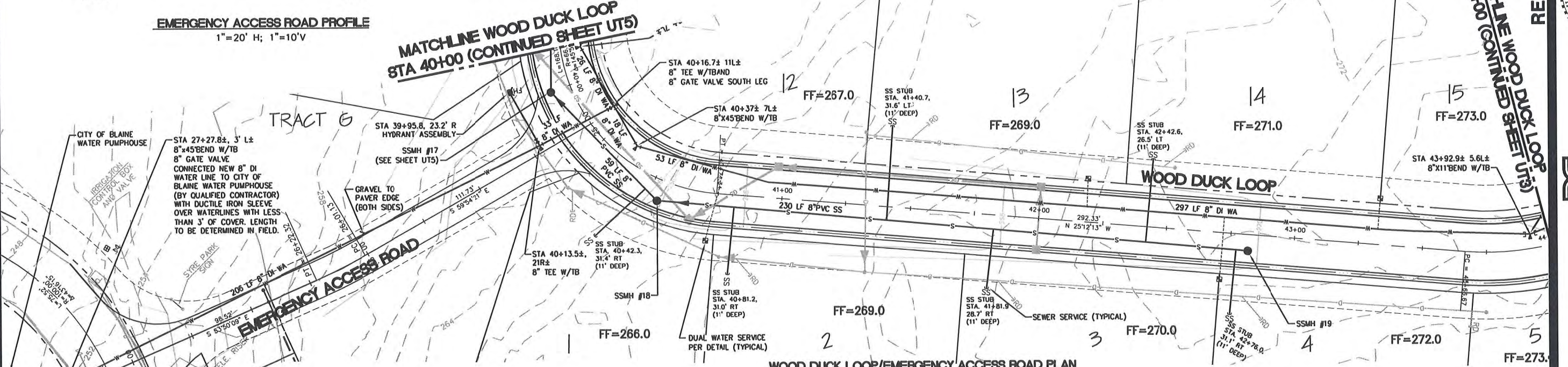
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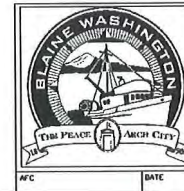


**EMERGENCY ACCESS ROAD PROFILE**  
1"=20' H; 1"=10' V



**WOOD DUCK LOOP PROFILE**  
1"=20' H; 1"=10' V

**PROJECT BENCH MARKS:**  
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ELEVATIONS PER THE CITY OF BLAINE GIS MAPPING SYSTEM.



CARNOUSTIE - SEMIAHMOO

UTILITY PLAN AND PROFILE

SHEET  
24  
OF  
31

UT4  
OF 31

PROJECT NUMBER:  
TRLX0107

DATE: 7/17/07  
DESIGN: BDK  
DRAWN: BEM  
CHECKED:

SCALE:

SHEET NO.

UT4  
OF 31

BLAINE, WA  
**CARNOUSTIE - SEMIAHMOO**  
UTILITY PLAN AND PROFILE -  
WOOD DUCK LOOP 3

**DAVID EVANS AND ASSOCIATES INC.**  
1119 Grand Avenue, Suite D  
Bellingham Washington 98225  
Phone: 360.647.7151  
Fax: 360.647.7160



RECORD DRAWING - 7/04/08

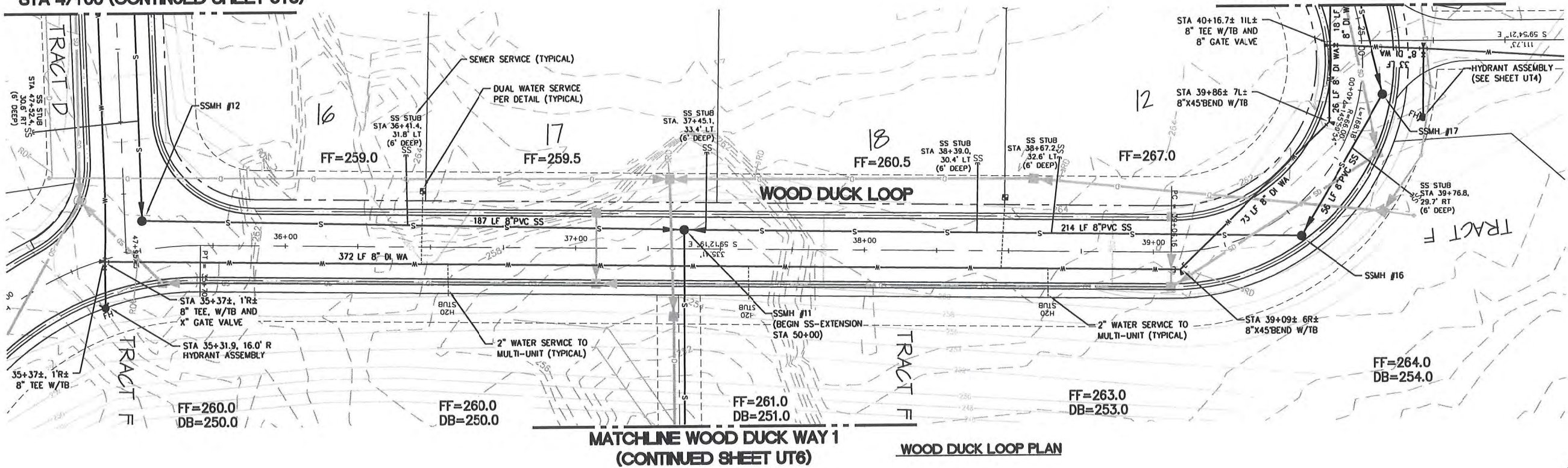
NO. REVISIONS:

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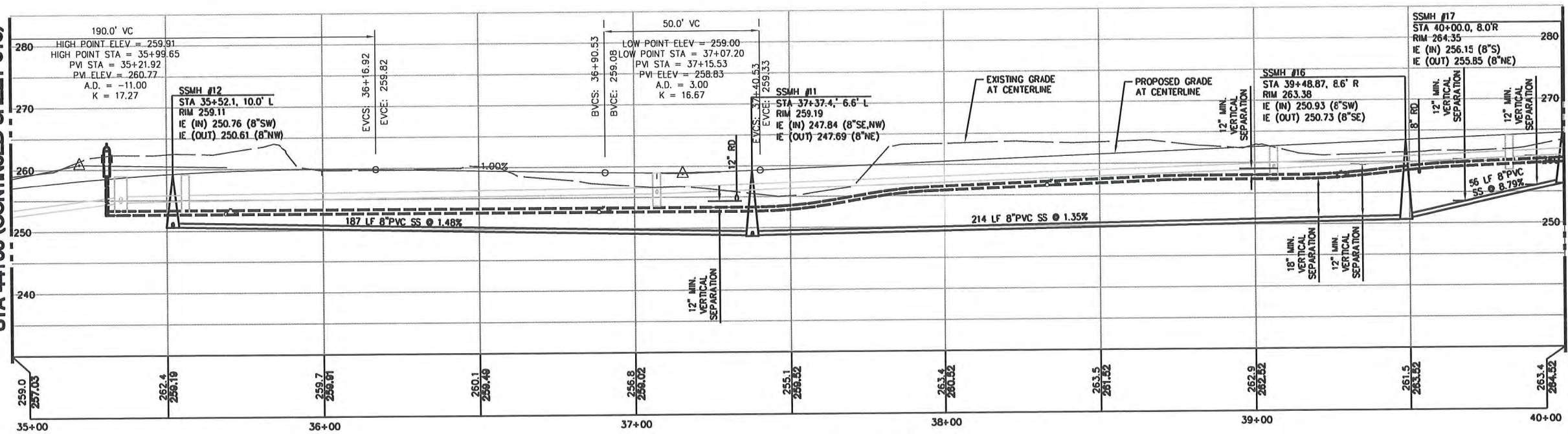
MATCHLINE WOOD DUCK LOOP  
STA 47+00 (CONTINUED SHEET UT3)

