

# DESCHUTES MARKET ROAD / HAMEHOOK ROAD INTERSECTION IMPROVEMENT

## 100% DESIGN SUBMITTAL

DESCHUTES COUNTY, OREGON

JANUARY, 2023

### OWNER & CLIENT:

DESCHUTES COUNTY  
CONTACT: CODY SMITH, PE  
61150 SE 27TH STREET  
BEND, OR 97702  
(541) 322-7113

### CIVIL ENGINEER & LAND SURVEYOR:

HARPER HOUF PETERSON RIGHELLIS INC.  
CONTACT: NICOLAS SPEROS, PE  
250 NW FRANKLIN AVENUE, SUITE 404  
BEND, OR 97703  
(541) 318-1161

### TRAFFIC ENGINEER

KITTELSON & ASSOCIATES  
1001 SW EMKAY DRIVE, SUITE 140  
BEND, OR 97702  
(541) 312-8300

### LEGEND:

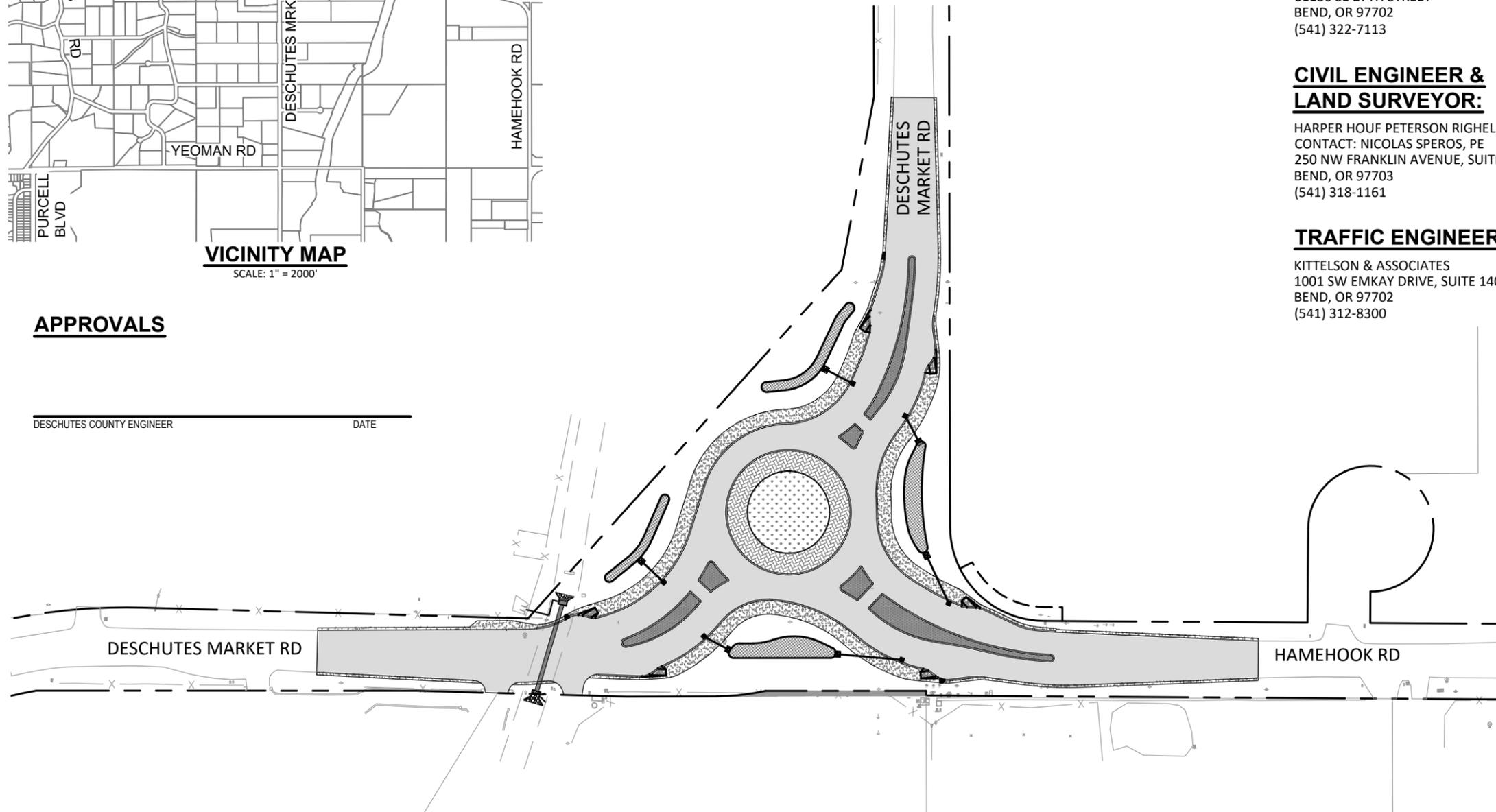
- — — — — RIGHT-OF-WAY LINE
- — — — — CENTER LINE
- - - - - EASEMENT LINE
- - - - - (E) TAX LOT LINE
- - - - - 3175 (E) CONTOUR LINE
- - - - - 3175 (P) CONTOUR LINE
- W — (E) WATER LINE
- W — (P) WATER LINE
- IRR — (E) IRRIGATION LINE
- OW — (E) OVERHEAD WIRE
- E — (E) UNDERGROUND ELEC
- FO — (E) FIBER OPTIC LINE
- T — (E) TELEPHONE LINE
- X — X — (E) FENCE LINE
- X — X — (P) FENCE LINE
- — — — — (P) STORM PIPE
- (P) CATCH BASIN
- (E) WATER METER
- ⊗ (E) WATER VALVE
- ⊗ (P) WATER VALVE
- ⊗ (E) IRRIGATION VALVE
- ⊗ (E) FIRE HYDRANT
- (E) WATER BOX
- (E) IRRIGATION BOX
- ⊗ (E) WATER MANHOLE
- ⊗ (E) TELECOM MANHOLE
- (E) WATER VAULT
- (E) TELECOM VAULT
- (E) POWER VAULT
- (E) POWER METER
- (E) POWER RISER
- (E) TELECOM RISER
- (E) FIBER OPTIC RISER
- (E) SIGN & POST
- ⊗ (E) POWER POLE
- ⊗ (E) MAILBOX
- ⊗ (E) BOULDER



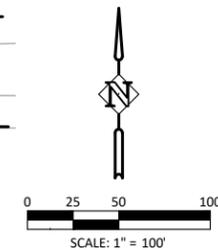
**VICINITY MAP**  
SCALE: 1" = 2000'

### APPROVALS

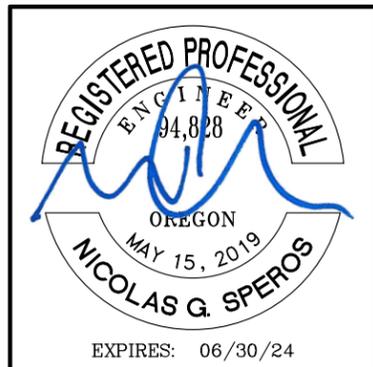
DESCHUTES COUNTY ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_



**PROJECT MAP**  
SCALE: 1" = 100'



**100% SUBMITTAL**



P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Room\about)\DCO02-DWG\Sheets\DCO02-C0\_Cover.dwg



DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

**HHPR** Harper Houf Peterson Righellis Inc.  
ENGINEERS \* PLANNERS  
LANDSCAPE ARCHITECTS \* SURVEYORS  
250 NW Franklin Ave., Suite 404, Bend, OR 97703  
phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

COVER SHEET <b>DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT</b> DESCHUTES COUNTY, OREGON	<b>C0.0</b>
JOB NO. DCO-02	

FOUND MONUMENT TABLE				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	403137.32	3309127.22	3411.63	5/8" IR
101	403094.33	3309127.04	3412.59	HELD - 5/8" IR DOWN 0.75' IN PAVEMENT
102	403175.60	3308794.25	3413.45	R/R SPIKE
103	403141.42	3308463.74	3411.69	1" PIPE DOWN 0.5'
104	403081.20	3308628.00	3411.75	5/8" IR WITH YPC INSCRIBED "BAXTER"
105	403084.74	3308178.91	3416.07	1/2" IR
106	403219.09	3308103.29	3414.65	1/2" IR
107	403085.44	3307803.96	3413.06	1/2" IR
108	403272.47	3307757.54	3410.40	5/8" IR W/ 2" ALUMINUM CAP INSCRIBED "DESCHUTES COUNTY ENGINEERING R/W LS2390"
109	403280.13	3307748.38	3410.17	5/8" IR W/ YPC - ILLEGIBLE
110	403272.62	3307817.58	3410.16	5/8" IR W/ 2" ALUMINUM CAP INSCRIBED "DESCHUTES COUNTY ENGINEERING R/W LS2390"
111	403145.49	3307631.22	3413.40	5/8" IR W/ 2" ALUMINUM CAP INSCRIBED "DESCHUTES COUNTY ENGINEERING R/W LS2390"
112	403145.17	3307560.96	3413.97	5/8" IR W/ 2" ALUMINUM CAP INSCRIBED "DESCHUTES COUNTY ENGINEERING R/W LS2390"
113	403085.04	3307560.01	3413.94	5/8" IR W/ 2" ALUMINUM CAP INSCRIBED "DESCHUTES COUNTY ENGINEERING R/W LS2390"
114	403156.11	3307173.01	3414.50	5/8" IR W/ 2" ALUMINUM CAP INSCRIBED "DESCHUTES COUNTY ENGINEERING R/W LS2390"
115	403096.06	3307171.32	3415.06	5/8" IR W/ 2" ALUMINUM CAP INSCRIBED "DESCHUTES COUNTY ENGINEERING R/W LS2390"
117	403165.12	3307173.74	3414.19	5/8" IR W/YPC INSCRIBED "HIGH DESERT ENG LS 540"
119	403090.63	3306903.19	3412.04	5/8" IR W/YPC INSCRIBED "HIGH DESERT ENG LS 540"
120	403044.90	3306857.68	3412.88	5/8" IR W/ 2" ALUMINUM CAP INSCRIBED "DESCHUTES COUNTY ENGINEERING R/W LS2390"
121	402999.76	3306896.83	3414.54	1/2" IR
122	402999.23	3306896.61	3414.64	5/8" IR W/ 2" ALUMINUM CAP INSCRIBED "DESCHUTES COUNTY ENGINEERING R/W LS2390"
125	403753.76	3307756.76	N/A	5/8" IR W/ YPC INSCRIBED "LS 2527"
126	403803.73	3307756.62	3410.70	5/8" IR W/ YPC INSCRIBED "LS 2527"
127	404084.48	3307756.11	3407.60	5/8" IR W/ YPC INSCRIBED "LS 2527"
128	404389.04	3307819.04	3406.76	1.5" ALUMINUM CAP INSCRIBED "DESCHUTES CO REF MON"
129	404415.50	3307755.52	3406.74	5/8" IR W/ 2" ALUMINUM CAP INSCRIBED "DESCHUTES COUNTY ENGINEERING R/W LS2390"
131	403253.70	3308793.81	3412.25	1/2" IR
132	403144.03	3308103.03	3416.51	1/2" IR
133	403168.65	3308152.94	3414.52	1/2" IR
134	403143.76	3308152.80	3414.90	1/2" IR
135	403141.69	3308461.29	3412.04	1/2" IR
136	403102.15	3307778.57	3413.42	2.5" ALUMINUM CAP INSCRIBED "DESCHUTES RESET" IN MONUMENT BOX
137	403116.10	3307787.81	3414.65	2" ALUMINUM CAP - ILLEGIBLE - IN MONUMENT BOX
138	404415.57	3307794.19	3406.92	1/2" HOLE IN STEEL PLATE DOWN 0.7' IN PAVEMENT - UNDERLYING MONUMENT NOT TIED
139	404396.76	3307756.91	3406.24	1.5" ALUMINUM CAP INSCRIBED "DESCHUTES CO REF MON"
140	404458.48	3307758.76	3405.23	5/8" IR DOWN 0.5'
141	404511.85	3307806.06	3405.66	1.5" ALUMINUM CAP INSCRIBED "DESCHUTES CO REF MON"
400	403090.15	3306466.33	3414.10	5/8" IR W/YPC INSCRIBED "HIGH DESERT ENG LS 540"
401	403139.73	3308745.49	3412.83	5/8" IR - DISTURBED
402	403139.46	3308793.62	3414.15	5/8" IR - DISTURBED
420	401763.95	3307803.01	3424.10	1/2" IR

### GENERAL NOTES

- ALL WORK SHOWN ON THESE PLANS TO BE PERFORMED UNDER CONTRACT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT SPECIAL PROVISIONS AND THE OREGON STATE "OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION," REVISED 2021.
- THE LOCATION AND DESCRIPTIONS OF EXISTING UTILITIES SHOWN ARE COMPILED FROM AVAILABLE RECORDS AND/OR FIELD SURVEYS. THE COUNTY AND UTILITY COMPANIES DO NOT GUARANTEE THE ACCURACY NOR THE COMPLETENESS OF SUCH RECORDS. LOCATIONS SHOWN ARE APPROXIMATE AND TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ADDITIONAL UNDERGROUND UTILITIES MAY EXIST WHICH ARE NOT SHOWN HEREIN.
- ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER. (NOTE: THE ADMINISTRATIVE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503) 232-1987; WEBSITE IS [callbeforeyoudig.org/oregon](http://callbeforeyoudig.org/oregon)).
- PROVISIONS SHALL BE MADE BY THE CONTRACTOR TO KEEP ALL EXISTING UTILITIES IN SERVICE AND PROTECT THEM DURING CONSTRUCTION BY ANY MEANS NECESSARY.
- UTILITIES, OR INTERFERING PORTIONS OF UTILITIES, THAT ARE ABANDONED IN PLACE SHALL BE REMOVED BY THE CONTRACTOR TO THE EXTENT NECESSARY TO ACCOMPLISH THE WORK. THE CONTRACTOR SHALL FILL COMPLETELY THE REMAINING PORTION(S) OF ABANDONED UTILITIES WITH CONTROLLED LOW-STRENGTH MATERIALS (CLSM) OR GROUT, PER COUNTY REQUIREMENTS.
- TOPOGRAPHIC SURVEY BY HARPER HOUF PETERSON RIGHELLIS, INC. DATED DECEMBER 7, 2021. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS PRIOR TO CONSTRUCTION.
- CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY, WAYS, MEANS, AND METHODS OF CONSTRUCTION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT AND VERIFY ALL EXISTING CONDITIONS BEFORE START OF WORK. THE CONTRACTOR SHALL TAKE ALL NECESSARY FIELD MEASUREMENTS AND OTHERWISE VERIFY ALL DIMENSIONS AND EXISTING CONSTRUCTION CONDITIONS INDICATED AND/OR SHOWN ON THE PLANS. SHOULD ANY ERRORS OR INCONSISTENCY EXIST, THE CONTRACTOR SHALL NOT PROCEED WITH THE WORK AFFECTED UNTIL REPORTED TO THE ENGINEER IN WRITING FOR CLARIFICATION OR CORRECTION.
- THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION ACTIVITIES TO THE PUBLIC RIGHT-OF-WAY AND EASEMENTS IDENTIFIED ON THE PLANS UNLESS WRITTEN PERMISSION IS OBTAINED FROM THE PROPERTY OWNER.
- THE CONTRACTOR SHALL NOTIFY RESIDENTS WITHIN THE PROJECT AREA A MINIMUM OF TWO BUSINESS DAYS PRIOR TO STARTING WORK, PROVIDING DOOR HANGERS LISTING THE CONTRACTOR'S CONTACT INFORMATION.
- ALL SURVEY MONUMENTS ON THE SUBJECT SITE, OR THAT MAY BE SUBJECT TO DISTURBANCE WITHIN THE CONSTRUCTION AREA, OR THE CONSTRUCTION OF ANY OFF-SITE IMPROVEMENTS SHALL BE ADEQUATELY REFERENCED AND PROTECTED PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY. IF THE SURVEY MONUMENTS ARE DISTURBED, MOVED, RELOCATED, OR DESTROYED AS A RESULT OF ANY CONSTRUCTION, THE PROJECT SHALL, AT IT'S COST, RETAIN THE SERVICES OF A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF OREGON TO RESTORE THE MONUMENT TO ITS ORIGINAL CONDITION AND FILE THE NECESSARY SURVEYS AS REQUIRED BY OREGON STATE LAW. A COPY OF ANY RECORDED SURVEY SHALL BE SUBMITTED TO COUNTY STAFF.
- DEMO & REMOVE EXISTING TREES AND VEGETATION WHERE IT IS IN CONFLICT WITH OR IS IMPACTED BY PROPOSED IMPROVEMENTS.

### VERTICAL DATUM

ELEVATION DATUM: NGVD29  
BASED ON MULTIPLE AVERAGED GPS OBSERVATIONS  
UTILIZING THE OREGON REAL TIME GPS NETWORK (ORGN)

### HORIZONTAL DATUM

HORIZONTAL DATUM IS NAD83 (ADJUSTMENT 1991) EXPRESSED AS CENTRAL OREGON COORDINATE SYSTEM (COCS), ESTABLISHED FROM MULTIPLE AVERAGED GPS OBSERVATIONS.

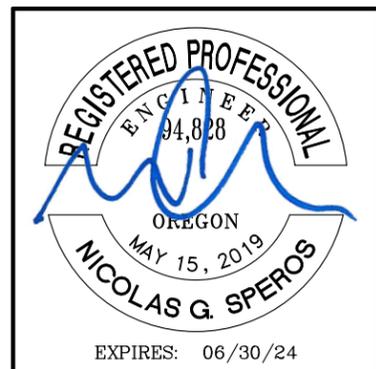
### BASIS OF BEARINGS

CENTRAL OREGON  
COORDINATE SYSTEM

### CONSTRUCTION ACCESS & TRAFFIC CONTROL NOTES

- CONTRACTOR SHALL PREPARE AND SUBMIT A TEMPORARY TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS FOR COUNTY REVIEW AND APPROVAL PRIOR TO THE START OF WORK. ALL TRAFFIC CONTROL MEASURES SHALL CONFORM TO THE 2009 EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND OREGON SUPPLEMENT, AND 2011 OTTCH.
- THE CONTRACTOR SHALL KEEP THE WORK AREAS IN A NEAT AND SIGHTLY CONDITION FREE OF DEBRIS AND LITTER FOR THE DURATION OF THE PROJECT.
- ALL DISTURBED AREAS INCLUDING ROADS AND ACCESS ROUTES SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AT NO COST TO OWNER.
- CONTRACTOR SHALL MONITOR TEMPORARY TRAFFIC CONTROL DEVICES AND REVISE BASED ON ON-SITE WORK CONDITIONS, OR AS DIRECTED BY THE ENGINEER OR COUNTY.
- CONTRACTOR SHALL PROVIDE NOTIFICATION TO EMERGENCY SERVICES AND AFFECTED RESIDENCES PRIOR TO CHANGES IN TRAFFIC PATTERNS.
- CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES.
- CONTRACTOR SHALL MAINTAIN ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES.