MATCHLINE WOOD DUCK LOOP  
STA 40+00 (CONTINUED SHEET UT4)



MATCHLINE WOOD DUCK LOOP  
STA 44+00 (CONTINUED SHEET UT3)

MATCHLINE WOOD DUCK LOOP  
STA 40+00 (CONTINUED SHEET UT4)



WOOD DUCK LOOP PROFILE  
1"=20' H; 1"=10' V

PROJECT BENCH MARKS:  
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THE 2 INCH BRASS DISK AT THE INTERSECTION OF WOOD DUCK WAY AND CANVASBACK ROAD AS BEING 209.60 FEET.  
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CARNOUSTIE - SEMIAHMOO

UTILITY PLAN AND PROFILE

RECORD DRAWING - 7/04/08

BLAINE, WA  
CARNOUSTIE - SEMIAHMOO  
UTILITY PLAN AND PROFILE -  
WOOD DUCK LOOP 2

PROJECT NUMBER:  
TRLX0107  
DATE: 7/17/07  
DESIGN: BDK  
DRAWN: BEM  
CHECKED:

SCALE:  
SHEET NO.

UT5  
OF 31

DAVID EVANS  
AND ASSOCIATES INC.  
119 Grand Avenue, Suite D  
Bellingham Washington 98225  
Phone: 360.647.7151  
Fax: 360.647.7160



NO. REVISIONS:  
APPD.



WOOD DUCK LOOP  
(CONTINUED SHEET UT5)

DUAL WATER SERVICE  
PER DETAIL (TYPICAL)

WOOD DUCK LOOP

SEWER SERVICE (TYPICAL)

FF=261.0  
DB=251.0

SSMH #11  
(SEE SHEET UT5)

FF=260.0  
DB=250.0

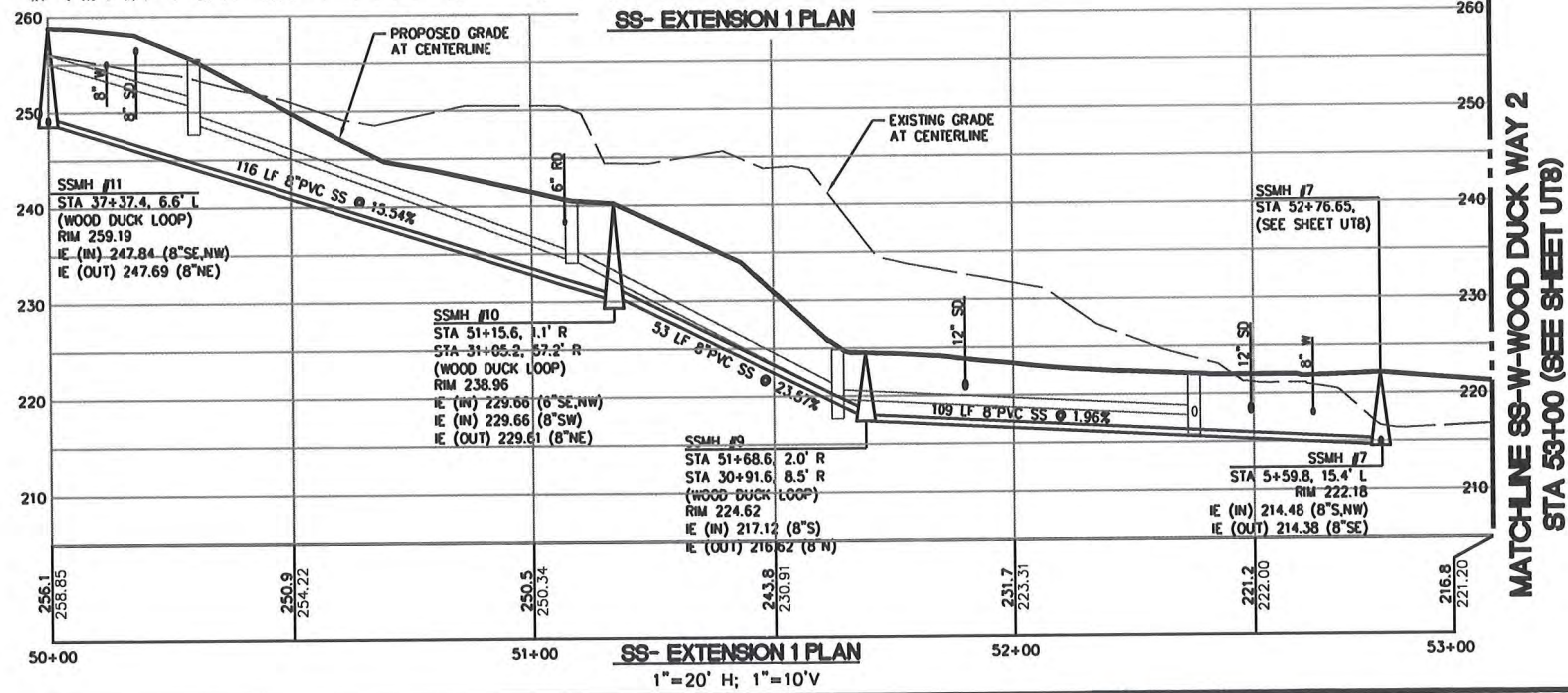
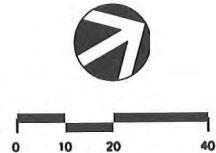
2" WATER SERVICE TO  
MULTI-UNIT (TYPICAL)

TRACT F

WOOD DUCK LOOP

WOOD DUCK WAY

WOOD DUCK WAY  
(CONTINUED SHEET UT8)



PROJECT BENCH MARKS:  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF BALD EAGLE DRIVE AND  
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CARNOUSTIE - SEMIAHMOO

UTILITY PLAN AND PROFILE

BLAINE, WA  
**CARNOUSTIE - SEMIAHMOO**  
UTILITY PLAN AND PROFILE -  
SS-EXTENSION 1

PROJECT NUMBER:  
TRLX0107  
DATE: 7/17/07  
DESIGN: BDK  
DRAWN: BEM  
CHECKED:

SCALE:  
SHEET NO.

**UT6**  
OF 31

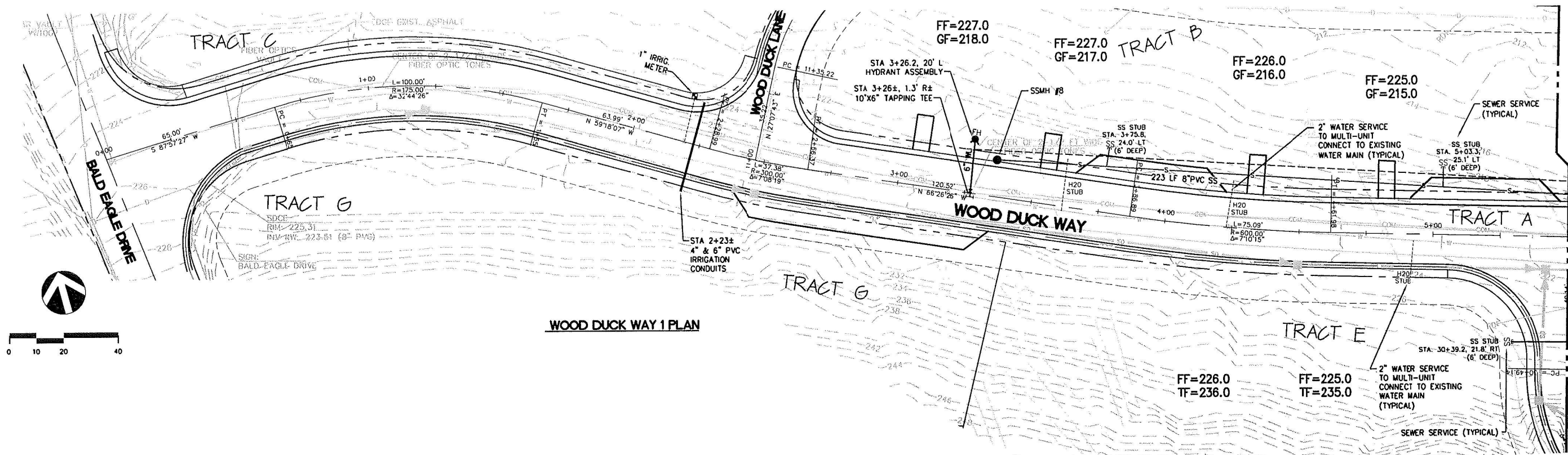


**DAVID EVANS  
AND ASSOCIATES, INC.**  
119 Grand Avenue, Suite D  
Bellingham Washington 98225  
Phone: 360.647.7151  
Fax: 360.647.7160

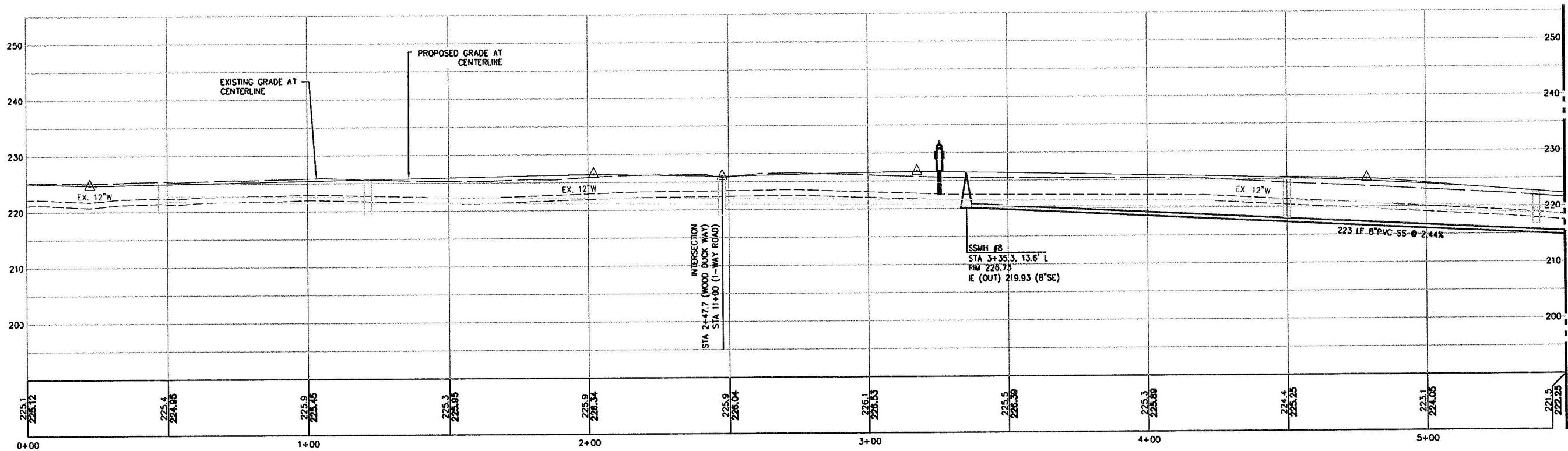
NO. REVISIONS:

APPD.





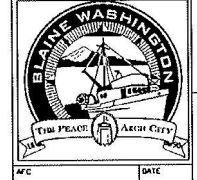
WOOD DUCK WAY 1 PLAN



WOOD DUCK WAY 1 PROFILE

1"=20' H; 1"=10' V

PROJECT BENCH MARKS:  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF BALD EAGLE DRIVE AND CANVASBACK ROAD AS BEING 245.22 FEET.  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF WOOD DUCK WAY AND CANVASBACK ROAD AS BEING 209.60 FEET.  
ELEVATIONS PER THE CITY OF BLAINE GIS MAPPING SYSTEM.



CARNOUSTIE - SEMIAHMOO

UTILITY PLAN AND PROFILE

RECORD DRAWING - 7/04/08 MATCHLINE WOOD DUCK WAY STA 6+00/ 1-WAY ROAD STA 14+50 (SEE SHEET UT8)

BLAINE, WA  
CARNOUSTIE - SEMIAHMOO  
UTILITY PLAN AND PROFILE -  
WOOD DUCK WAY 1

PROJECT NUMBER:  
TRLX0107  
DATE: 7/17/07  
DESIGN: BDK  
DRAWN: BEM  
CHECKED:

SCALE:  
SHEET NO.