100% SUBMITTAL



P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C0\_Cover.dwg



DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
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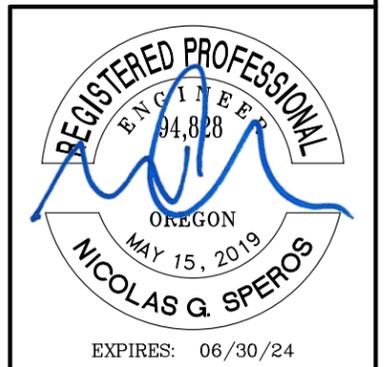
GENERAL NOTES  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.  
**C0.1**  
JOB NO.  
DCO-02

**SHEET INDEX**

C0.0 - COVER SHEET	SS-1 - SIGNING AND STRIPING LEGEND	ODOT RD300 - TRENCH BACKFILL, BEDDING, PIPE ZONE & MULTIPLE INSTALLATIONS
C0.1 - NOTES	SS-2 - SIGNING AND STRIPING PLAN	ODOT RD364 - CONCRETE INLETS
C0.2 - SHEET INDEX	SS-3 - SIGNING AND STRIPING PLAN	ODOT RD365 - INLET FRAMES & GRATES
C1.0 - TYPICAL SECTIONS	SS-4 - EXISTING SIGN DETAILS	ODOT RD810 - BARBED & WOVEN WIRE FENCES
C1.1 - CONSTRUCTION DETAILS	SS-5 - PROPOSED SIGN DETAILS	ODOT RD1010 - INLET PROTECTION
C1.2 - WATER DETAILS	SS-6 - SIGN & POST DATA TABLE	ODOT RD1032 - SEDIMENT BARRIER, TYPE 8
C1.3 - WATER DETAILS	SS-7 - SIGN & POST DATA TABLE	ODOT RD1040 - SEDIMENT FENCE
C2.0 - EXISTING CONDITIONS & DEMO PLAN	IL-1 - ILLUMINATION LEGEND	ODOT TM200 - SIGN INSTALLATION DETAILS
C3.0 - GEOMETRY PLAN	IL-2 - ILLUMINATION PLAN	ODOT TM211 - SIGNING DETAILS (US & INTERSTATE ROUTE SHIELDS)
C4.0 - PLAN & PROFILE - WEST LEG	IL-3 - ILLUMINATION PLAN	ODOT TM300 - ILLUMINATION CONTROL CABINETS
C4.1 - PLAN & PROFILE - NORTH LEG	TC-1 - STAGE I CONSTRUCTION	ODOT TM471 - TRENCHING & CONDUIT INSTALLATION
C4.2 - PLAN & PROFILE - EAST LEG	TC-2 - STAGE II CONSTRUCTION	ODOT TM472 - JUNCTION BOXES & HAND HOLES
C4.3 - PLAN & PROFILE - NORTHWEST FLOWLINE	TC-3 - STAGE III (PHASE 1) CONSTRUCTION	ODOT TM482 - CONTROLLER CABINET & SERVICE CABINET FOUNDATION DETAILS
C4.4 - PLAN & PROFILE - SOUTH FLOWLINE	TC-4 - STAGE III (PHASE 2) CONSTRUCTION	ODOT TM500 - PAVEMENT MARKING STANDARD DETAIL BLOCKS
C4.5 - PLAN & PROFILE - EAST FLOWLINE	TC-5 - STAGE II & III CONSTRUCTION DETOUR	ODOT TM501 - PAVEMENT MARKING STANDARD DETAIL BLOCKS
C5.0 - OVERALL GRADING & ESC PLAN		ODOT TM503 - PAVEMENT MARKING STANDARD DETAIL BLOCKS
C6.0 - GRADING DETAILS SITE MAP		ODOT TM530 - INTERSECTION PAVEMENT MARKINGS (CROSSWALK, STOP BAR & BIKE LANE STENCIL)
C6.1 - WEST LEG GRADING DETAILS - SPLITTER ISLAND		ODOT TM600 - MULTIPOST BREAKAWAY SIGN SUPPORTS NOTES
C6.3 - NORTH LEG GRADING DETAILS - SPLITTER ISLAND		ODOT TM601 - MULTIPOST BREAKAWAY SIGN SUPPORTS DETAILS
C6.5 - EAST LEG GRADING DETAILS - SPLITTER ISLAND		ODOT TM602 - TRIANGULAR BASE BREAKAWAY MULTIDIRECTIONAL SLIP BASE DESIGN
C6.7 - INNER CIRCLE GRADING DETAILS		ODOT TM635 - BREAKAWAY SIGN & LUMINAIRE SUPPORTS - SUPPORT LOCATION GUIDELINES
L1.0 - LANDSCAPE PLAN		ODOT TM671 - 3 SECOND GUST WIND SPEED MAP
		ODOT TM676 - SIGN ATTACHMENTS
		ODOT TM681 - PERFORATED STEEL SQUARE TUBE (PSST) SIGN SUPPORT INSTALLATION
		ODOT TM688 - PERFORATED STEEL SQUARE TUBE (PSST) SLIP BASE FOUNDATION
		ODOT TM800 - TABLES, ABRUPT EDGE & PCMS DETAILS
		ODOT TM820 - TEMPORARY BARRICADES
		ODOT TM821 - TEMPORARY SIGN SUPPORTS
		ODOT TM822 - TEMPORARY SIGN SUPPORTS
		ODOT TM841 - INTERSECTION WORK ZONE DETAILS
		ODOT TM850 - 2-LANE, 2-WAY ROADWAYS

**100% SUBMITTAL**



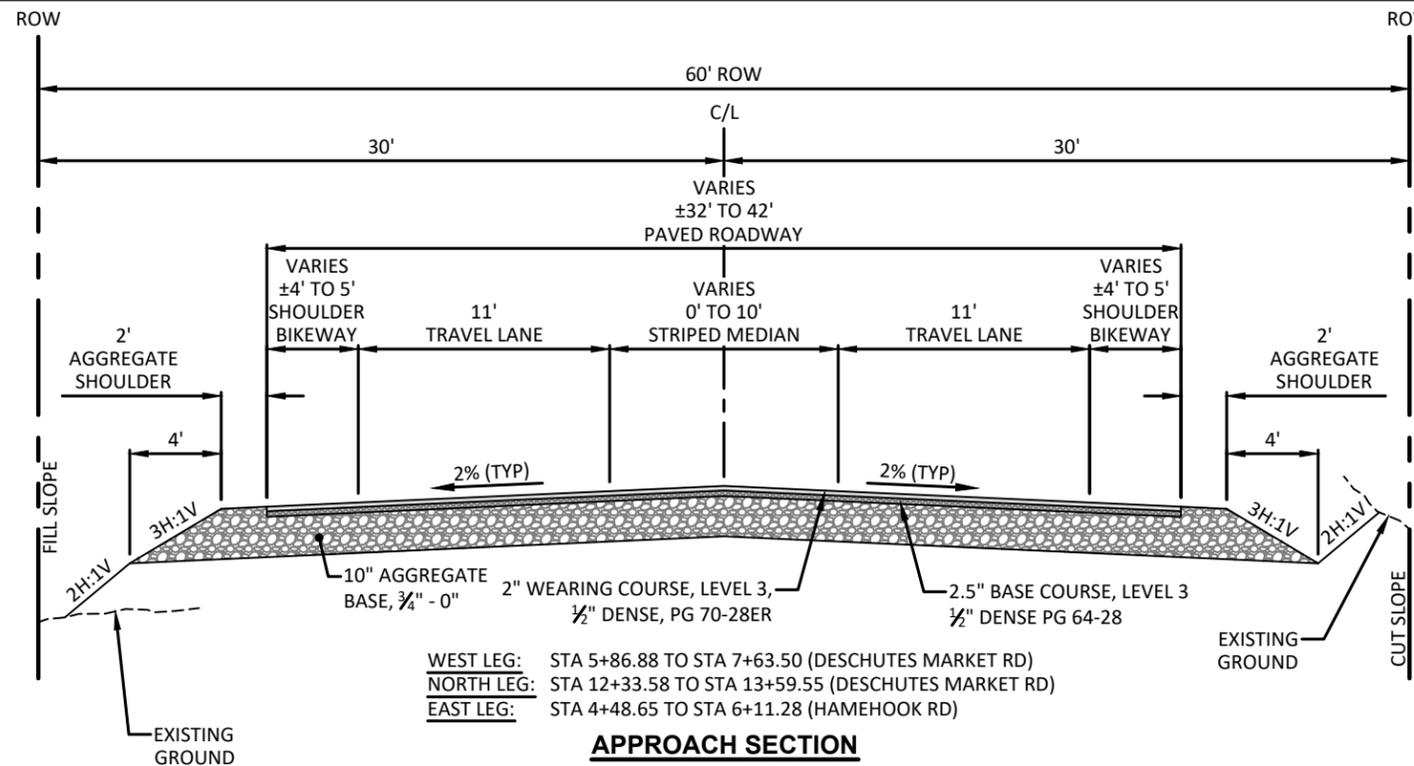
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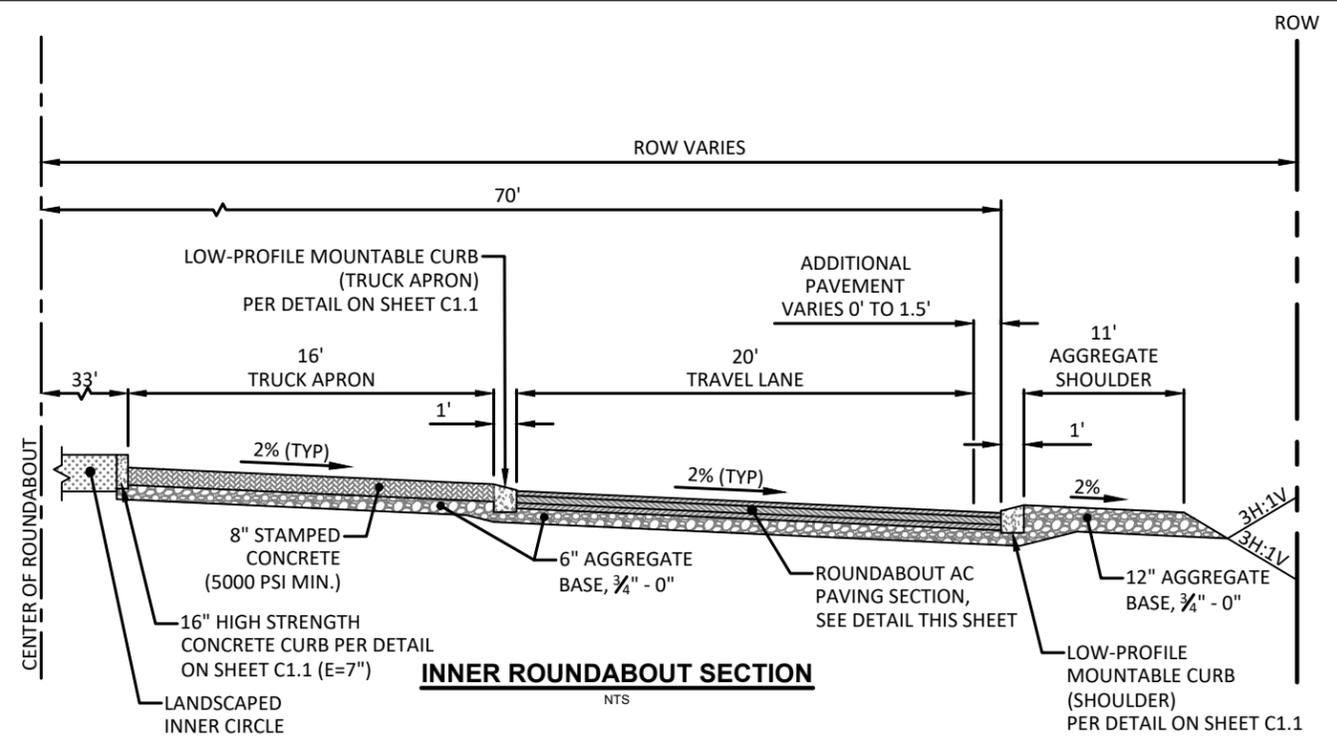
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SHEET INDEX <b>DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT</b> DESCHUTES COUNTY, OREGON		SHEET NO. <b>C0.2</b>
		JOB NO. DC0-02

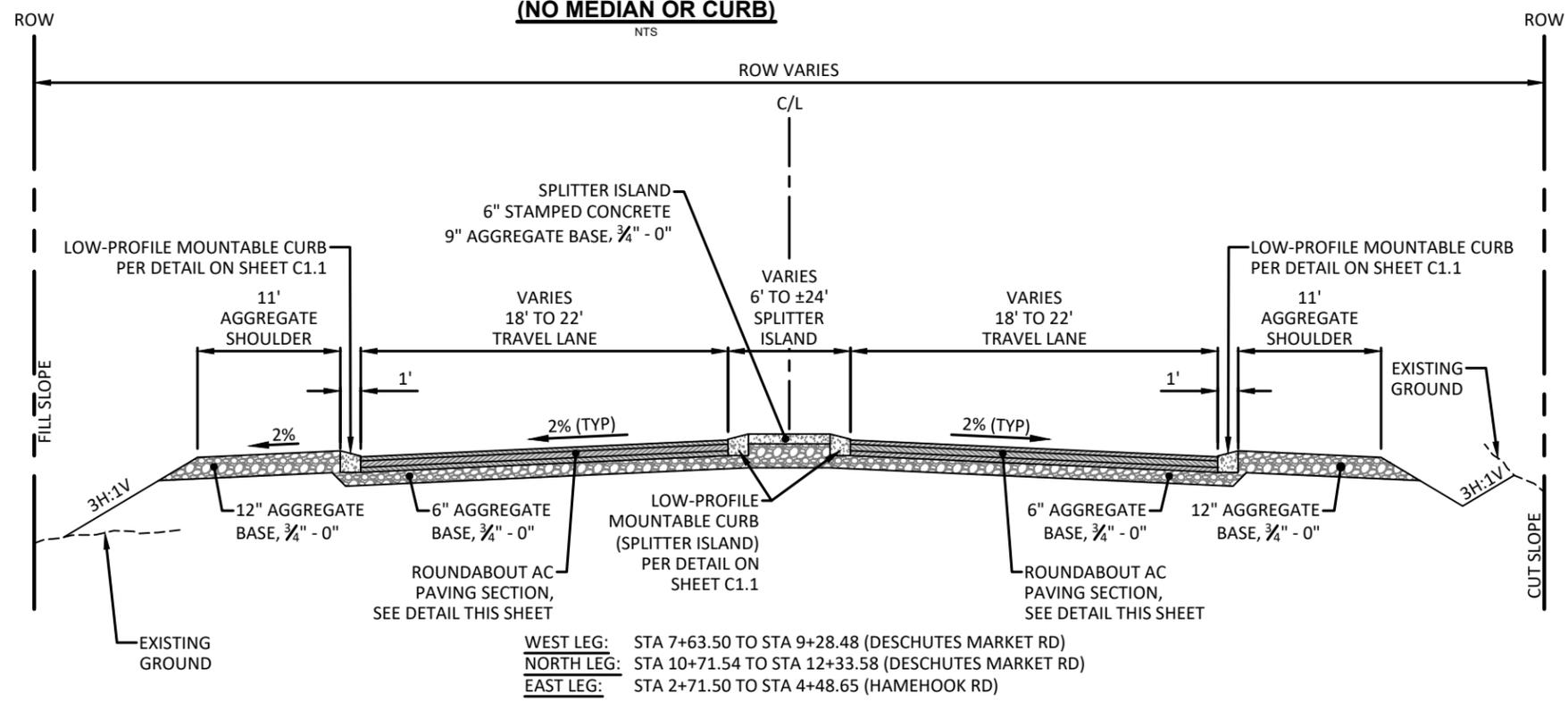
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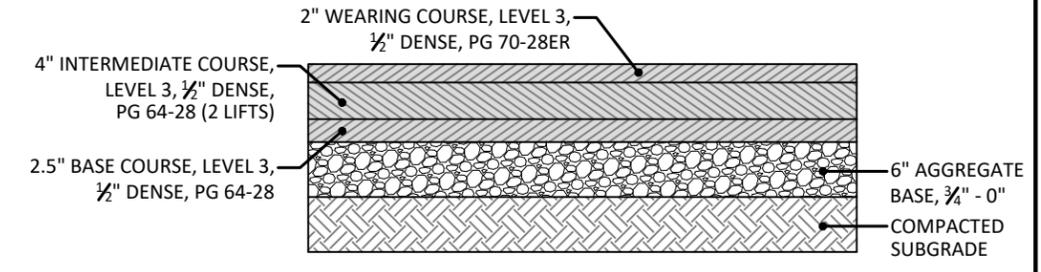
**APPROACH SECTION  
(NO MEDIAN OR CURB)**  
NTS



**INNER ROUNDABOUT SECTION**  
NTS



**APPROACH SECTION  
(WITH MEDIAN & CURB)**  
NTS



**ROUNDABOUT AC PAVING SECTION DETAIL**  
NTS

**100% SUBMITTAL**



P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C1.0\_Typical Sections.dwg



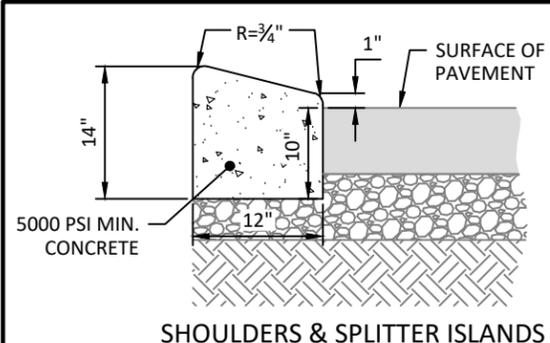
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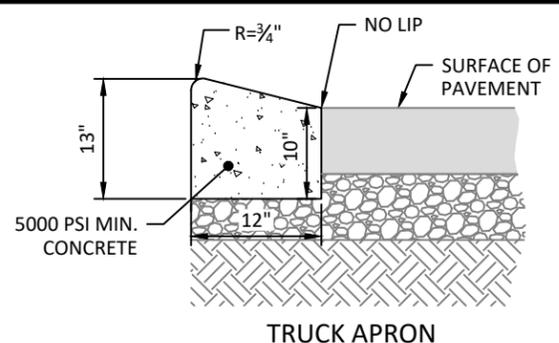
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TYPICAL SECTIONS  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

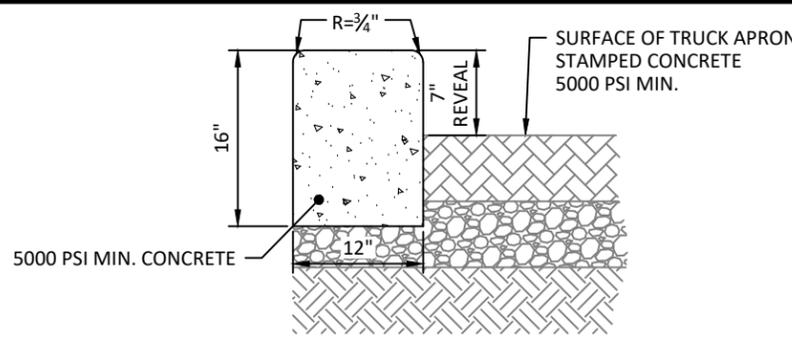
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**C1.0**  
JOB NO.  
DCO-02