UT7  
OF 31

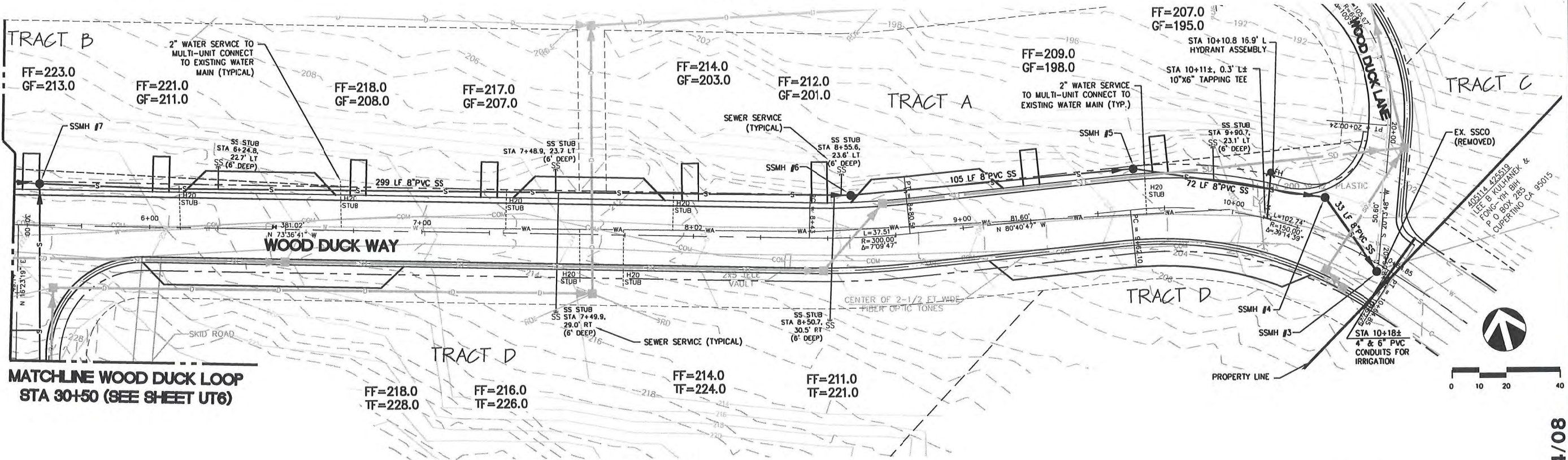


DAVID EVANS  
AND ASSOCIATES, INC.  
119 Grand Avenue, Suite D  
Bellingham Washington 98225  
Phone: 360.647.7151  
Fax: 360.647.7161

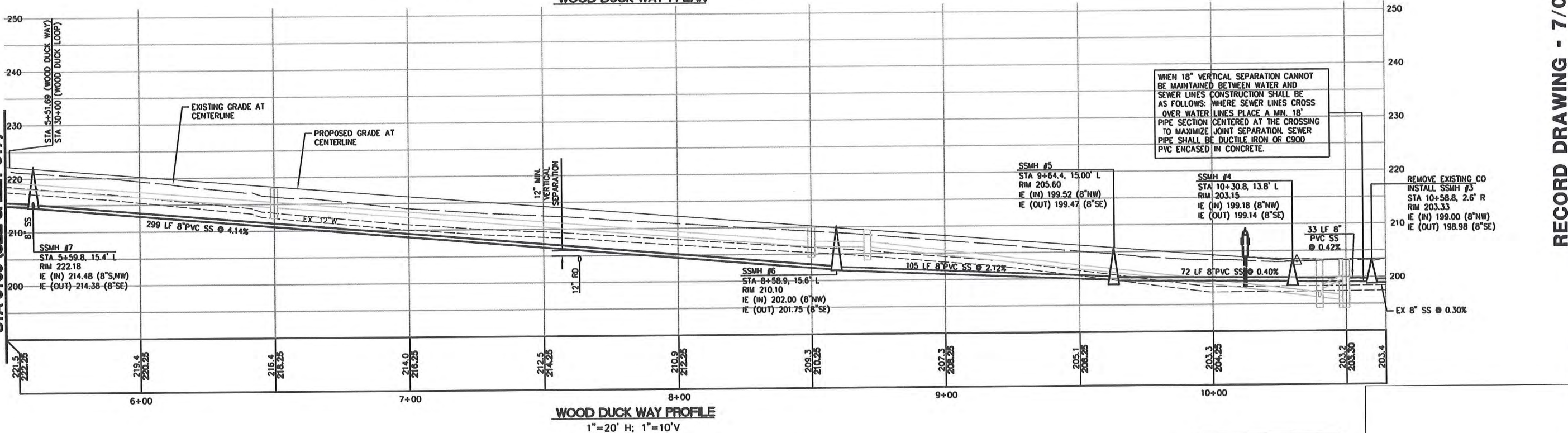
NO. REVISIONS:  
APPD.



MATCHLINE WOOD DUCK WAY  
STA 5+50 (SEE SHEET UT7)



MATCHLINE WOOD DUCK WAY  
STA 5+50 (SEE SHEET UT7)



RECORD DRAWING - 7/04/08

BLAINE, WA  
**CARNOUSTIE - SEMIAHMOO**  
UTILITY PLAN AND PROFILE -  
WOOD DUCK WAY 2

PROJECT NUMBER:  
TRLX0107  
DATE: 7/17/07  
DESIGN: BDK  
DRAWN: BEM  
CHECKED:

SCALE:  
SHEET NO.  
**UT8**  
OF 31

PROJECT BENCH MARKS:  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF BALD EAGLE DRIVE AND  
CANVASBACK ROAD AS BEING 245.22 FEET.  
THE 2 INCH BRASS DISK AT THE INTERSECTION OF WOOD DUCK WAY AND  
CANVASBACK ROAD AS BEING 209.60 FEET.  
ELEVATIONS PER THE CITY OF BLAINE GIS MAPPING SYSTEM.