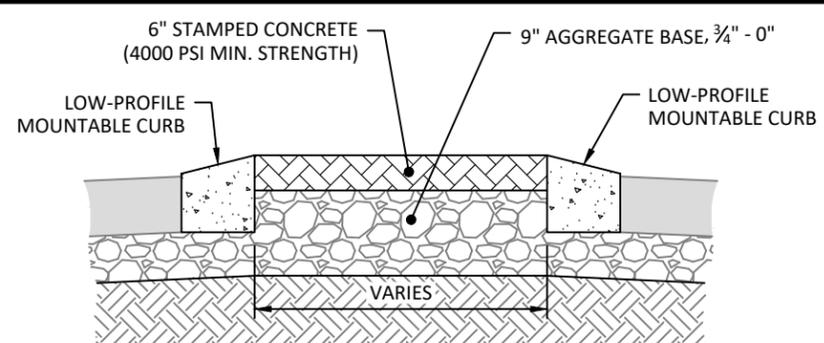
SHOULDERS & SPLITTER ISLANDS



TRUCK APRON



HIGH-STRENGTH CONCRETE CURB



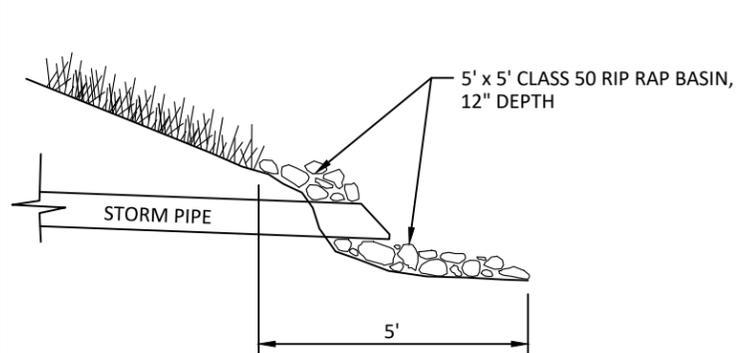
SPLITTER ISLAND

LOW-PROFILE MOUNTABLE CONCRETE CURB

NTS

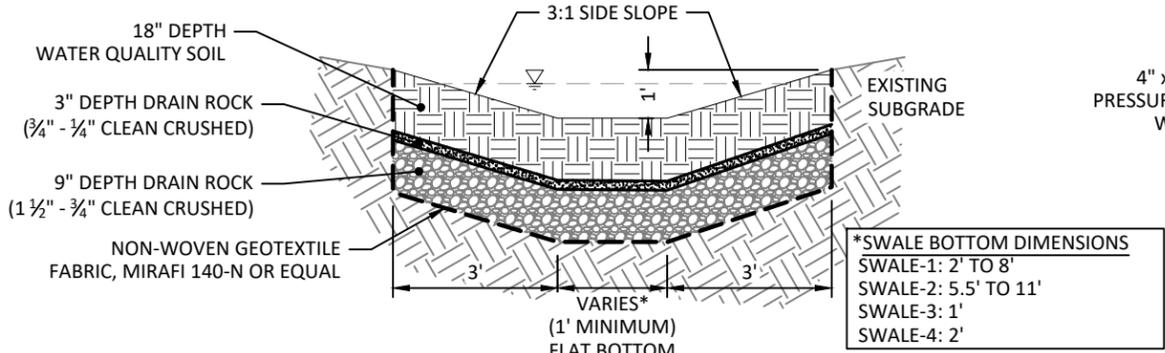
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NTS



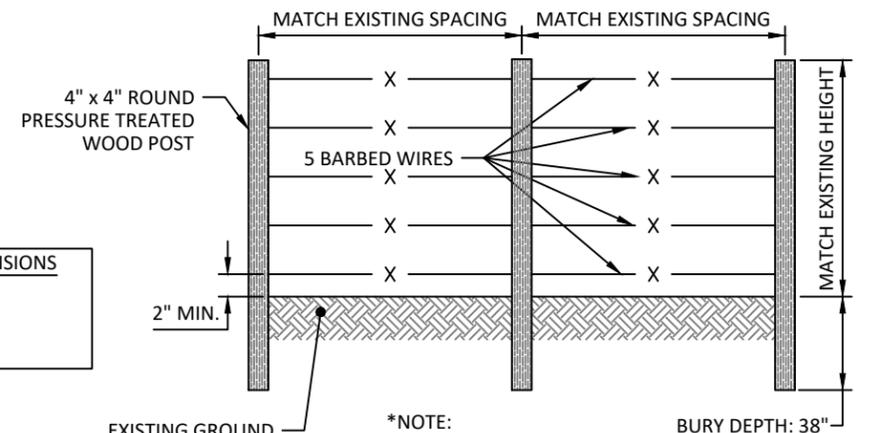
STORM OUTFALL

NTS



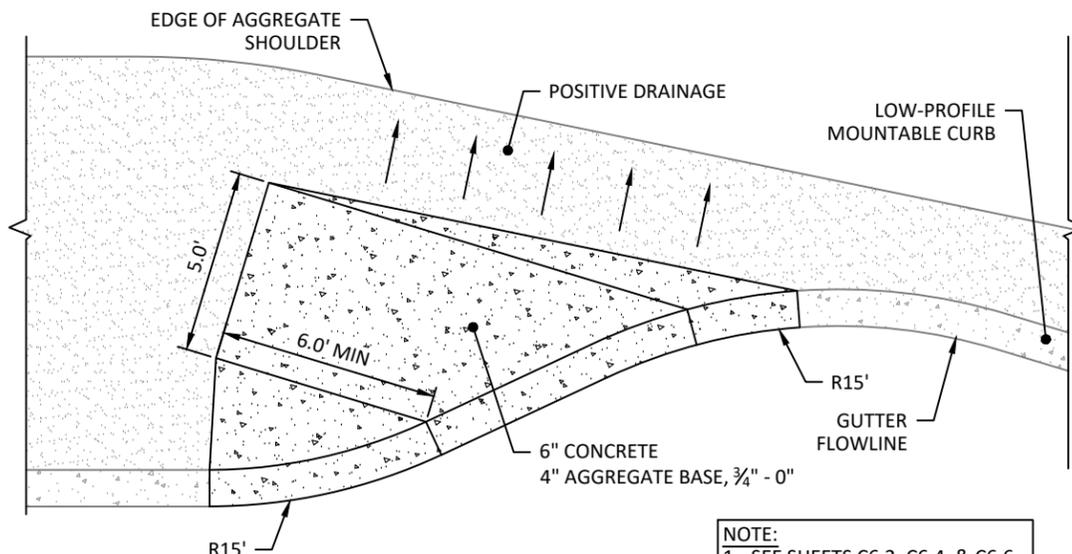
STORMWATER QUALITY SWALE

NTS



BARBED WIRE FENCE

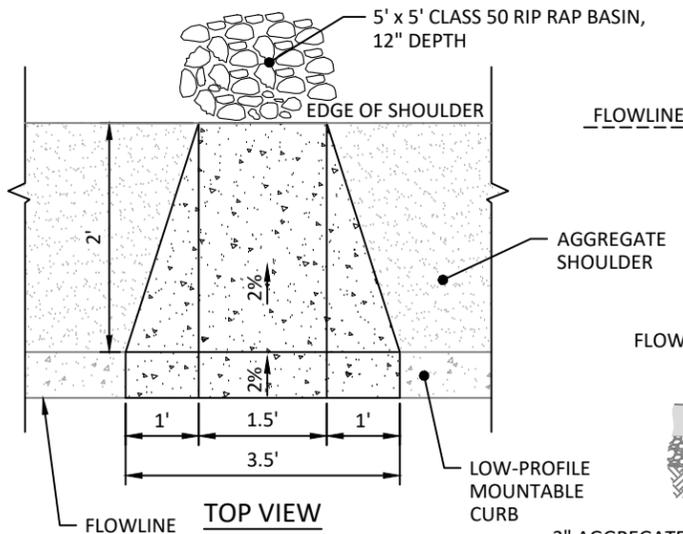
NTS



BICYCLE RAMP

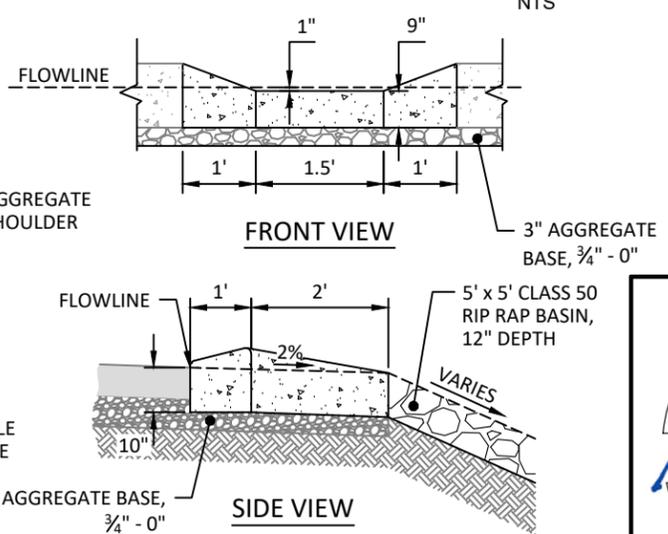
NTS

NOTE:  
1. SEE SHEETS C6.2, C6.4, & C6.6 FOR DETAILED GRADING PLAN.



CONCRETE DRAINAGE CURB CUT

NTS



100% SUBMITTAL



P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C1.1\_Details.dwg



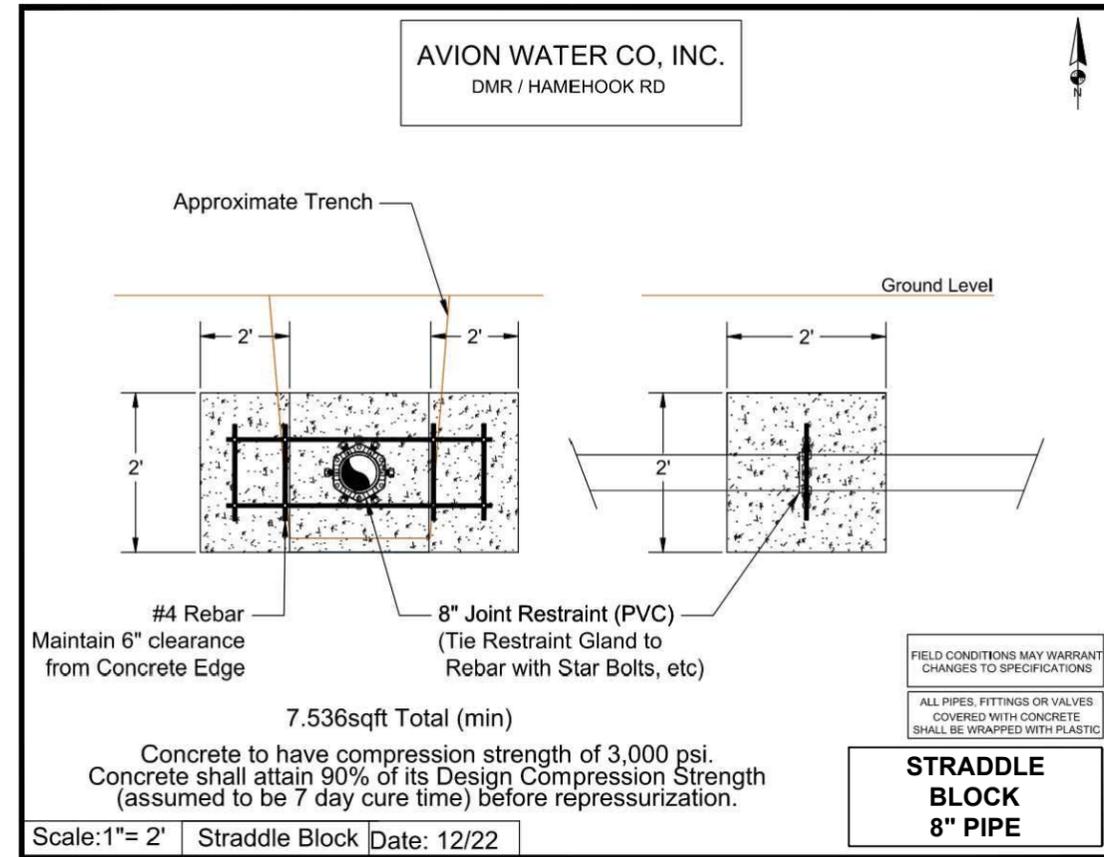
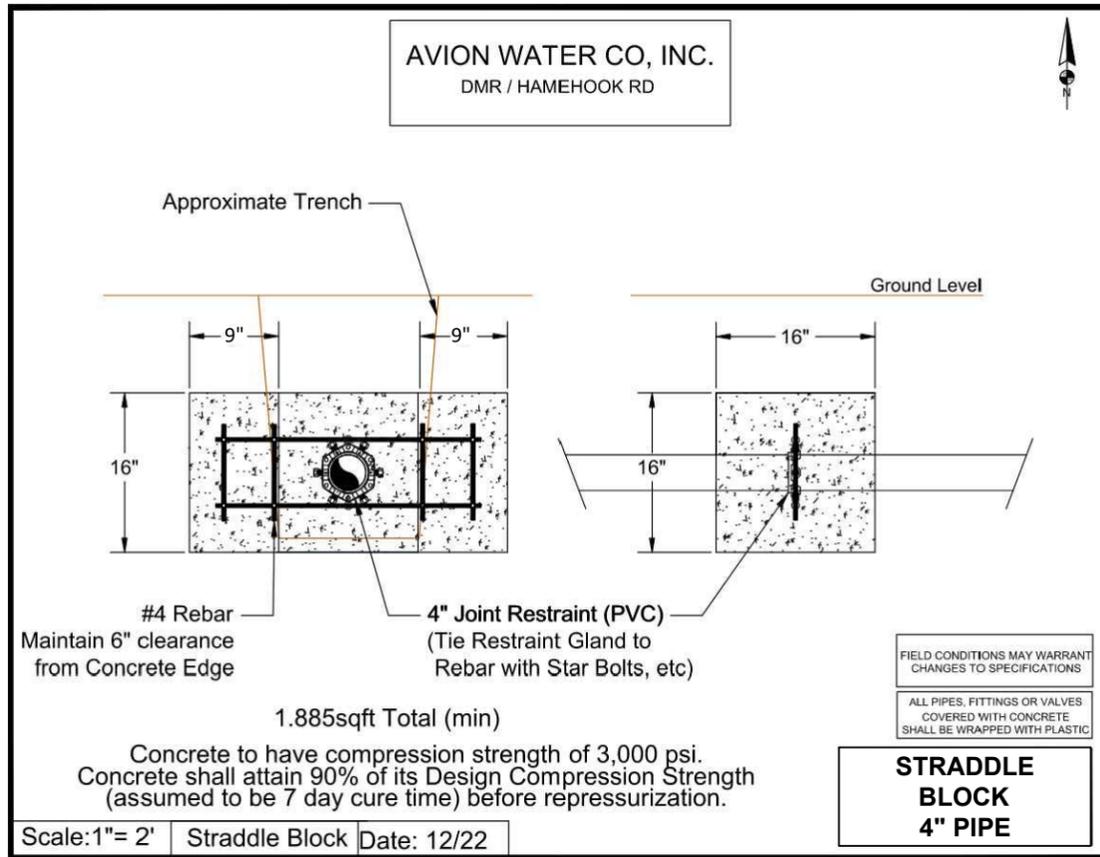
DATE	NO.	DESCRIPTION
REVISIONS		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

**HHPR** Harper Houf Peterson Righellis Inc.  
ENGINEERS\*PLANNERS  
LANDSCAPE ARCHITECTS\*SURVEYORS  
250 NW Franklin Ave., Suite 404, Bend, OR 97703  
phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

CONSTRUCTION DETAILS  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.  
**C1.1**  
JOB NO.  
DCO-02

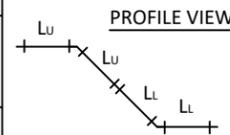


RESTRAINED LENGTH FOR DUCTILE IRON PIPE	
HORIZONTAL BENDS	MIN. RESTRAINED LENGTH FROM END OF BEND
3" - 45°	5'
4" - 45°	7'
4" - 90°	15'
8" - 90°	27'
12" - 11.25°	4'
12" - 22.5°	8'

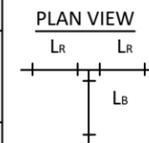
RESTRAINED LENGTH FOR DUCTILE IRON PIPE	
REDUCERS	MIN RESTRAINED LENGTH
8" x 3"	50'
8" x 4"	45'
12" x 4"	76'

RESTRAINED LENGTH FOR DUCTILE IRON PIPE	
DEAD ENDS	MIN RESTRAINED LENGTH
12"	87'

RESTRAINED LENGTH FOR DUCTILE IRON PIPE		
VERTICAL BENDS	MIN RESTRAINED LENGTH UPPER SIDE (LU)	MIN RESTRAINED LENGTH LOWER SIDE (LL)
12" - 45°	37'	8'

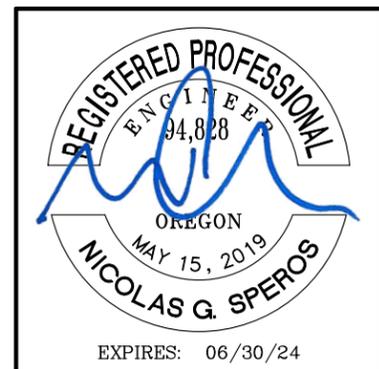


RESTRAINED LENGTH FOR DUCTILE IRON PIPE		
TEES	MIN RESTRAINED LENGTH ALONG RUN (LR)**	MIN RESTRAINED LENGTH ALONG BRANCH (LB)
12" x 4"	2'	2'
12" x 8"	6'	13'
12" x 12"	12'	22'



\*\* LENGTH ALONG RUN FROM TEE SHALL EXTEND THE MINIMUM SPECIFIED IN THE TABLE IN EACH DIRECTION FROM THE TEE AND SHALL BE SOLID PIPE WITHOUT JOINTS, FITTING, ETC.

**100% SUBMITTAL**



P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C1.1\_Details.dwg



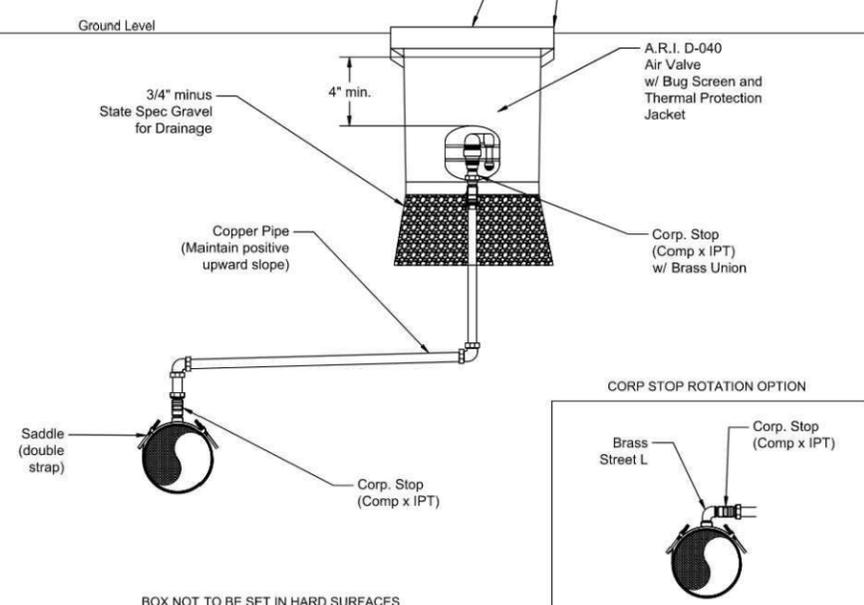
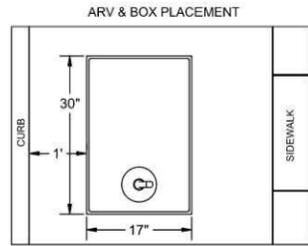
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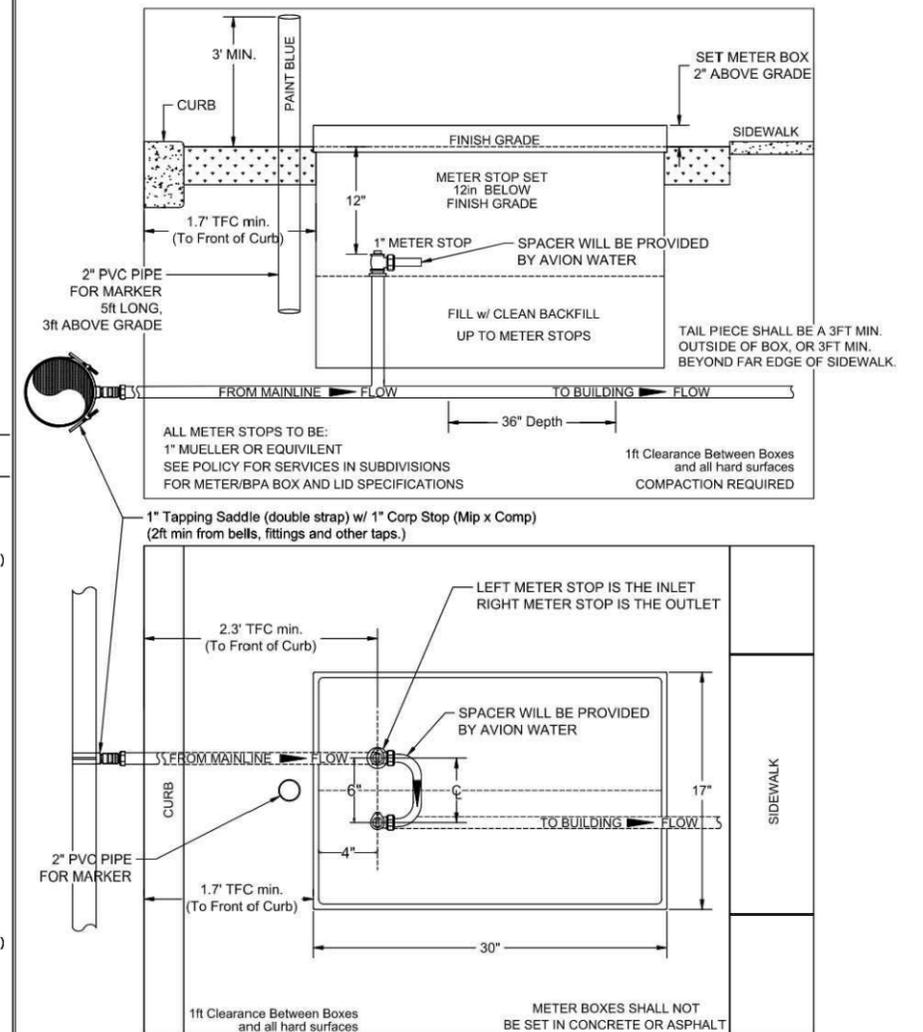
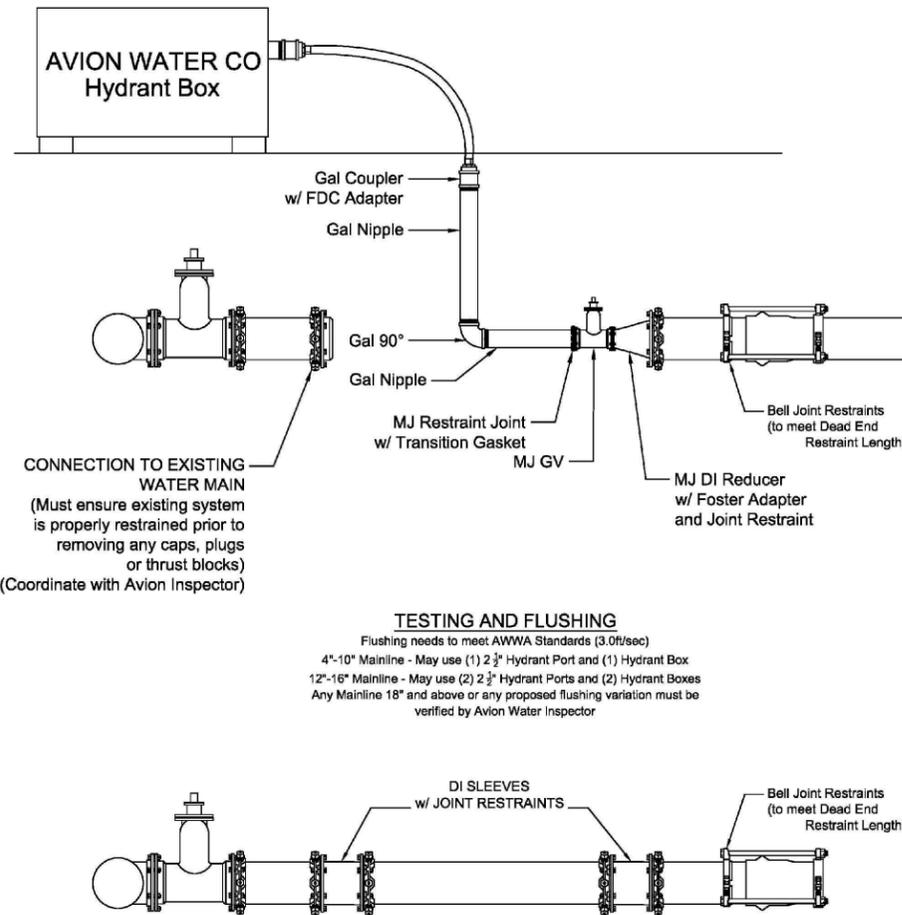
WATER DETAILS  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.  
**C1.2**  
JOB NO.  
DCO-02



MAINLINE PIPE SIZE	AIR RELIEF (Size Required)	CORP STOP (Size Required)	SADDLE (Size Required)
4" - 12"	1"	1"	(4" - 12") x 1"
14" - 24"	2"	2"	(14" - 24") x 2"

### AVION WATER CO FULL SEPARATION CHLORINATION Hot Stick Chlorination Detail



DWN BY: TEL  
DATE: JAN 2022

**Avion Water**  
BEND, OREGON

**AVION WATER CO**  
60813 PARRELL RD BEND, OR 97702

**AIR RELIEF**  
METER BOX APPLICATIONS

NOT TO SCALE

REV/DATE  
REV/DATE  
REV/DATE

DWN BY: TEL  
DATE: JAN 2022

**Avion Water**  
BEND, OREGON

**AVION WATER CO**  
60813 PARRELL RD BEND, OR 97702

**HOT STICK CONNECTION AFTER FLUSHING**  
Pipe and sleeves to be hand chlorinated

NOT TO SCALE

REV/DATE  
REV/DATE  
REV/DATE

DWN BY: TEL  
DATE: Nov 2022

**Avion Water**  
BEND, OREGON

**AVION WATER CO**  
60813 PARRELL RD BEND, OR 97702

**3/4" & 1" METER INSTALLATION**

NOT TO SCALE

REV/DATE  
REV/DATE  
REV/DATE

P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\S\Sheets\DCO02-C1.1\_Details.dwg



DATE	NO.	DESCRIPTION
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**100% SUBMITTAL**

WATER DETAILS  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

**REGISTERED PROFESSIONAL ENGINEER**  
94,828  
OREGON  
MAY 15, 2019  
**NICOLAS G. SPEROS**  
EXPIRES: 06/30/24

SHEET NO.	<b>C1.3</b>
JOB NO.	DCO-02

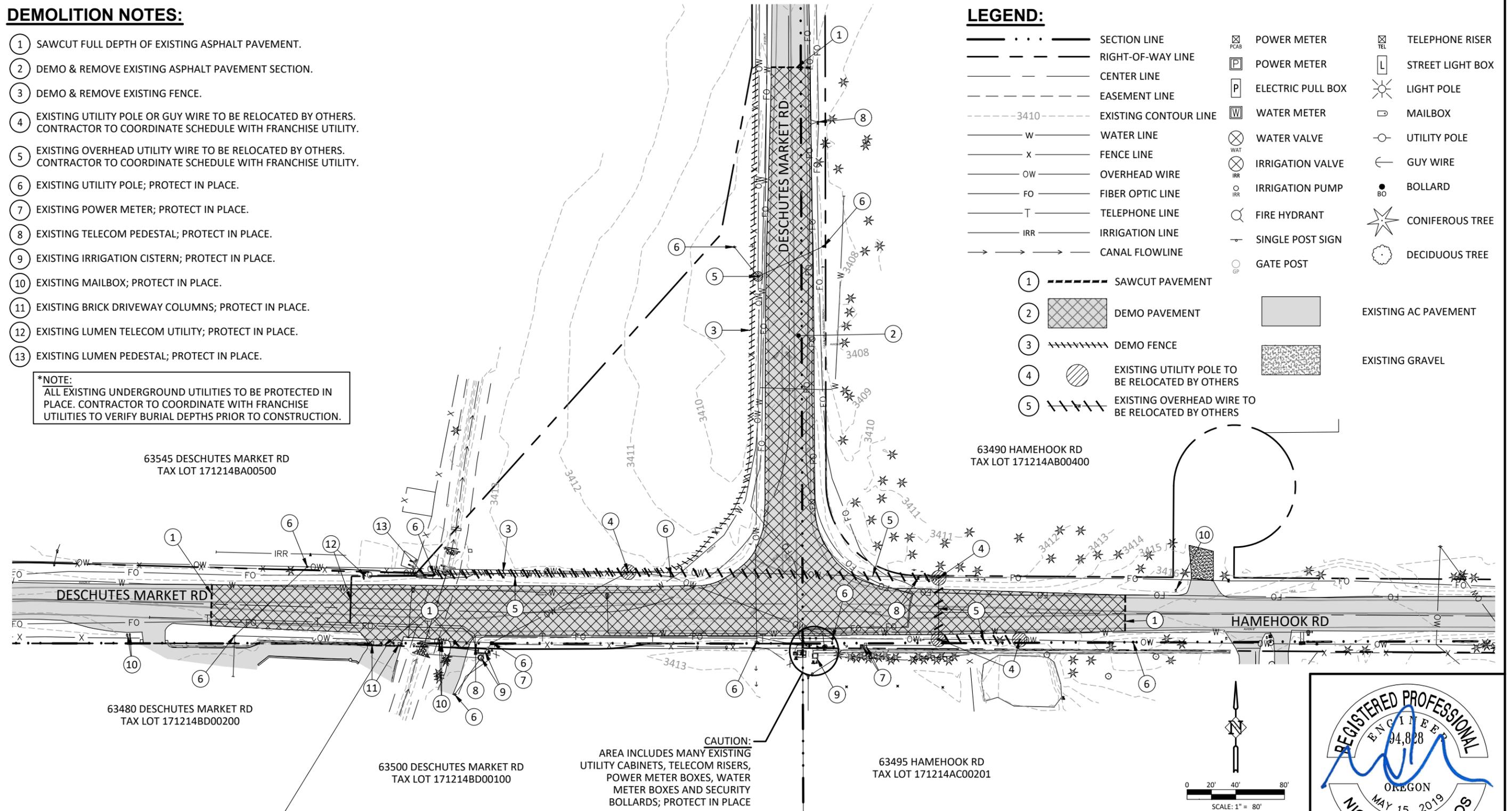
**DEMOLITION NOTES:**

- 1 SAWCUT FULL DEPTH OF EXISTING ASPHALT PAVEMENT.
- 2 DEMO & REMOVE EXISTING ASPHALT PAVEMENT SECTION.
- 3 DEMO & REMOVE EXISTING FENCE.
- 4 EXISTING UTILITY POLE OR GUY WIRE TO BE RELOCATED BY OTHERS. CONTRACTOR TO COORDINATE SCHEDULE WITH FRANCHISE UTILITY.
- 5 EXISTING OVERHEAD UTILITY WIRE TO BE RELOCATED BY OTHERS. CONTRACTOR TO COORDINATE SCHEDULE WITH FRANCHISE UTILITY.
- 6 EXISTING UTILITY POLE; PROTECT IN PLACE.
- 7 EXISTING POWER METER; PROTECT IN PLACE.
- 8 EXISTING TELECOM PEDESTAL; PROTECT IN PLACE.
- 9 EXISTING IRRIGATION CISTERN; PROTECT IN PLACE.
- 10 EXISTING MAILBOX; PROTECT IN PLACE.
- 11 EXISTING BRICK DRIVEWAY COLUMNS; PROTECT IN PLACE.
- 12 EXISTING LUMEN TELECOM UTILITY; PROTECT IN PLACE.
- 13 EXISTING LUMEN PEDESTAL; PROTECT IN PLACE.

**\*NOTE:**  
ALL EXISTING UNDERGROUND UTILITIES TO BE PROTECTED IN PLACE. CONTRACTOR TO COORDINATE WITH FRANCHISE UTILITIES TO VERIFY BURIAL DEPTHS PRIOR TO CONSTRUCTION.

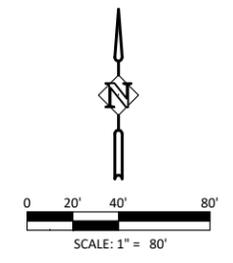
**LEGEND:**

- SECTION LINE
- - - RIGHT-OF-WAY LINE
- CENTER LINE
- - - EASEMENT LINE
- - - 3410 - - - EXISTING CONTOUR LINE
- W — WATER LINE
- X — FENCE LINE
- OW — OVERHEAD WIRE
- FO — FIBER OPTIC LINE
- T — TELEPHONE LINE
- IRR — IRRIGATION LINE
- CANAL FLOWLINE
- ⊗ PCAB POWER METER
- ⊗ P POWER METER
- ⊗ P ELECTRIC PULL BOX
- ⊗ W WATER METER
- ⊗ WAT WATER VALVE
- ⊗ IRR IRRIGATION VALVE
- ⊗ IRR IRRIGATION PUMP
- ⊗ GP GATE POST
- ⊗ TEL TELEPHONE RISER
- ⊗ L STREET LIGHT BOX
- ⊗ LIGHT POLE
- ⊗ MAILBOX
- ⊗ UTILITY POLE
- ⊗ GUY WIRE
- ⊗ BO BOLLARD
- ⊗ CONIFEROUS TREE
- ⊗ DECIDUOUS TREE
- 1 SAWCUT PAVEMENT
- 2 DEMO PAVEMENT
- 3 DEMO FENCE
- 4 EXISTING UTILITY POLE TO BE RELOCATED BY OTHERS
- 5 EXISTING OVERHEAD WIRE TO BE RELOCATED BY OTHERS
- EXISTING AC PAVEMENT
- EXISTING GRAVEL



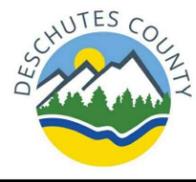
**CAUTION:**  
AREA INCLUDES MANY EXISTING UTILITY CABINETS, TELECOM RISERS, POWER METER BOXES, WATER METER BOXES AND SECURITY BOLLARDS; PROTECT IN PLACE

**EXISTING CONDITIONS & DEMOLITION PLAN**  
SCALE: 1" = 80'



**REGISTERED PROFESSIONAL ENGINEER**  
94,828  
OREGON  
MAY 15, 2019  
**NICOLAS G. SPEROS**  
EXPIRES: 06/30/24

**100% SUBMITTAL**



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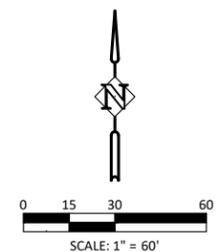
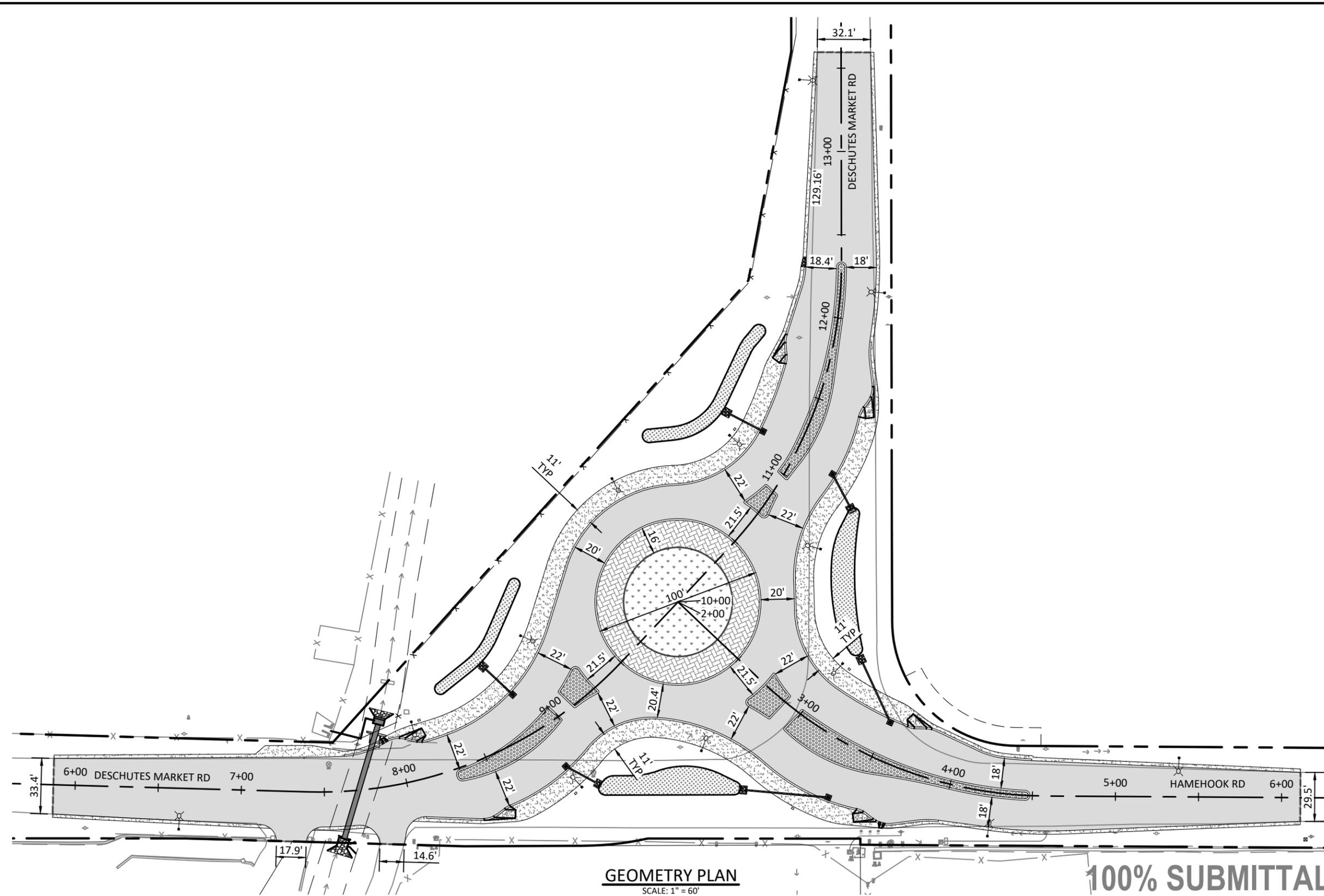
**HHPR** Harper Houf Peterson Righellis Inc.  
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EXISTING CONDITIONS & DEMO PLAN  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.  
**C2.0**  
JOB NO.  
DC0-02