CALL BEFORE YOU DIG  
Call: TOLL FREE  
1-800-424-5555



CARNOUSTIE - SEMIAHMOO

UTILITY PLAN AND PROFILE

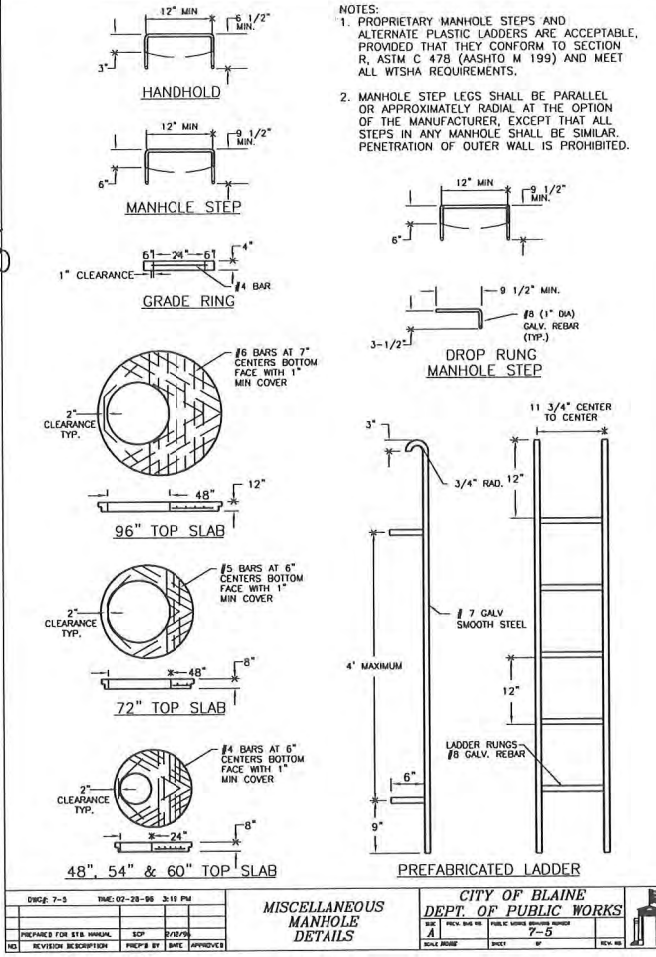
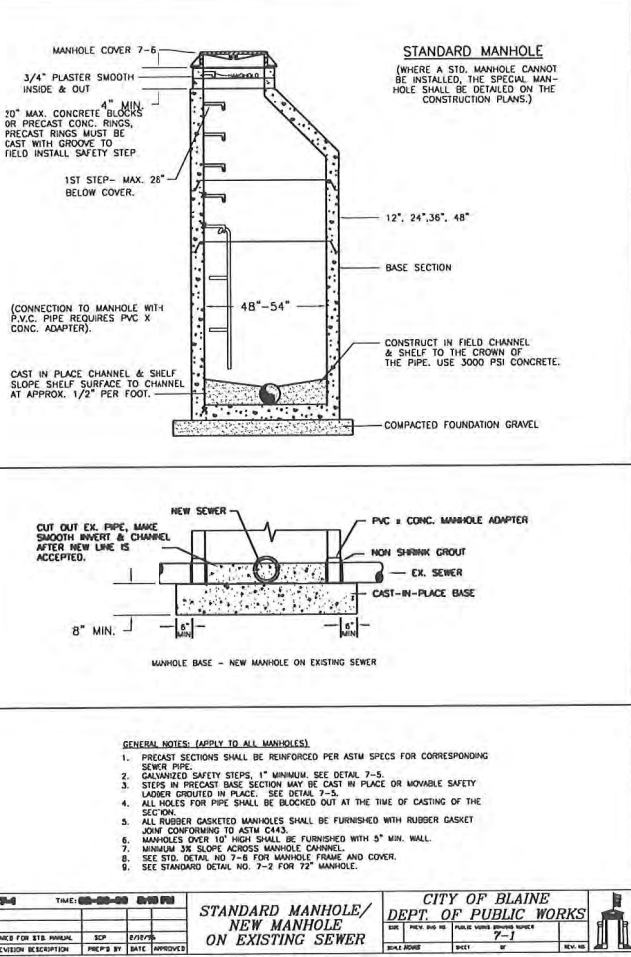
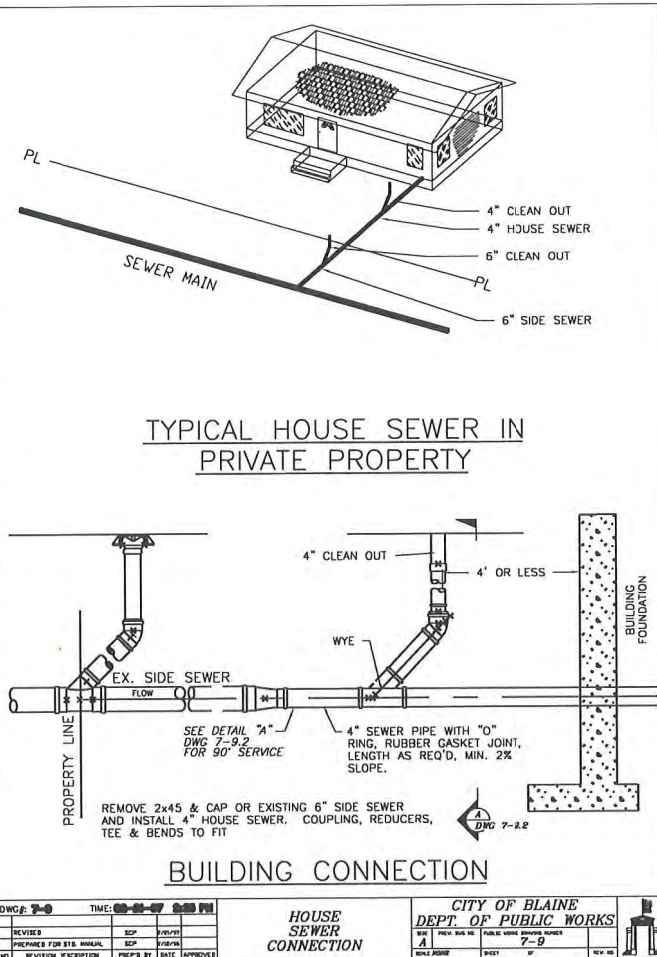
NO. REVISIONS:

APPD.

DAVID EVANS  
AND ASSOCIATES INC.  
119 Grand Avenue, Suite D  
Bellingham Washington 98225  
Phone: 360.647.7151  
Fax: 360.647.7160