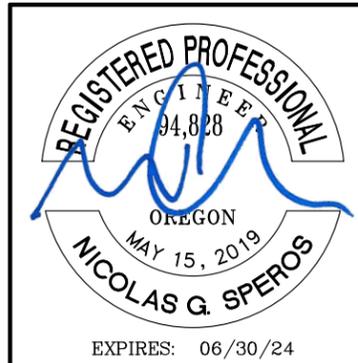
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**GEOMETRY PLAN**  
SCALE: 1" = 60'

**100% SUBMITTAL**



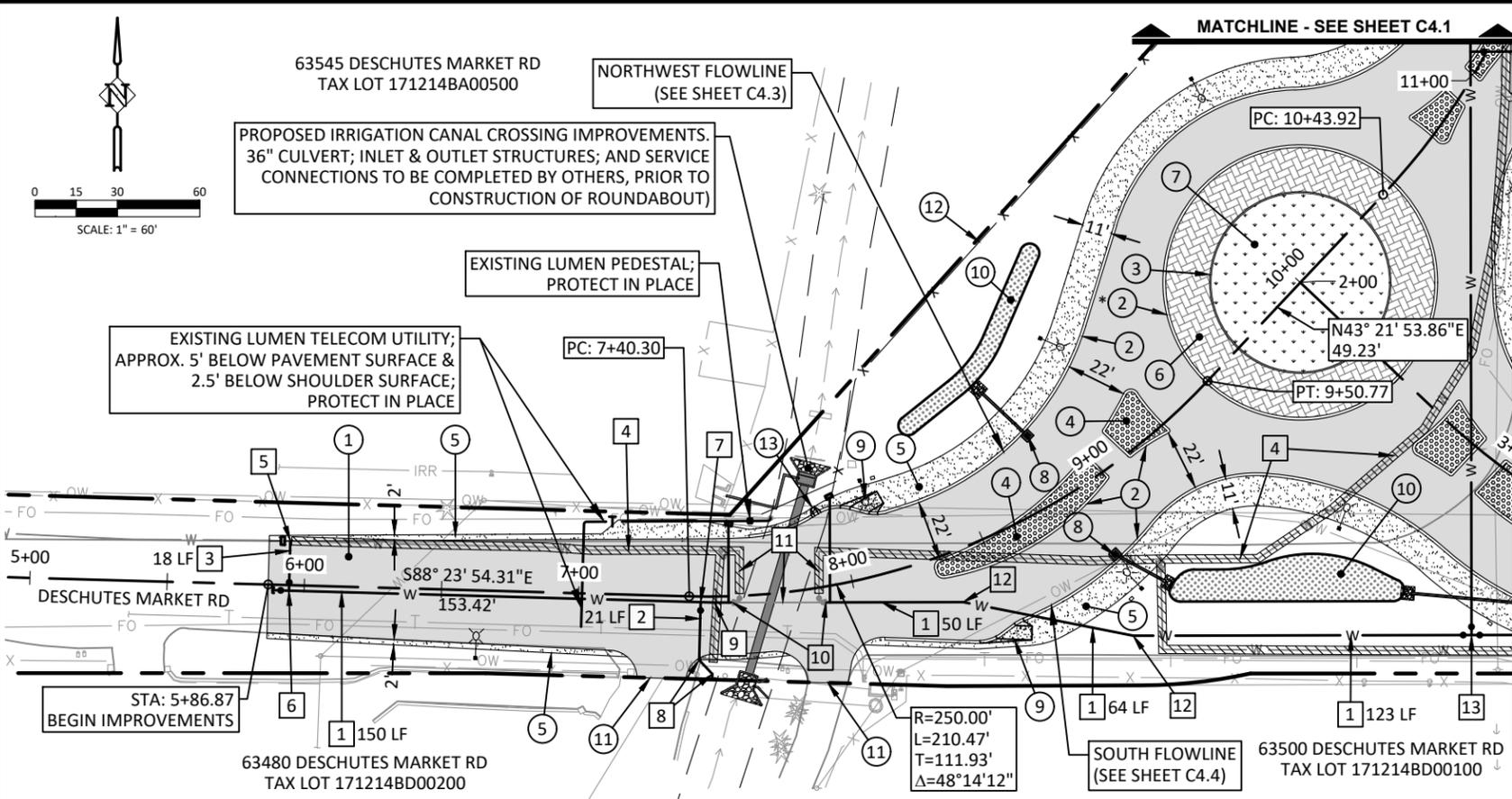
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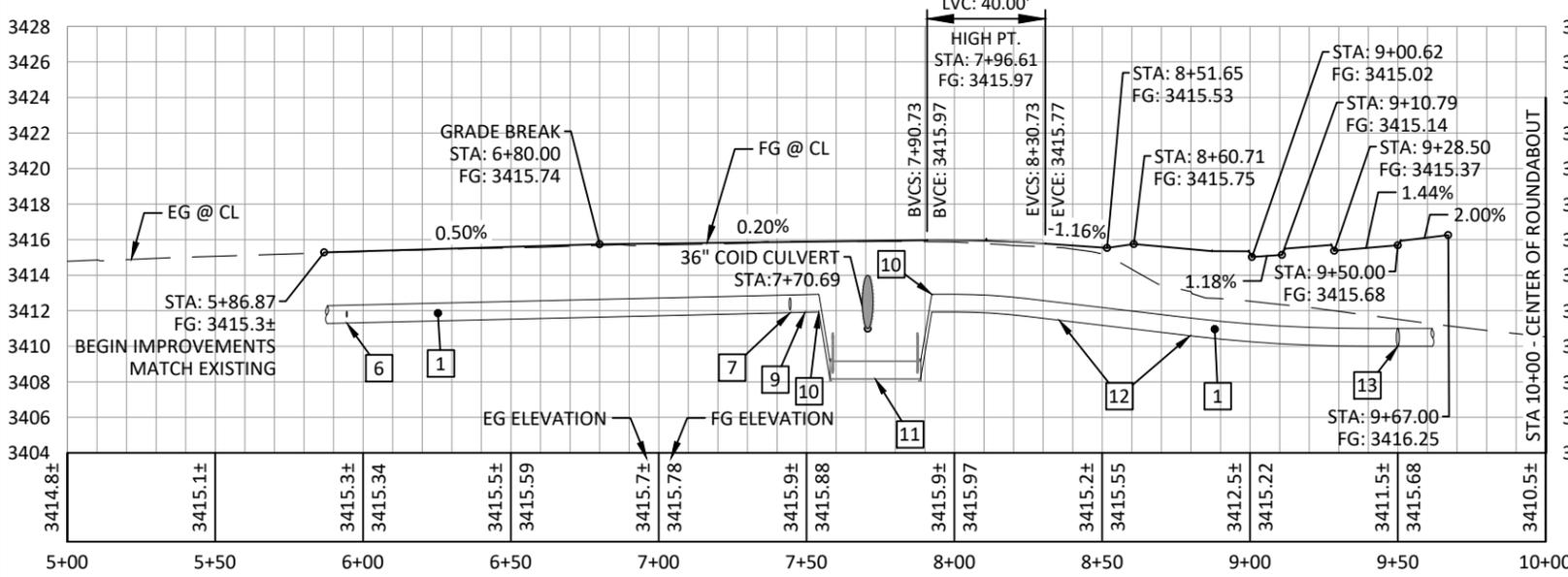
**HHPR** Harper Houf Peterson Righellis Inc.  
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GEOMETRY PLAN  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.	<b>C3.0</b>
JOB NO.	DCO-02



**DESCHUTES MARKET RD - PLAN**  
SCALE: 1" = 60'



**DESCHUTES MARKET RD (STA 5+00 TO 10+00) - PROFILE**  
SCALE: 1" = 60' (HORIZ.)  
1" = 10' (VERT.)

**WATER MAIN NOTES: 1**

- 1 CONSTRUCT 12" D.I. WATER PIPE. SEE PLAN FOR LENGTH.
- 2 CONSTRUCT 8" D.I. WATER PIPE. SEE PLAN FOR LENGTH.
- 3 CONSTRUCT 4" D.I. WATER PIPE. SEE PLAN FOR LENGTH.
- 4 DEMO AND REMOVE EXISTING WATER PIPE.
- 5 STA 5+94.48, 16.1' L (DESCHUTES MARKET RD) CONNECT TO EXISTING 4" WATER MAIN. CUT EXISTING 4" WATER MAIN; INSTALL 1 - 4" 90° BEND<sup>3</sup>; 1 - 4" STRADDLE BLOCK<sup>2</sup> WEST OF CONNECTION.
- 6 STA 5+94.48, 2.0' R (DESCHUTES MARKET RD) INSTALL 1 - 12" x 4" TEE<sup>3</sup>; 1 - 12" G.V. ASSEMBLY ON WEST LEG; 1 - 4" G.V. ASSEMBLY ON NORTH LEG; PLUG AT WEST END FOR FUTURE EXTENTION WEST.
- 7 STA 7+44.47, 2.0' R (DESCHUTES MARKET RD) INSTALL 1 - 12" x 8" TEE<sup>3</sup>; 1 - 8" G.V. ASSEMBLY ON SOUTH LEG.
- 8 STA 7+44.15, 23.1' R (DESCHUTES MARKET RD) INSTALL 1 - 8" x 3" REDUCER<sup>3</sup>; 2 - 3" 45° BENDS<sup>3</sup>; 7 LF 3" D.I. WATER PIPE; CONNECT TO EXISTING 3" WATER SERVICE AT STA 7+47.54, 28.2' R (CONTRACTOR TO VERIFY LOCATION OF EXISTING SERVICE)
- 9 STA 7+49.43, 2.2' R (DESCHUTES MARKET RD) DEFLECT AS NECESSARY. DO NOT EXCEED MANUFACTURER SPECS
- 10 STA 7+55.99, 2.3' R (DESCHUTES MARKET RD) STA 7+89.27, 5.7' R (DESCHUTES MARKET RD) INSTALL 1 - AIR RELIEF VALVE<sup>2</sup>; 2 - 12" 45° VERTICAL BENDS; REMOVE 12" PLUG; CONNECT TO EXISTING 12" WATER MAIN.
- 11 EXISTING WATER MAIN INSTALLED DURING COID CANAL CROSSING IMPROVEMENTS. CONNECT TO EXISTING 12" WATER MAIN; ABANDON EXISTING 4" WATER PIPE.
- 12 STA 8+35.44, 18.5' R (DESCHUTES MARKET RD) STA 8+79.68, 56.1' R (DESCHUTES MARKET RD) INSTALL 1 - 12" 11.25° BEND<sup>3</sup>.
- 13 STA 9+50.05, 133.3' R (DESCHUTES MARKET RD) = STA 3+21.97, 56.9' R (HAMEHOOK RD) INSTALL 1 - 12" TEE<sup>3</sup>; 3 - 12" G.V. ASSEMBLIES; SEE SHEET C4.1 FOR CONTINUATION NORTH. SEE SHEET C4.2 FOR CONTINUATION EAST.

**CONSTRUCTION NOTES:**

- 1 CONSTRUCT AC PAVEMENT SECTION PER TYPICAL SECTION DETAILS ON SHEET C1.0. DEPTH VARIES.
- 2 CONSTRUCT LOW-PROFILE MOUNTABLE CONCRETE CURB PER DETAIL ON SHEET C1.1. \*NOTE: TRUCK APRON, 0" LIP.
- 3 CONSTRUCT HIGH-STRENGTH CONCRETE CURB PER DETAIL ON SHEET C1.1.
- 4 CONSTRUCT CONCRETE SPLITTER ISLAND PER DETAIL ON SHEET C1.1. SEE SHEET C6.1 FOR DETAILED GRADING PLAN.
- 5 CONSTRUCT AGGREGATE SHOULDER PER TYPICAL SECTION DETAILS ON SHEET C1.0. WIDTH NOTED ON PLAN.
- 6 CONSTRUCT 8" STAMPED CONCRETE MOUNTABLE TRUCK APRON PER TYPICAL SECTION DETAIL ON SHEET C1.0.
- 7 CONSTRUCT LANDSCAPED CENTER ISLAND. SEE SHEET L1.0 FOR LANDSCAPING PLAN.
- 8 PROPOSED CATCH BASIN. SEE SHEETS C4.3-C4.5 FOR MORE INFORMATION.
- 9 CONSTRUCT CONCRETE BICYCLE RAMP PER DETAIL ON SHEET C1.1. SEE SHEETS 6.1-6.3 FOR DETAILED GRADING PLAN.
- 10 CONSTRUCT WATER QUALITY DRAINAGE SWALE PER DETAIL ON SHEET C1.1. SEE SHEET C5.0 FOR MORE INFORMATION.
- 11 CONSTRUCT AC DRIVEWAY APRON. SEE SHEET C6.1 FOR DETAILED GRADING PLAN.
- 12 CONSTRUCT BARBED WIRE FENCE PER DETAIL ON SHEET C1.1. STA 7+73.00 TO STA 10+00.00
- 13 CONSTRUCT CURB CUT AT LOWPOINT PER DETAIL ON SHEET C1.1.

**NOTES:**  
1. ALL WATER IMPROVEMENTS TO BE CONSTRUCTED PER AVION WATER COMPANY STANDARDS AND SPECIFICATIONS. CONTRACTOR TO COORDINATE WATER MAIN SHUT-OFF WITH AVION WATER COMPANY.  
2. SEE SHEETS C1.2 & C1.3 FOR DETAILS.  
3. RESTRAIN FITTINGS PER TABLE ON SHEET C1.2.

**LEGEND**

- 1 AC PAVEMENT
- 4 CONCRETE ISLAND
- 5 AGGREGATE SHOULDER
- 6 CONCRETE TRUCK APRON
- 7 LANDSCAPED ISLAND
- 10 WATER QUALITY SWALE
- W — (P) WATER MAIN
- W — (E) WATER MAIN
- DEMOWATER MAIN

**100% SUBMITTAL**



P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C4\_Plan & Profile.dwg



DATE	NO.	DESCRIPTION
REVISIONS		

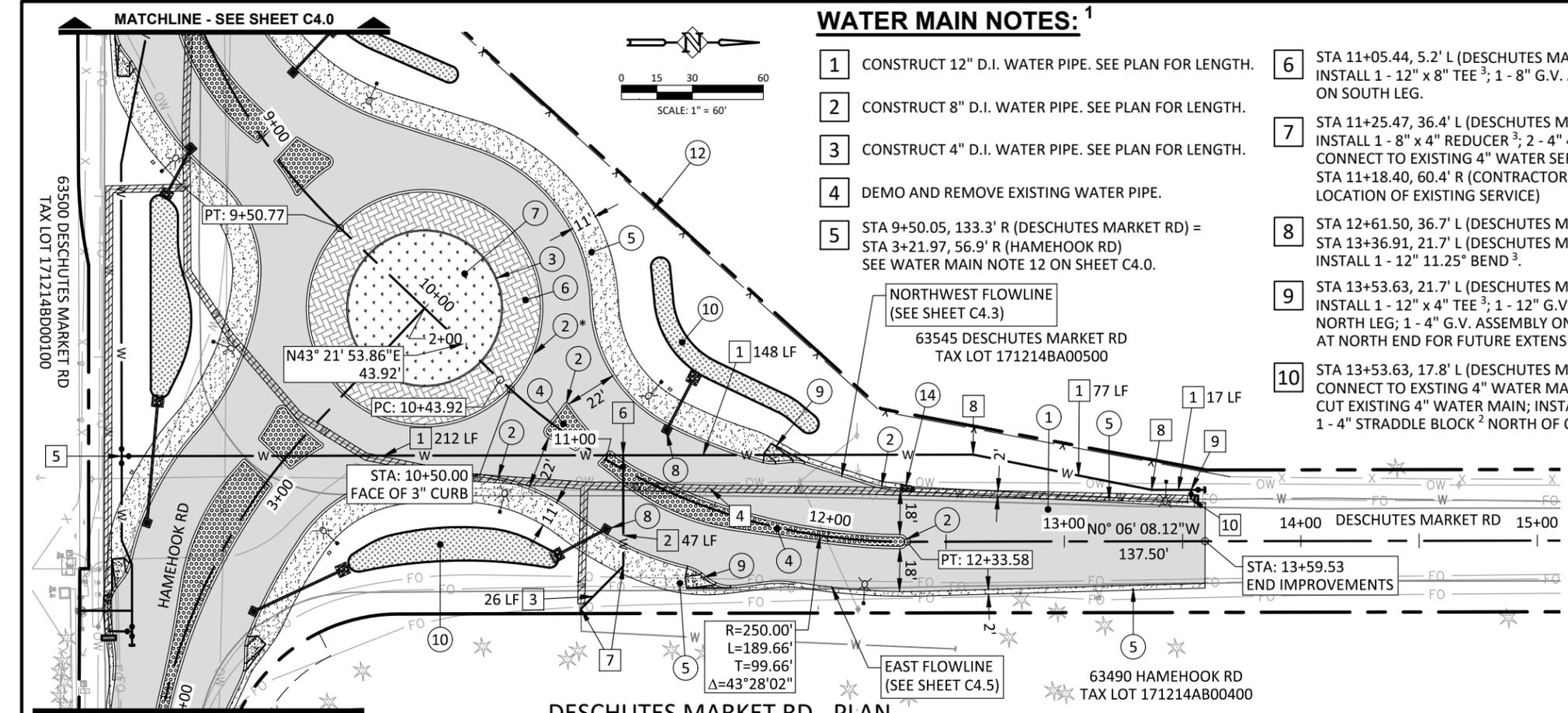
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**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

**C4.0**

SHEET NO.  
JOB NO. DCO-02



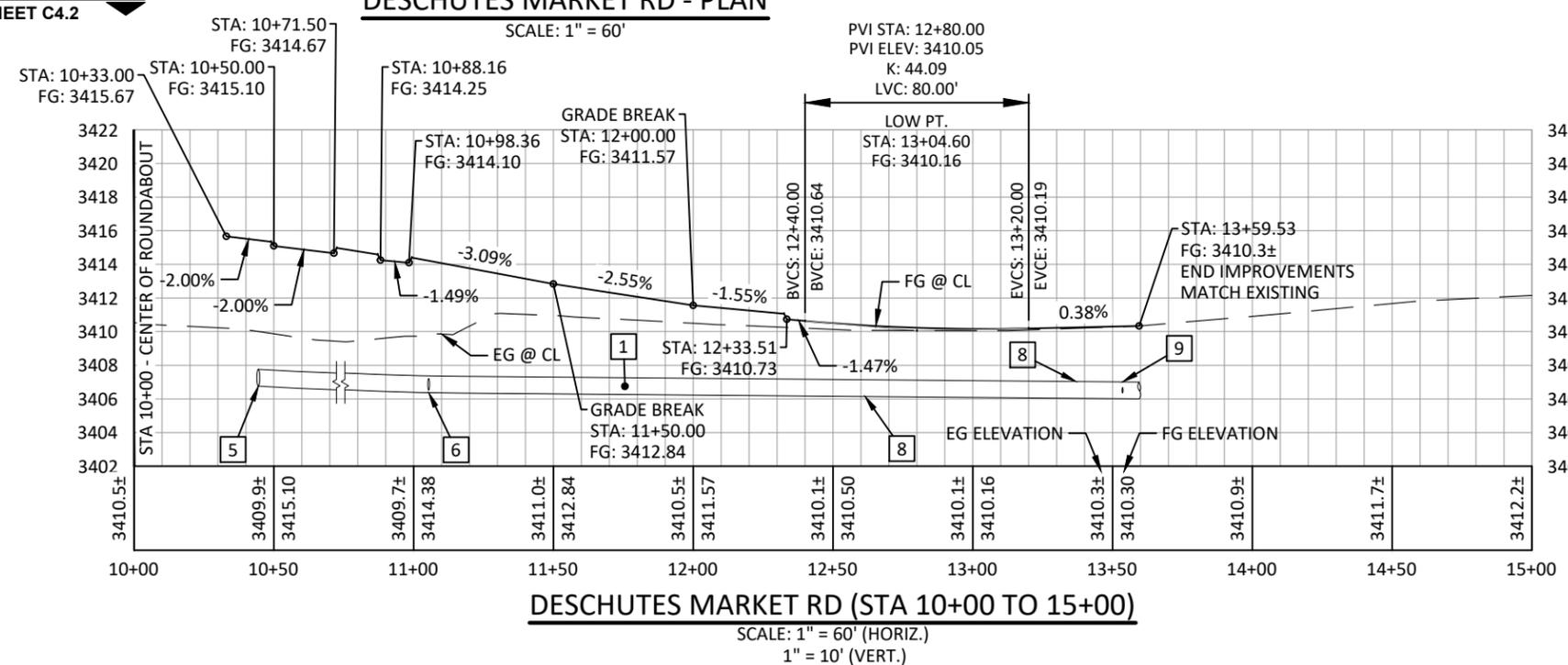
- CONSTRUCTION NOTES:**
- CONSTRUCT AC PAVEMENT SECTION PER TYPICAL SECTION DETAILS ON SHEET C1.0. DEPTH VARIES.
  - CONSTRUCT LOW-PROFILE MOUNTABLE CONCRETE CURB PER DETAIL ON SHEET C1.1. \*NOTE: TRUCK APRON, 0" LIP.
  - CONSTRUCT HIGH-STRENGTH CONCRETE CURB PER DETAIL ON SHEET C1.1.
  - CONSTRUCT CONCRETE SPLITTER ISLAND PER DETAIL ON SHEET C1.1. SEE SHEET C6.2 FOR DETAILED GRADING PLAN.
  - CONSTRUCT AGGREGATE SHOULDER PER TYPICAL SECTION DETAILS ON SHEET C1.0. WIDTH NOTED ON PLAN.
  - CONSTRUCT 8" STAMPED CONCRETE MOUNTABLE TRUCK APRON PER TYPICAL SECTION DETAIL ON SHEET C1.0.
  - CONSTRUCT LANDSCAPED CENTER ISLAND. SEE SHEET L1.0 FOR LANDSCAPING PLAN.
  - PROPOSED CATCH BASIN. SEE SHEETS C4.3-C4.5 FOR MORE INFORMATION.
  - CONSTRUCT CONCRETE BICYCLE RAMP PER DETAIL ON SHEET C1.1. SEE SHEETS 6.1-6.3 FOR DETAILED GRADING PLAN.
  - CONSTRUCT WATER QUALITY DRAINAGE SWALE PER DETAIL ON SHEET C1.1. SEE SHEET C5.0 FOR MORE INFORMATION.
  - CONSTRUCT BARBED WIRE FENCE PER DETAIL ON SHEET C1.1. STA 10+00.00 TO STA 13+34.38
  - CONSTRUCT 5' x 5' CLASS 50 RIP RAP BASIN (12" DEPTH) AT END OF CURB.

**LEGEND**

1	AC PAVEMENT	W (P)	WATER MAIN
4	CONCRETE ISLAND	W (E)	WATER MAIN
5	AGGREGATE SHOULDER	W	DEMO WATER MAIN
6	CONCRETE TRUCK APRON		
7	LANDSCAPED ISLAND		
10	WATER QUALITY SWALE		

**NOTES:**

- ALL WATER IMPROVEMENTS TO BE CONSTRUCTED PER AVION WATER COMPANY STANDARDS AND SPECIFICATIONS. CONTRACTOR TO COORDINATE WATER MAIN SHUT-OFF WITH AVION WATER COMPANY.
- SEE SHEETS C1.2 & C1.3 FOR DETAILS.
- RESTRAIN FITTINGS PER TABLE ON SHEET C1.2.



**100% SUBMITTAL**

P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C4\_Plan & Profile.dwg



DATE	NO.	DESCRIPTION
REVISIONS		

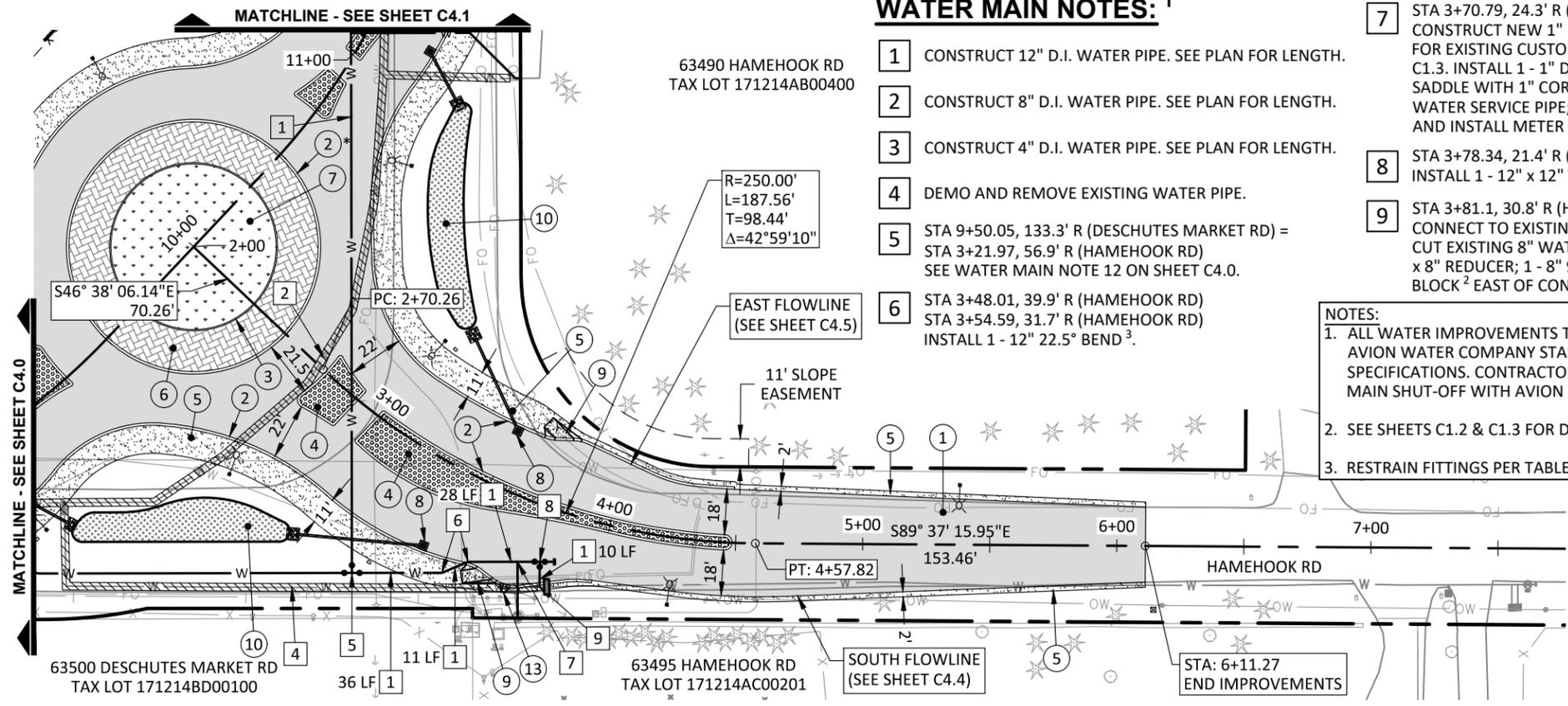
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PLAN & PROFILE - NORTH LEG  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

**REGISTERED PROFESSIONAL ENGINEER**  
94,828  
OREGON  
MAY 15, 2019  
**NICOLAS G. SPEROS**  
EXPIRES: 06/30/24

SHEET NO.  
**C4.1**  
JOB NO.  
DCO-02



**WATER MAIN NOTES: 1**

- 1 CONSTRUCT 12" D.I. WATER PIPE. SEE PLAN FOR LENGTH.
- 2 CONSTRUCT 8" D.I. WATER PIPE. SEE PLAN FOR LENGTH.
- 3 CONSTRUCT 4" D.I. WATER PIPE. SEE PLAN FOR LENGTH.
- 4 DEMO AND REMOVE EXISTING WATER PIPE.
- 5 STA 9+50.05, 133.3' R (DESCHUTES MARKET RD) = STA 3+21.97, 56.9' R (HAMEHOOK RD) SEE WATER MAIN NOTE 12 ON SHEET C4.0.
- 6 STA 3+48.01, 39.9' R (HAMEHOOK RD) STA 3+54.59, 31.7' R (HAMEHOOK RD) INSTALL 1 - 12" 22.5° BEND<sup>3</sup>.

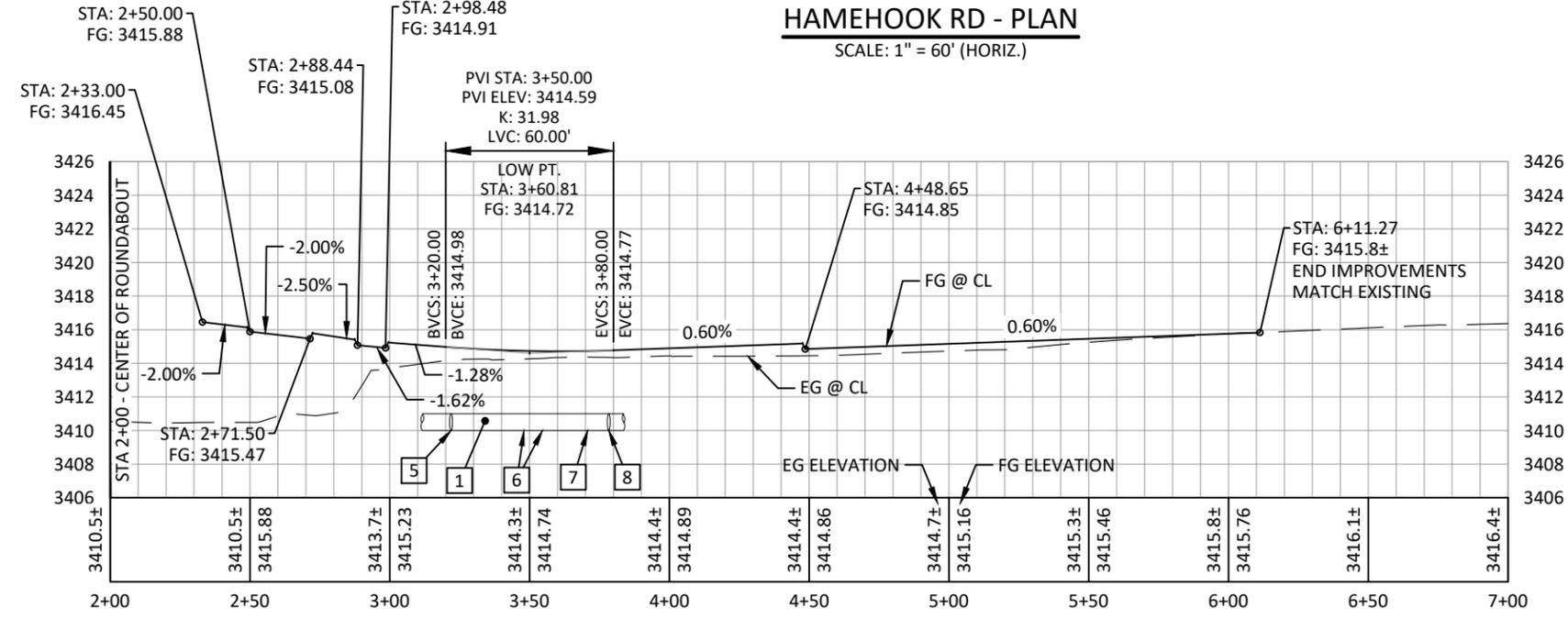
- 7 STA 3+70.79, 24.3' R (HAMEHOOK RD) CONSTRUCT NEW 1" DOMESTIC WATER SERVICE FOR EXISTING CUSTOMER PER DETAIL ON SHEET C1.3. INSTALL 1 - 1" DOUBLE STRAP TAPPING SADDLE WITH 1" CORP STOP; 22 LF 1" COPPER WATER SERVICE PIPE; AVION WATER TO PROVIDE AND INSTALL METER AND BACKFLOW DEVICE.
- 8 STA 3+78.34, 21.4' R (HAMEHOOK RD) INSTALL 1 - 12" x 12" TEE<sup>3</sup>; 3 - 12" G.V. ASSEMBLIES.
- 9 STA 3+81.1, 30.8' R (HAMEHOOK RD) CONNECT TO EXISTING 8" WATER MAIN. CUT EXISTING 8" WATER MAIN; INSTALL 1 - 12" x 8" REDUCER; 1 - 8" 90° BEND; 1 - 8" STRADDLE BLOCK<sup>2</sup> EAST OF CONNECTION.

**NOTES:**  
 1. ALL WATER IMPROVEMENTS TO BE CONSTRUCTED PER AVION WATER COMPANY STANDARDS AND SPECIFICATIONS. CONTRACTOR TO COORDINATE WATER MAIN SHUT-OFF WITH AVION WATER COMPANY.  
 2. SEE SHEETS C1.2 & C1.3 FOR DETAILS.  
 3. RESTRAIN FITTINGS PER TABLE ON SHEET C1.2.

**CONSTRUCTION NOTES:**

- 1 CONSTRUCT AC PAVEMENT SECTION PER TYPICAL SECTION DETAILS ON SHEET C1.0. DEPTH VARIES.
- 2 CONSTRUCT LOW-PROFILE MOUNTABLE CONCRETE CURB PER DETAIL ON SHEET C1.1. \*NOTE: TRUCK APRON, 0" LIP.
- 3 CONSTRUCT HIGH-STRENGTH CONCRETE CURB PER DETAIL ON SHEET C1.1.
- 4 CONSTRUCT CONCRETE SPLITTER ISLAND PER DETAIL ON SHEET C1.1. SEE SHEET C6.3 FOR DETAILED GRADING PLAN.
- 5 CONSTRUCT AGGREGATE SHOULDER PER TYPICAL SECTION DETAILS ON SHEET C1.0. WIDTH NOTED ON PLAN.
- 6 CONSTRUCT 8" STAMPED CONCRETE MOUNTABLE TRUCK APRON PER TYPICAL SECTION DETAIL ON SHEET C1.0.
- 7 CONSTRUCT LANDSCAPED CENTER ISLAND. SEE SHEET L1.0 FOR LANDSCAPING PLAN.
- 8 PROPOSED CATCH BASIN. SEE SHEETS C4.3-C4.5 FOR MORE INFORMATION.
- 9 CONSTRUCT CONCRETE BICYCLE RAMP PER DETAIL ON SHEET C1.1. SEE SHEETS 6.1-6.3 FOR DETAILED GRADING PLAN.
- 10 CONSTRUCT WATER QUALITY DRAINAGE SWALE PER DETAIL ON SHEET C1.1. SEE SHEET C5.0 FOR MORE INFORMATION.
- 13 CONSTRUCT CURB CUT AT LOWPOINT PER DETAIL ON SHEET C1.1.

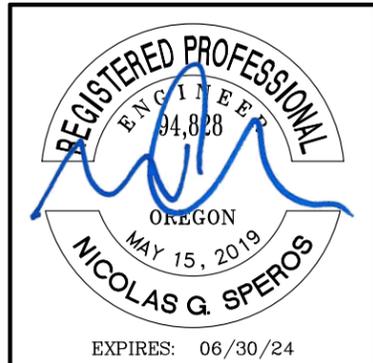
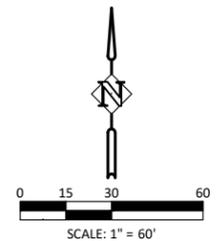
**HAMEHOOK RD - PLAN**  
SCALE: 1" = 60' (HORIZ.)