REGISTERED PROFESSIONAL ENGINEER  
WASHINGTON STATE  
EXPIRES 05/31/10





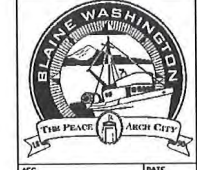
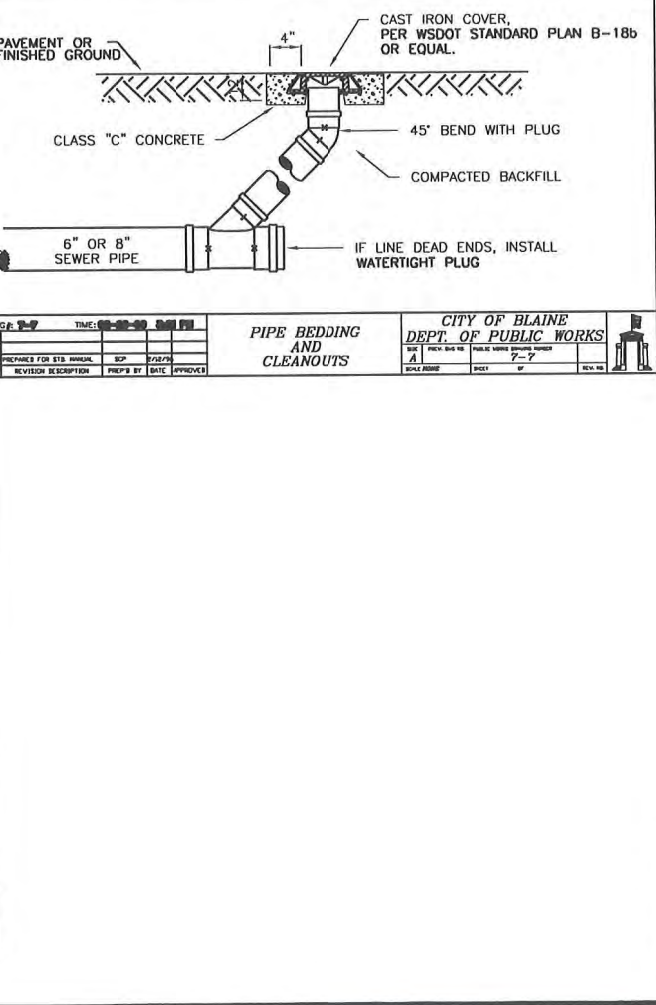
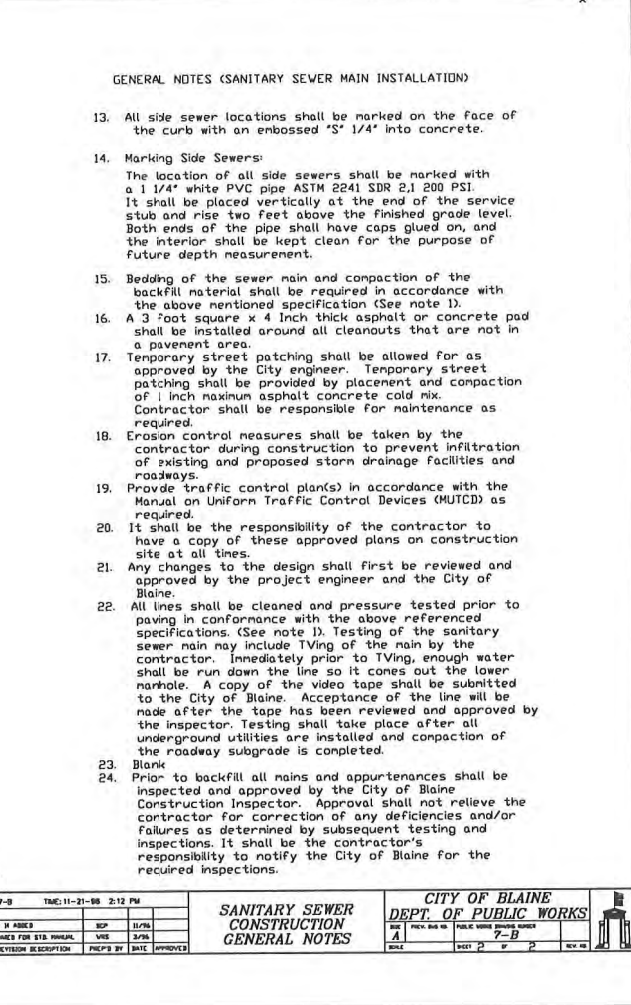
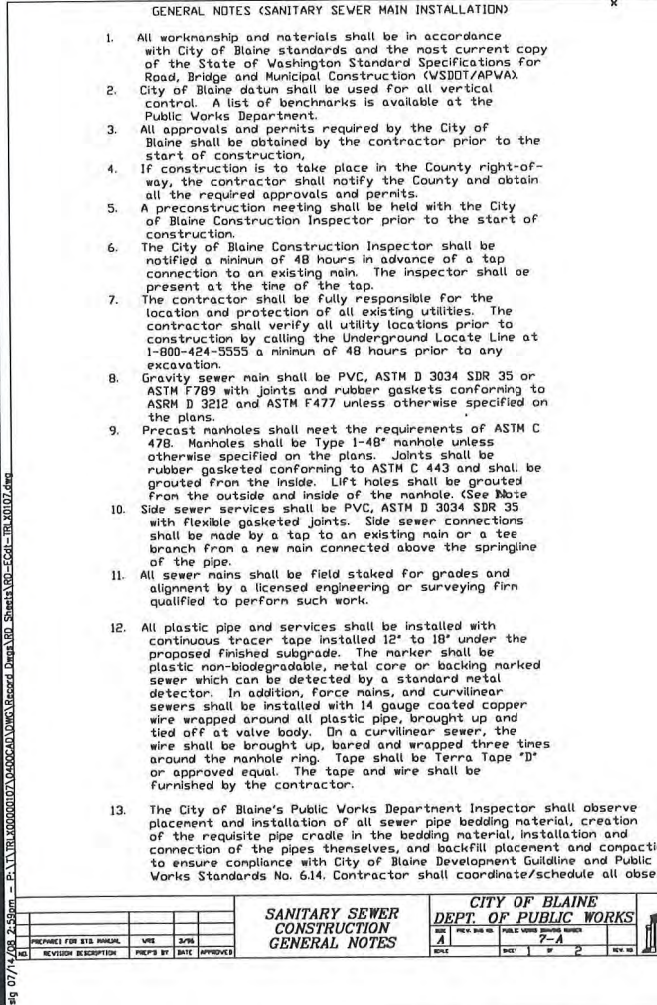
CITY OF BLAINE  
CARNOUSTIE - SEMIAHMOO  
SPECIFICATION AMENDMENT No 1  
PREPARATION DATE: 2006.10.04  
EFFECTIVE DATE: 2006.10.04

THE FOLLOWING PROVISIONS APPLY TO SUBJECT PROJECT AS OF THE EFFECTIVE DATE ABOVE, AND SUPERSEDE ANY CONFLICTING PROVISIONS IN THE CITY-APPROVED DESIGN, AND ANY PREVIOUS AMENDMENTS, FOR SUBJECT PROJECT

All underground culvert, water pipe, and sewer pipe installations shall comply with WSDOT Standard Specifications Division 7 and Section 9-03, and WSDOT Standard Plan B-11 (which supersedes City of Blaine Standard Drawing 7-7 "Pipe Bedding Classes" details), in particular as noted in the table below:

Subject	Pipe Zone				Trench Zone	
	Culvert	Storm Sewer	Sanitary Sewer	Water (< 16" diam)	Inside Road Prism	Outside Road Prism
General	7-02	7-04	7-17	7-09	9-03.19	9-03.15
Aggregate Materials	9-03.12(3)				7-08.3(1)	7-08.3(1)
Trench Excavation	7-08.3(1)				7-08.3(1)	7-08.3(1)
Pipe Bedding	7-08.3(1)C				7-08.3(1)C	7-08.3(1)C
Laying Pipe	7-08.3(2)				7-08.3(3)	7-08.3(3)
Backfilling	7-08.3(3)				7-08.3(10)	7-08.3(1)
Compaction	7-08.3(3)				7-08.3(1)	7-08.3(1)
Installed Pipe Testing	7-04.3(1) 7-17.3(2)				7-09.3(23)	7-09.3(23)
Pipe Disinfection	7-09.3(24)				7-15.3(1)	7-15.3(1)
Standard Plan	B-11					

- and with the following modifications and/or clarifications as noted below:
1. Specification 7-08.03(3) and 7-09.3(11). Lift thickness (prior to compaction) shall not exceed 12".
  2. Backfill compaction testing. Backfill compaction testing by the City is optional (at the City's discretion) at trench depths greater than 4 feet below the upper edge of the trench. Compaction testing by City is mandatory at trench depths less than 4 feet from the upper edge of the trench. Regardless of testing protocol, the Contractor shall achieve the specified degree of compaction.