**HAMEHOOK RD - PROFILE**  
SCALE: 1" = 60' (HORIZ.)  
1" = 10' (VERT.)

**LEGEND**

- 1 AC PAVEMENT
- 4 CONCRETE ISLAND
- 5 AGGREGATE SHOULDER
- 6 CONCRETE TRUCK APRON
- 7 LANDSCAPED ISLAND
- 10 WATER QUALITY SWALE
- W (P) WATER MAIN
- W (E) WATER MAIN
- W DEMO WATER MAIN



**100% SUBMITTAL**

PLAN & PROFILE - EAST LEG  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

SHEET NO.  
**C4.2**  
 JOB NO.  
 DCO-02

P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\S\Sheets\DCO02-C4\_Plan & Profile.dwg



DATE	NO.	DESCRIPTION
REVISIONS		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

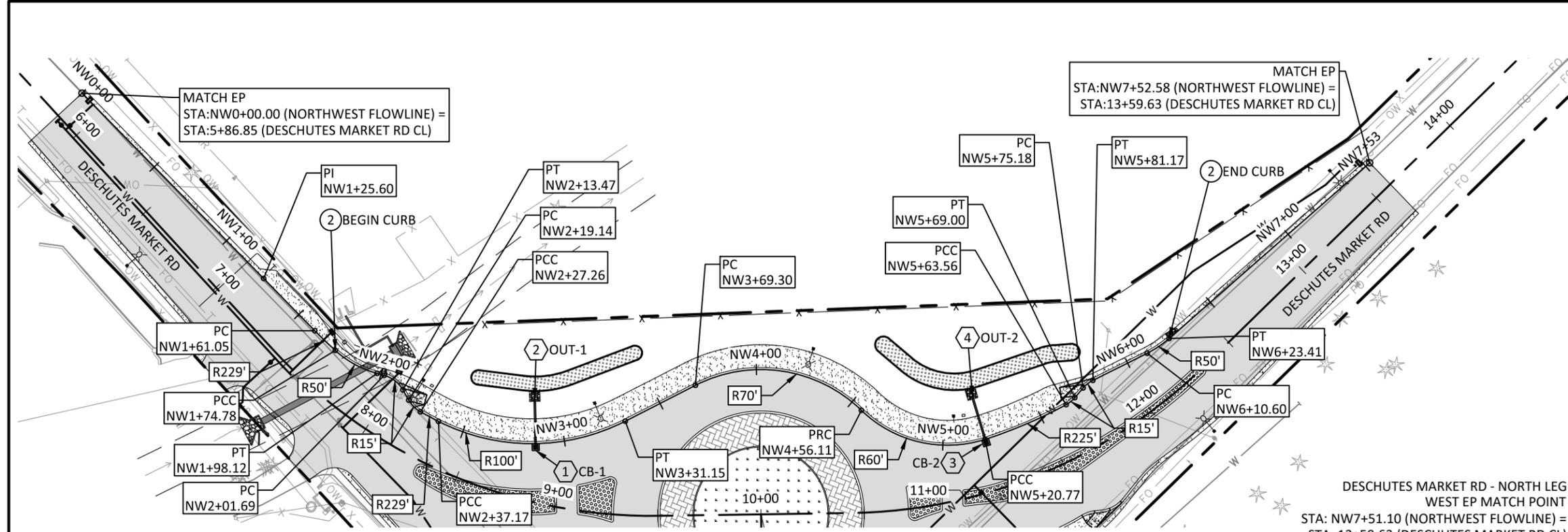
**HHPR** Harper Houf Peterson Righellis Inc.  
 ENGINEERS \* PLANNERS  
 LANDSCAPE ARCHITECTS \* SURVEYORS  
 250 NW Franklin Ave., Suite 404, Bend, OR 97703  
 phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

**CONSTRUCTION NOTES:**

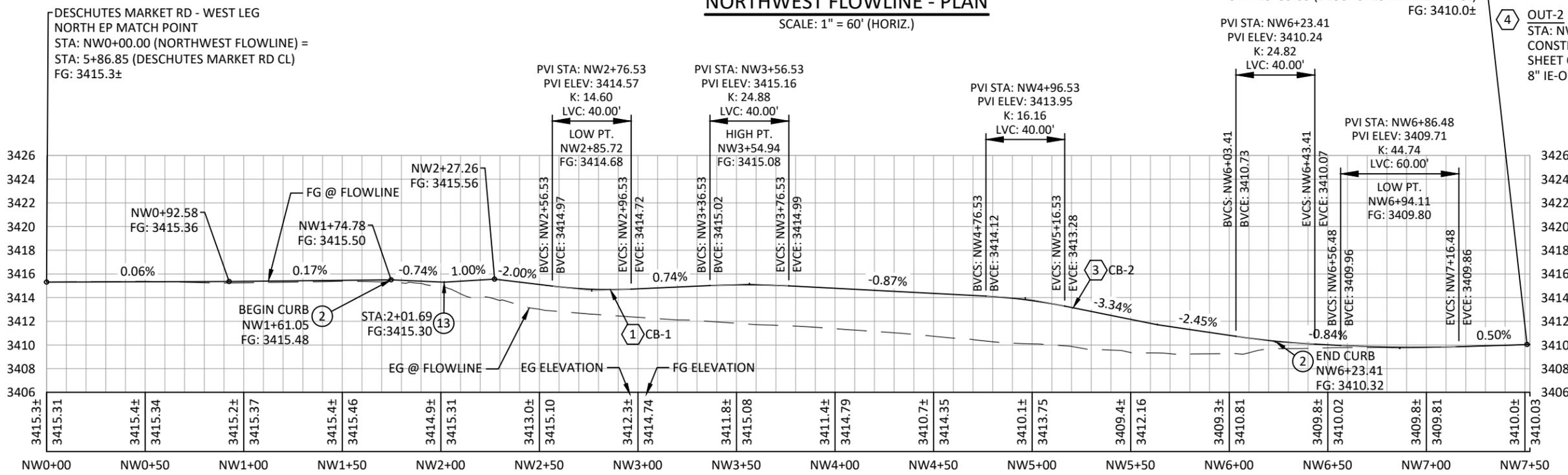
- 2 CONSTRUCT LOW-PROFILE MOUNTABLE CONCRETE CURB PER DETAIL ON SHEET C1.1. SEE PLAN FOR STATION RANGE.
- 13 CONSTRUCT CURB CUT AT LOWPOINT PER DETAIL ON SHEET C1.1.

**STORM SEWER NOTES:**

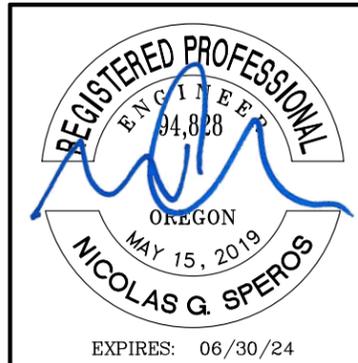
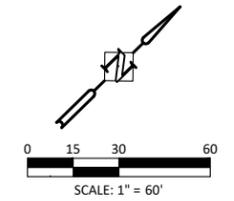
- 1 CB-1  
STA: NW2+85.94, 0.0' (NORTHWEST FLOWLINE)  
CONSTRUCT G-2 CATCH BASIN PER ODOT STD DWGS RD364 & RD365.  
GUTTER = 3414.68  
8" IE-OUT (NW) = 3412.68  
CONSTRUCT 23.1 LF HDPE 8" PIPE @ S = -1.7% TO PIPE OUTLET (OUT-1). SEE NOTE 2.
- 2 OUT-1  
STA: NW2+85.94, 21.4' L (NORTHWEST FLOWLINE)  
CONSTRUCT STORM OUTFALL PER DETAIL ON SHEET C1.1.  
8" IE-OUT (NW) = 3412.29
- 3 CB-2  
STA: NW5+20.78, 0.0' (NORTHWEST FLOWLINE)  
CONSTRUCT G-2 CATCH BASIN PER ODOT STD DWGS RD364 & RD365.  
GUTTER = 3413.14  
8" IE-OUT (W) = 3410.64  
CONSTRUCT 23.0 LF HDPE 8" PIPE @ S = -2.3% TO PIPE OUTLET (OUT-2). SEE NOTE 4.
- 4 OUT-2  
STA: NW5+21.17, 21.4' L (NORTHWEST FLOWLINE)  
CONSTRUCT STORM OUTFALL PER DETAIL ON SHEET C1.1.  
8" IE-OUT (W) = 3410.11



**NORTHWEST FLOWLINE - PLAN**  
SCALE: 1" = 60' (HORIZ.)



**NORTHWEST FLOWLINE - PROFILE**  
SCALE: 1" = 60' (HORIZ.)  
1" = 10' (VERT.)



**100% SUBMITTAL**

DATE	NO.	DESCRIPTION
REVISIONS		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

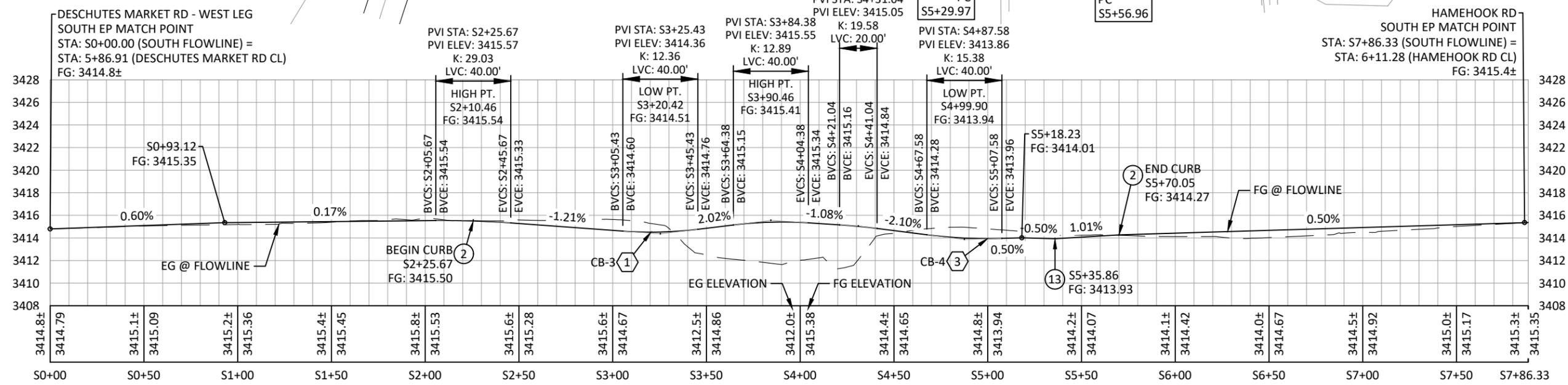
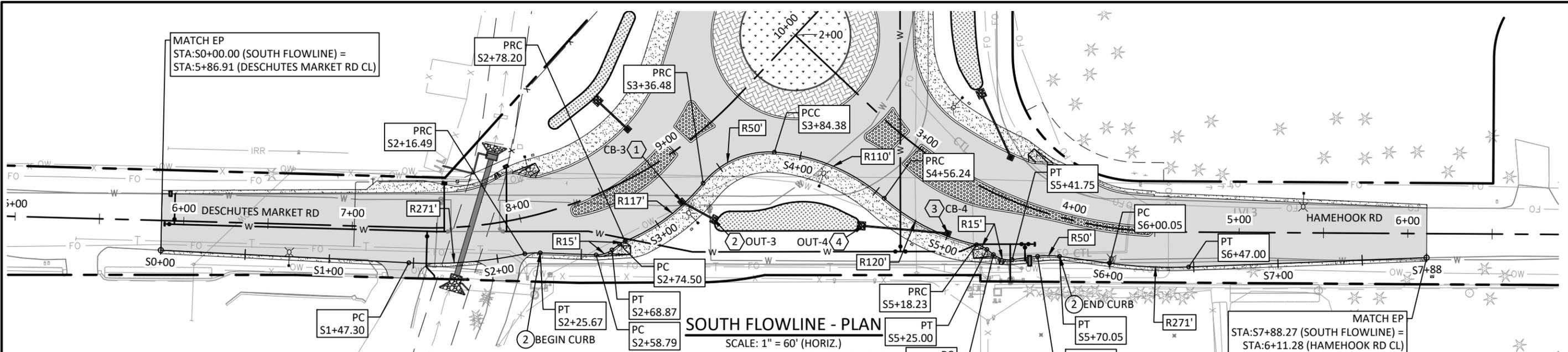
**HHPR** Harper Houf Peterson Righellis Inc.  
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LANDSCAPE ARCHITECTS\*SURVEYORS  
250 NW Franklin Ave., Suite 404, Bend, OR 97703  
phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

**PLAN & PROFILE - NORTHWEST FLOWLINE**  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.  
**C4.3**  
JOB NO.  
DC0-02

P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C4\_Plan & Profile.dwg



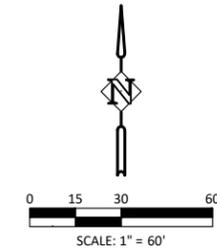


**STORM SEWER NOTES:**

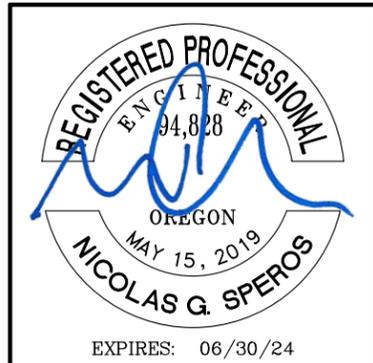
- ① CB-3  
STA: S3+20.42, 0.0' (SOUTH FLOWLINE)  
CONSTRUCT G-2 CATCH BASIN PER ODOT STD DWGS RD364 & RD365.  
GUTTER = 3414.51  
8" IE-OUT (NW) = 3412.51  
CONSTRUCT 21.0 LF HDPE 8" PIPE @ S = -1.0%  
TO PIPE OUTLET (OUT-3). SEE NOTE 2.
- ② OUT-3  
STA: S3+25.49, 18.4' R (SOUTH FLOWLINE)  
CONSTRUCT STORM OUTFALL PER DETAIL ON SHEET C1.1.  
8" IE-OUT (NW) = 3412.30
- ③ CB-4  
STA: S4+99.90, 0.0' (SOUTH FLOWLINE)  
CONSTRUCT G-2 CATCH BASIN PER ODOT STD DWGS RD364 & RD365.  
GUTTER = 3413.94  
8" IE-OUT (W) = 3412.27  
CONSTRUCT 50.0 LF HDPE 8" PIPE @ S = -0.50%  
TO PIPE OUTLET (OUT-4). SEE NOTE 4.
- ④ OUT-4  
STA: S4+57.75, 20.3' R (SOUTH FLOWLINE)  
CONSTRUCT STORM OUTFALL PER DETAIL ON SHEET C1.1.  
8" IE-OUT (W) = 3412.02

**CONSTRUCTION NOTES:**

- ② CONSTRUCT LOW-PROFILE MOUNTABLE CONCRETE CURB PER DETAIL ON SHEET C1.1. SEE PLAN FOR STATION RANGE.
- ⑬ CONSTRUCT CURB CUT AT LOWPOINT PER DETAIL ON SHEET C1.1.



**100% SUBMITTAL**



P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWGS\Sheets\DCO02-C4\_Plan & Profile.dwg



DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED:	MD
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CHECKED:	NS
DATE:	01.30.2023

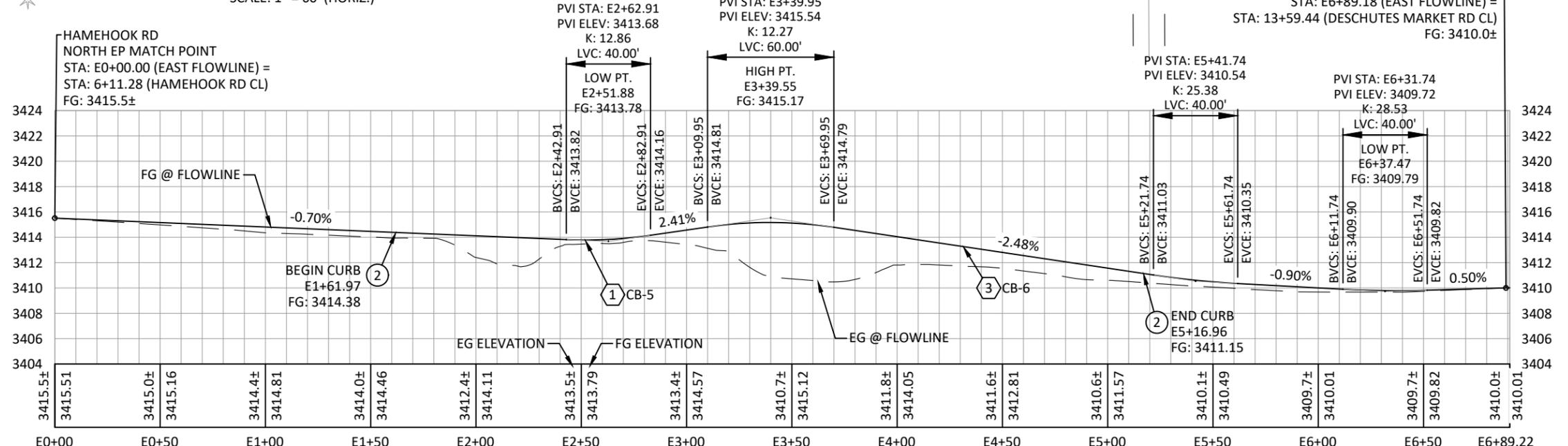
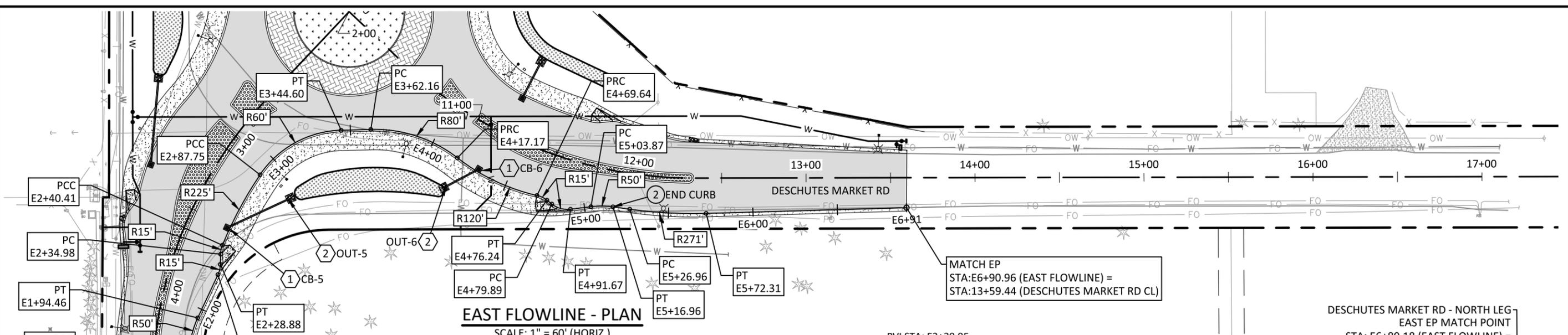
**HHPR** Harper Houf Peterson Righellis Inc.  
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phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

PLAN & PROFILE - SOUTH FLOWLINE  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

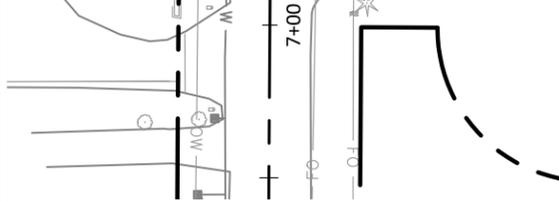
SHEET NO.  
**C4.4**  
JOB NO.  
DCO-02

EXPIRES: 06/30/24

P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\SS\Sheets\DCO02-C4\_Plan & Profile.dwg



MATCH EP  
STA: E0+00.00 (EAST FLOWLINE) =  
STA: 6+11.28 (HAMEHOOK RD CL)

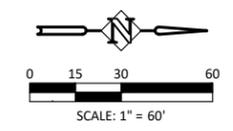


**STORM SEWER NOTES:**

- ① CB-5  
STA: E2+51.88, 0.0' (EAST FLOWLINE)  
CONSTRUCT G-2 CATCH BASIN PER ODOT STD DWGS RD364 & RD365.  
GUTTER = 3413.78  
8" IE-OUT (NW) = 3412.11  
CONSTRUCT 40.0 LF HDPE 8" PIPE @ S = -0.9% TO PIPE OUTLET (OUT-5). SEE NOTE 2.
- ② OUT-5  
STA: E2+84.92, 21.9' R (EAST FLOWLINE)  
CONSTRUCT STORM OUTFALL PER DETAIL ON SHEET C1.1.  
8" IE-OUT (NW) = 3411.75
- ③ CB-6  
STA: E4+31.41, 0.0' (EAST FLOWLINE)  
CONSTRUCT G-2 CATCH BASIN PER ODOT STD DWGS RD364 & RD365.  
GUTTER = 3413.27  
8" IE-OUT (W) = 3411.6  
CONSTRUCT 22.0 LF HDPE 8" PIPE @ S = -0.9% TO PIPE OUTLET (OUT-6). SEE NOTE 4.
- ④ OUT-6  
STA: E4+21.51, 17.7' R (EAST FLOWLINE)  
CONSTRUCT STORM OUTFALL PER DETAIL ON SHEET C1.1.  
8" IE-OUT (W) = 3411.40

**CONSTRUCTION NOTES:**

- ② CONSTRUCT LOW-PROFILE MOUNTABLE CONCRETE CURB PER DETAIL ON SHEET C1.1. SEE PLAN FOR STATION RANGE.