CARNOUSTIE - SEMIAHMOO  
SANITARY SEWER DETAILS

RECORD DRAWING - 7/04/08



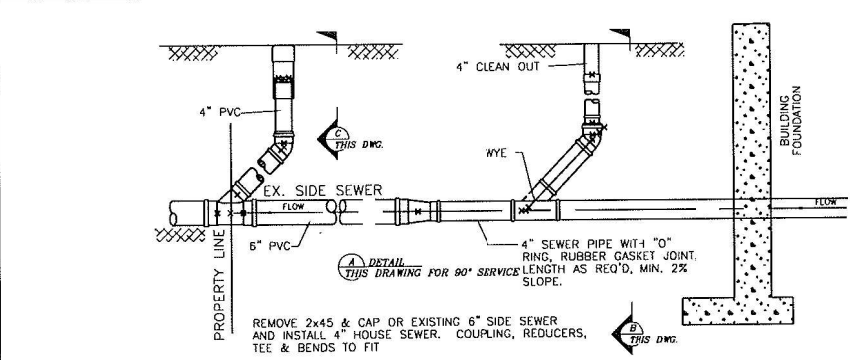
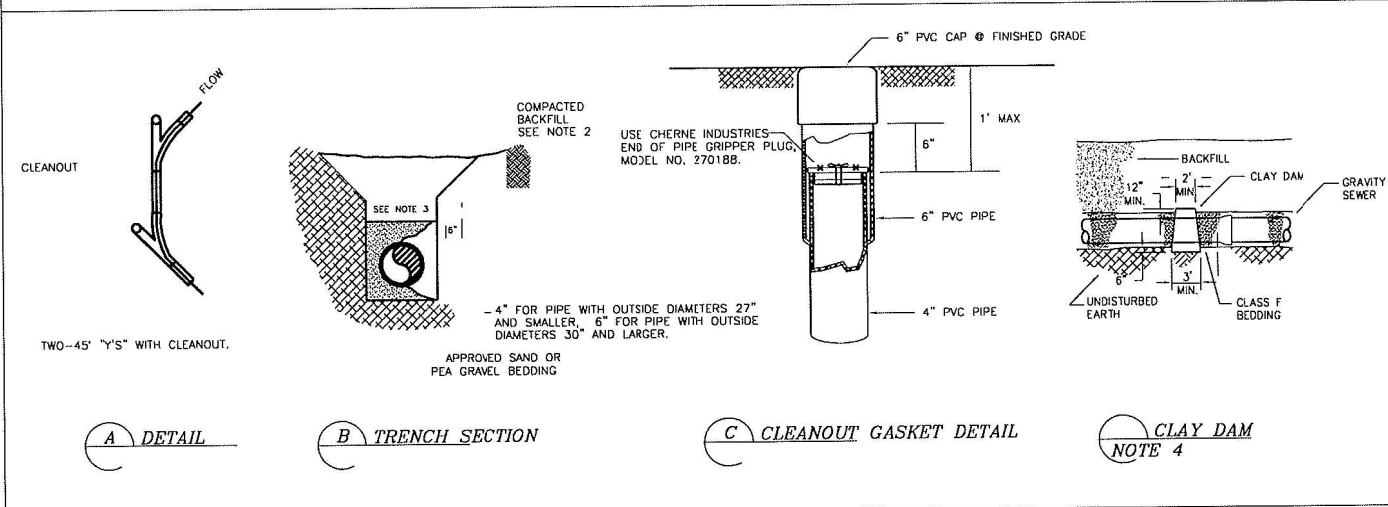
PROJECT NUMBER:  
TRLX0107  
DATE: 7/17/07  
DESIGN: BOK  
DRAWN: BEM  
CHECKED:  
SCALE: AS SHOWN  
SHEET NO.  
UT9  
31

BLAINE, WA  
CARNOUSTIE - SEMIAHMOO  
SANITARY SEWER DETAILS  
AND NOTES

NO. REVISIONS:  
01/16/09/10  
EXP: 05/10/09/10

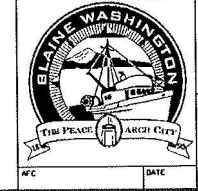


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- NOTES
1. SEWER PIPING SHALL BE LAID ON A FIRM BED THROUGHOUT ITS ENTIRE LENGTH.
  2. EARTH TO BE COMPACTED IN MAXIMUM OF 6" LIFTS.
  3. TRENCH WIDTH TO 1 FOOT ABOVE THE TOP OF THE PIPE SHALL NOT EXCEED 30 INCHES MAXIMUM OR 1 1/2 TIMES THE OUTSIDE DIAMETER OF THE PIPE PLUS 18 INCHES WHICHEVER IS GREATER.
  4. THE CITY MAY REQUIRE THAT A DAM CONSTRUCTED OF CLAY OR IMPERVIOUS NATIVE MATERIAL BE INSTALLED IN THE PPE ZONE IMMEDIATELY DOWNSTREAM AREAS WHERE EXCESS SURFACE AND GROUND WATER WILL LIKELY BEGIN TO FLOW IN THE PPE BEDDING. (IE WETLANDS, UNDER STORM-WATER INFILTRATION SYSTEMS ETC.) THE DAM SHALL BE KEYS INTO THE TRENCH BOTTOM AND SIDES A MINIMUM OF 6" AND COVER OVER THE PIPE 12" MINIMUM. THE DAM BASE SHALL BE A MINIMUM OF 3' LONG AND THE TOP SHALL BE A MINIMUM OF 2' LONG, AS MEASURED ALONG THE PIPE.

CITY OF BLAINE		PUBLIC WORKS DEPARTMENT		7-9	
STANDARD		SANITARY SIDE SEWER		DATE	
CONNECTION		CONNECTION		DATE	
NO.		REVISION DESCRIPTION		DATE	
1		AS SHOWN		DATE	



CARNOUSTIE - SEMIAHMOO

SANITARY SEWER DETAILS



BLAINE, WA

CARNOUSTIE - SEMIAHMOO

SANITARY SEWER DETAILS

PROJECT NUMBER:

TRLX0107

DATE: 7/17/07

DESIGN: BDK

DRAWN: BEM

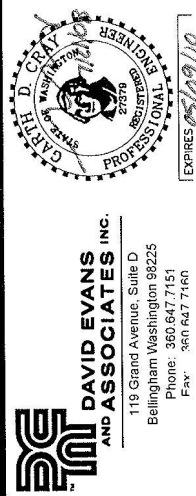
CHECKED:

SCALE: AS SHOWN

SHEET NO.

UT10

OF 31



RECORD DRAWING - 7/04/08

NO. REVISIONS:

APPD.



**PROJECT NUMBER:**  
TRLX0107

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**DATE:** 7/17/07  
**DESIGN:** BDK  
**DRAWN:** BEM  
**CHECKED:**

**SCALE: AS SHOWN**

SHEET NO.

UT11  
OF 31

- GENERAL NOTES (WATER MAIN INSTALLATION)**
1. All workmanship and material shall be in accordance with City of Boise Development Standards and the State of Washington Standard Specifications for Road, Bridge and Municipal Construction as amended.
  2. A preconstruction meeting shall be held with the City prior to the start of construction.
  3. Water mains shall be ductile iron cement mortar lined thickness Class 50.
  4. Gate valves shall be resilient wedge, NRS (Non Rising Stem) with O-rings seals. Valve ends shall be mechanical joint or ANSI flanges. Valves shall conform to AWWA 505-94. Valves shall be Mueller, M & H, Kennedy, Clow R/W or Watertown Series 500. existing valves to be replaced by City employees only.
  5. Hydrants shall be Watertown Pacer 100 Model WG-67, Clow Model F-2505 or Clow Cerium Model A-421. Hydrants shall be bagged until system is approved. AWWA C 502-94
  6. All lines shall be chlorinated and tested in conformance with the above referenced specification (Note 1).
  7. Pipe installer shall place pipe in a straight alignment. Pipe installer shall wrap pipe with 8 MIL polyethylene membrane designed for such use. Pipe installer shall plug pipe ends at end of each work day.
  8. Provide traffic control plan(s) in accordance with MUTCD if applicable.
  9. All water mains shall be staked for grades and alignment by an engineering or surveying firm capable of performing such work.
  10. Service lines to be installed perpendicular to the main and the locations shall be marked on the face of the curb with an embossed "W 1/4 inch into concrete.
  11. Call Underground Locate at 1-800-424-5555 a minimum of 48 hours prior to excavation.
  12. The Developer shall coordinate with the City prior to scheduling any shutdown of the water system. Where connections require "field verification", connection points will be exposed by contractor and fittings verified 48 hours prior to distributing shut-down notices.
  13. At any connection to an existing line where a new valve is not installed, the existing valve must be pressure tested to City standards prior to connection. If an existing valve fails to pass the test, the Contractor shall make the necessary provisions to test the new line prior to connection to the existing system or install a new valve.
  14. The City of Boise's Public Works Department Inspector shall observe placement and installation of all sewer pipe bedding material, creation of the requisite pipe cradle in the bedding material, installation and connection of the pipes themselves, and backfill placement and compaction, to ensure compliance with City of Boise Development Standards and the Washington Standards No. 6.14. Contractor shall coordinate/schedule all observations.

PIPE SIZE	(A)		(B)		(C)		(D)		(E)		X (100 PSI)
	SO.	FT.	SO.	FT.	SO.	FT.	SO.	FT.	SO.	FT.	
4	4	4	4	2	1	1	1	1	1	1	NONE
6	8	7	6	4	2	1	1	1	1	1	NONE
8	11	11	10	9	5	3	2	2	2	2	4
10	12	18	14	9	5	3	5	3	5	3	7
12	22	19	19	12	6	3	7	7	7	7	10
14	26	22	25	6	6	6	6	6	6	6	12
16	36	31	20	10	10	5	5	5	5	5	13
20	45	39	24	13	13	6	7	6	7	6	16
24	54	47	29	15	15	8	8	8	8	8	23
24	64	56	35	18	9	9	9	9	9	9	23
28	87	76	48	24	12	12	12	12	12	12	28
30	101	87	55	28	14	14	14	14	14	14	31
36	145	125	78	40	20	20	20	20	20	20	36

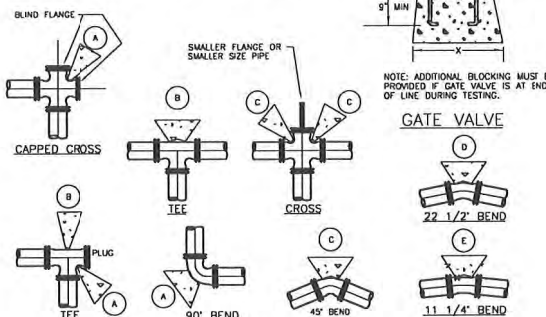
**SAFE BEARING LOADS IN LB./SQ. FT.**  
**THE SAFE BEARING LOADS GIVEN IN THE FOLLOWING TABLE ARE FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 2 FEET.**

<b>SOIL</b>	<b>SAFE BEARING LOAD LB. PER SQ. FT.</b>
*MUCK, PEAT, ETC.	0
SOFT CLAY	1000
SAND	2000
SAND & GRAVEL	3000
SAND & GRAVEL	
CEMENTED W/ CLAY	4000
HARD SHALE	10000

\*IN MUCK OR PEAT, ALL THRUSTS SHALL BE RESTRAINED BY PILES OR THE RODS TO SOLID FOUNDATIONS OR BY REMOVAL OF MUCK OR PEAT AND REPLACEMENT WITH BALLAST OF SUFFICIENT STABILITY.

NOTES

1. BEARING AREA OF CONCRETE THRUST BLOCK IS BASED ON 2000 PSI PRESSURE AND CONK BEARING LOAD OF 2000 PSI.
  2. AREAS MUST BE ADAPTED FOR OTHER PIPE SIZES, PRESSURES AND SOIL CONDITIONS.
  3. CONCRETE BLOCKING SHALL BE CAST IN PLACE AND HAVE A MINIMUM OF 1/4 SQUARE FOOT BEARING AGAINST THE FITTING.
  4. THE BLOCK SHALL BEAR AGAINST THE FITTING ONLY AND SHALL BE CLEAR OF JOINTS TO PERMIT TACING UP OR DOWN THE FITTING.
  5. THE CONTRACTOR SHALL INSTALL LOCKING DEVICES ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATION PRESSURES UNDER ALL CONDITIONS OF SERVICE.
- 



NOTE: ADDITIONAL BLOCKING MUST BE PROVIDED IF GATE VALVE IS AT END OF LINE DURING TESTING.

### CAST IRON TAPPING TEE MECHANICAL JOINT SLEEVE

INSTALLED ON ASBESTOS CEMENT PIPE  
CAST IRON PIPE AND DUCTILE IRON PIPE

## TAPPING TEES

CITY OF BLAINE			
DEPT. OF PUBLIC WORKS			
DATE A	PROJ. ENG. NO.	PUBLIC WORKS DIVISION REPORT 6-5	

NOTE

1. USE APPROVED JOINT COMPOUND ON ALL THREADED CONNECTIONS.
2. PAINT CONCRETE POST - GREEN (PER UTILITY STD. SPECIFICATIONS)
3. AIR/VAC TO BE BURIED AS SHOWN FOR FREEZE PROTECTION.
4. LOCATION OF RISER SECTION TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION, AWAY FROM DRIVING SURFACE, ATTACHED TO D.I. POST (CONCRETE FILLED).
5. TAP INTO WATER MAIN BY CITY UTILITY CREW.

1" AIR & VACUUM  
RELEASE VALVE ASSEM  
(10" MAIN & SMALLER)

CITY OF BLAINE			
DEPT. OF PUBLIC WORKS			
SUC.	PREM. SUB. NO.	PUBLIC WORKS DIVISION REPORT	
A		6-11B	

5/8"x3/4" METER SETTER  
W/SHUT OFF & CHECK VALVE  
FORD MODEL no. VH172-15  
OR EQUAL

METER BOX W/PLASTIC LID (SEE NOTE) \_\_\_\_\_

SHUT OFF

36\*

(200 PSI) BRONZE BRANCH



3/4"

IN COVER                      PLA

1" TEE W\PLUGS

DETAIL	A
	BOULE ROUGE

- [illegible]

- NOTES:**
1. GUARD POST TO BE LEVEL WITH TOP OF HYDRANT.
  2. GUARD POST INSTALLED ONLY WHEN DIRECTED.
  3. **FIRE HYDRANTS**
    - Hydrants to match C502 except on basin modified.
    - Standard brand of the hydrants shall be a minimum of 17" and 12" seven and one-half inch outside diameter.
    - Provide pentagon operating nuts.
    - Open by turning counterclockwise.
    - Nozzles and operating nuts shall be identical with those on larger hydrant equipment or as elsewhere provided.
    - Depth of clear cover over the pipe shall be three feet and shall be longer than the length as required where the hydrant is installed.
    - Nozzle, extension, range and safety stem coupling shall be standard and shall be separate with minimum damage.
    - Minimum extension standard of manufacturer of hydrant provided.
  4. Hydrant shall be as:
    - 100 Model Paper, 100 Model W8-67.
    - Class Model F 2500.
    - Manufacturer Model A-21.
    - API #23 Reference
  5. When extinguished open & locked.
  6. Hydrant to remain locked or tagged unless accepted by City.
4. BLUE REFLECTOR, 6" FROM CENTERLINE OF STREET TO HYDRANT SIDE.

### TYPE A HYDRANT ASSEMBLY

CITY OF BLAINE	
DEPT. OF PUBLIC WORKS	
BOOK	PAGE
4	8-8

**STANDARD  
BLOW-OFF  
ASSEMBLY**

CITY OF BLAINE		
DEPT. OF PUBLIC WORKS		
BOOK	PAGE, BULK NO.	PUBLIC WORKS BULKING NUMBER
4		6-10

CARNOUSTIE – SEMIAHMOO

### WATER DETAILS

**SHEET**

31

OF

OF 31

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