**100% SUBMITTAL**

REGISTERED PROFESSIONAL ENGINEER  
94,828  
OREGON  
MAY 15, 2019  
NICOLAS G. SPEROS  
EXPIRES: 06/30/24



DATE	NO.	DESCRIPTION
REVISIONS		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

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phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

PLAN & PROFILE - EAST FLOWLINE  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.  
**C4.5**  
JOB NO.  
DCO-02

**ESC & GRADING NOTES**

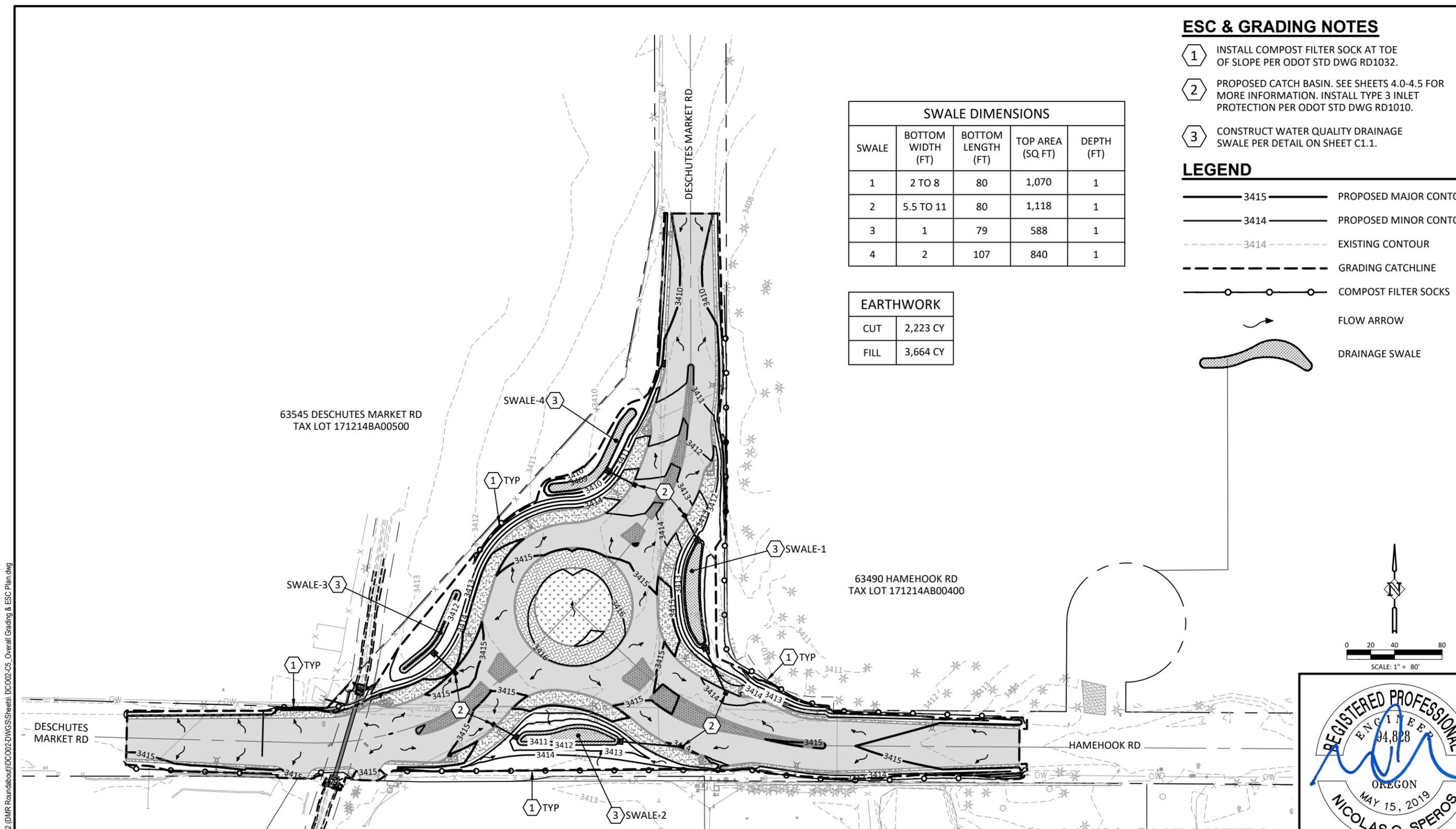
- 1 INSTALL COMPOST FILTER SOCK AT TOE OF SLOPE PER ODOT STD DWG RD1032.
- 2 PROPOSED CATCH BASIN. SEE SHEETS 4.0-4.5 FOR MORE INFORMATION. INSTALL TYPE 3 INLET PROTECTION PER ODOT STD DWG RD1010.
- 3 CONSTRUCT WATER QUALITY DRAINAGE SWALE PER DETAIL ON SHEET C1.1.

**LEGEND**

- 3415 — PROPOSED MAJOR CONTOUR
- 3414 — PROPOSED MINOR CONTOUR
- - - 3414 - - - EXISTING CONTOUR
- - - - - GRADING CATCHLINE
- ○ ○ ○ ○ COMPOST FILTER SOCKS
- FLOW ARROW
- DRAINAGE SWALE

SWALE DIMENSIONS				
SWALE	BOTTOM WIDTH (FT)	BOTTOM LENGTH (FT)	TOP AREA (SQ FT)	DEPTH (FT)
1	2 TO 8	80	1,070	1
2	5.5 TO 11	80	1,118	1
3	1	79	588	1
4	2	107	840	1

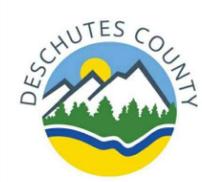
EARTHWORK	
CUT	2,223 CY
FILL	3,664 CY



**OVERALL GRADING & DRAINAGE PLAN**  
SCALE: 1" = 80'

**100% SUBMITTAL**

REGISTERED PROFESSIONAL ENGINEER  
94,828  
OREGON  
MAY 15, 2019  
NICOLAS G. SPEROS  
EXPIRES: 06/30/24



DATE	NO.	DESCRIPTION
REVISIONS		

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CHECKED:	NS
DATE:	01.30.2023

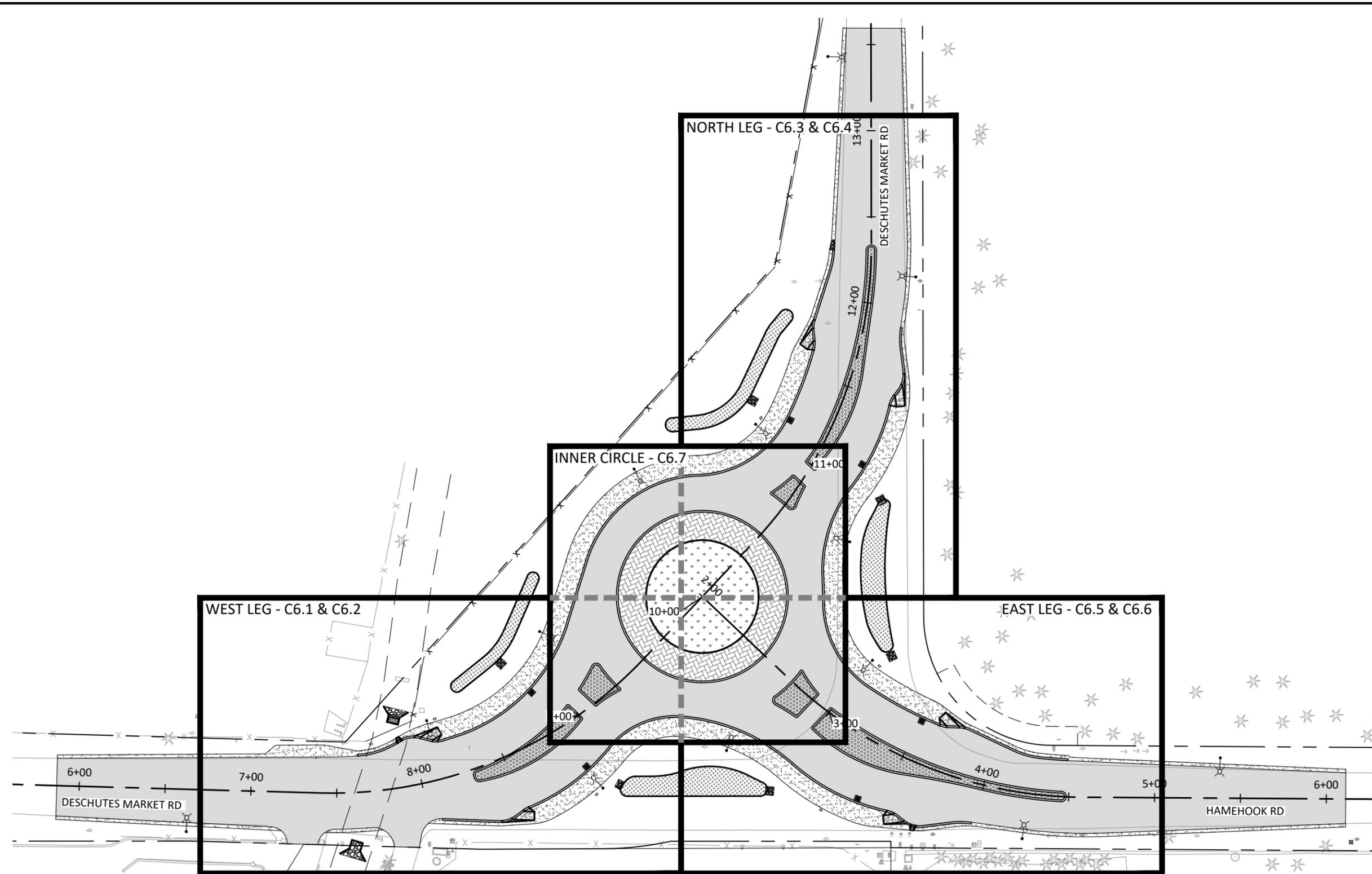
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OVERALL GRADING & ESC PLAN  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

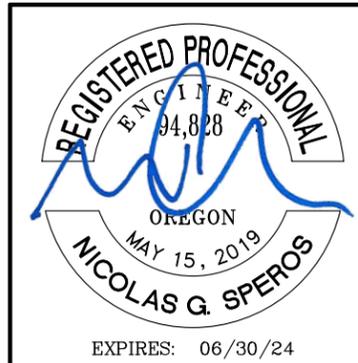
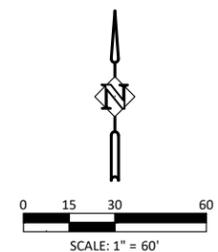
SHEET NO.  
**C5.0**  
JOB NO.  
DC0-02

P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C5\_Overall Grading & ESC Plan.dwg

P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C6\_Grading Details.dwg



**SITE MAP**  
SCALE: 1" = 60'



**100% SUBMITTAL**



DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED:	MD
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DATE:	01.30.2023

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LANDSCAPE ARCHITECTS\*SURVEYORS  
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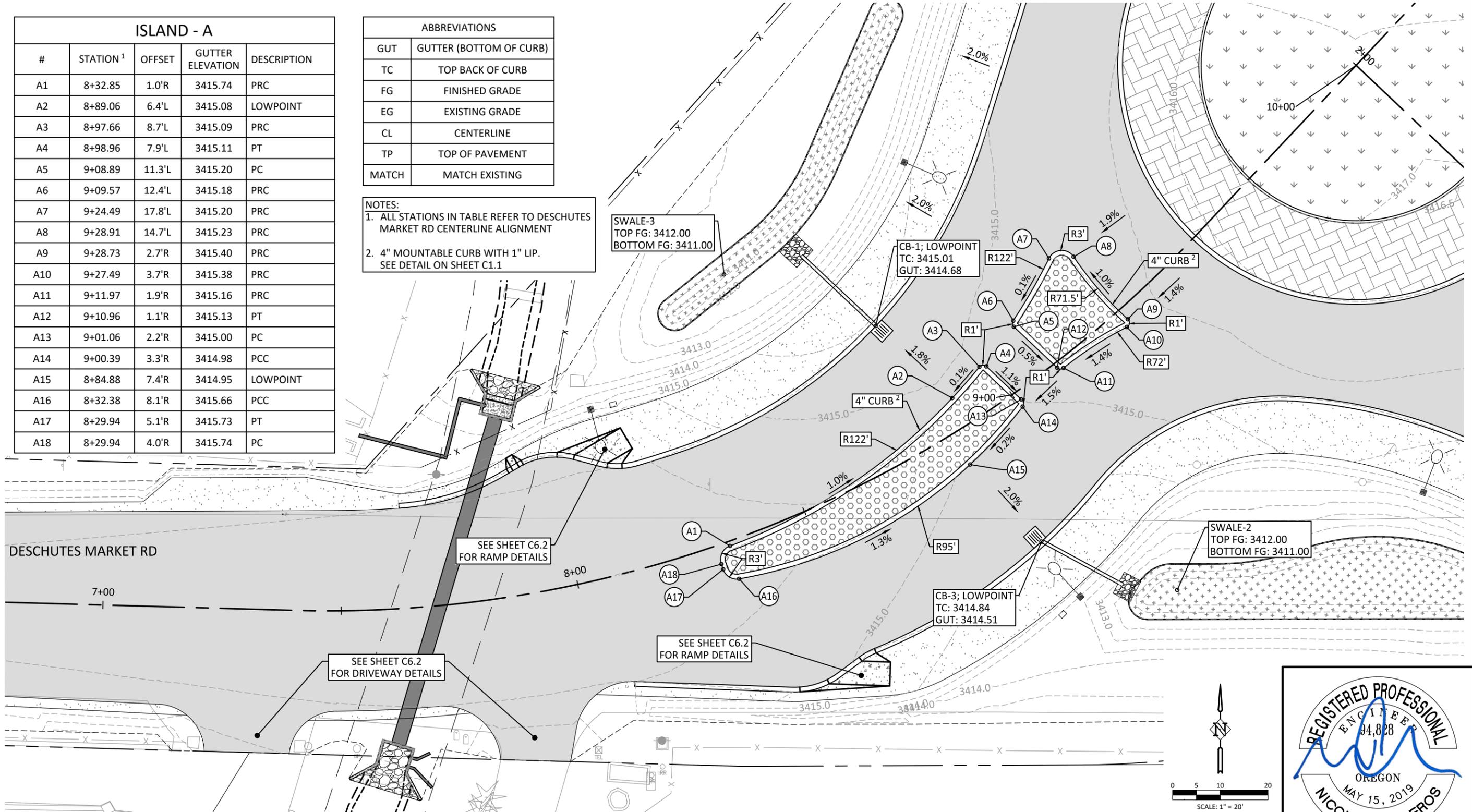
GRADING DETAILS SITE MAP  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.	<b>C6.0</b>
JOB NO.	DCO-02

ISLAND - A				
#	STATION <sup>1</sup>	OFFSET	GUTTER ELEVATION	DESCRIPTION
A1	8+32.85	1.0'R	3415.74	PRC
A2	8+89.06	6.4'L	3415.08	LOWPOINT
A3	8+97.66	8.7'L	3415.09	PRC
A4	8+98.96	7.9'L	3415.11	PT
A5	9+08.89	11.3'L	3415.20	PC
A6	9+09.57	12.4'L	3415.18	PRC
A7	9+24.49	17.8'L	3415.20	PRC
A8	9+28.91	14.7'L	3415.23	PRC
A9	9+28.73	2.7'R	3415.40	PRC
A10	9+27.49	3.7'R	3415.38	PRC
A11	9+11.97	1.9'R	3415.16	PRC
A12	9+10.96	1.1'R	3415.13	PT
A13	9+01.06	2.2'R	3415.00	PC
A14	9+00.39	3.3'R	3414.98	PCC
A15	8+84.88	7.4'R	3414.95	LOWPOINT
A16	8+32.38	8.1'R	3415.66	PCC
A17	8+29.94	5.1'R	3415.73	PT
A18	8+29.94	4.0'R	3415.74	PC

ABBREVIATIONS	
GUT	GUTTER (BOTTOM OF CURB)
TC	TOP BACK OF CURB
FG	FINISHED GRADE
EG	EXISTING GRADE
CL	CENTERLINE
TP	TOP OF PAVEMENT
MATCH	MATCH EXISTING

NOTES:  
 1. ALL STATIONS IN TABLE REFER TO DESCHUTES MARKET RD CENTERLINE ALIGNMENT  
 2. 4" MOUNTABLE CURB WITH 1" LIP. SEE DETAIL ON SHEET C1.1



P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C6\_Grading Details.dwg



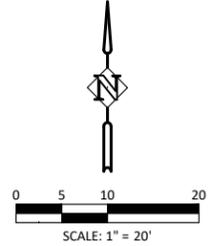
DATE	NO.	DESCRIPTION
REVISIONS		

DESIGNED:	MD
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DATE:	01.30.2023

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 ENGINEERS \* PLANNERS  
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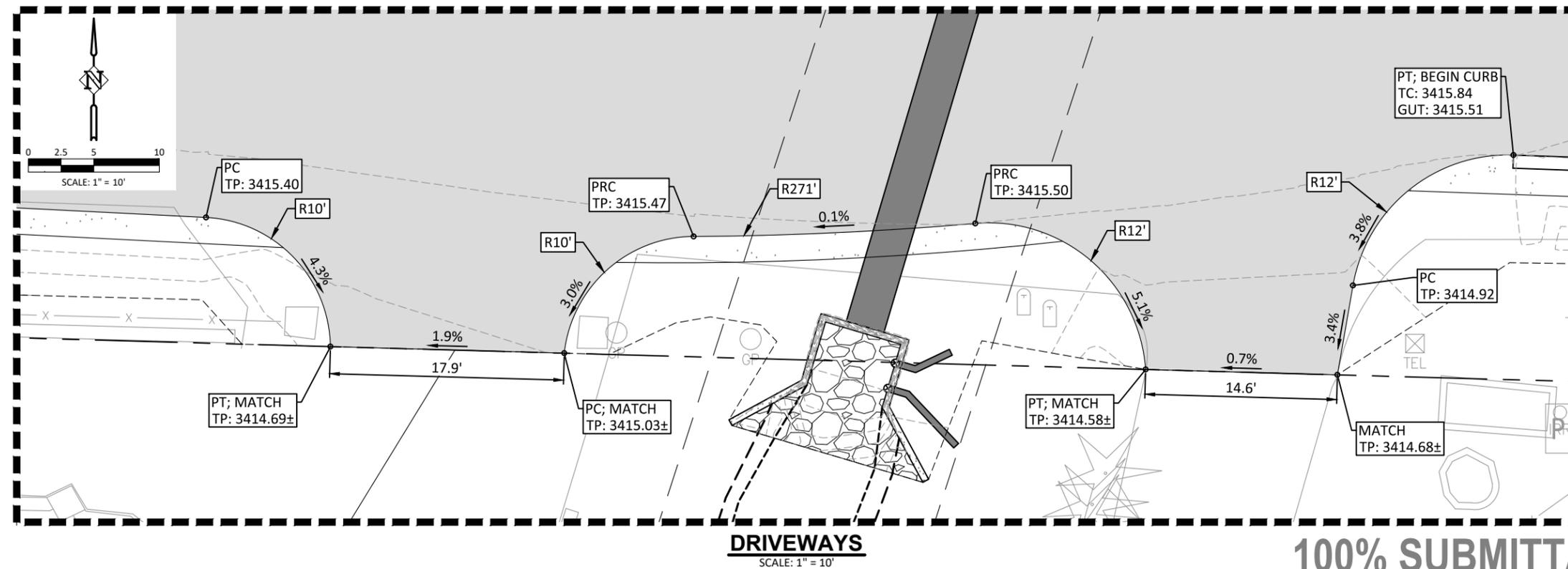
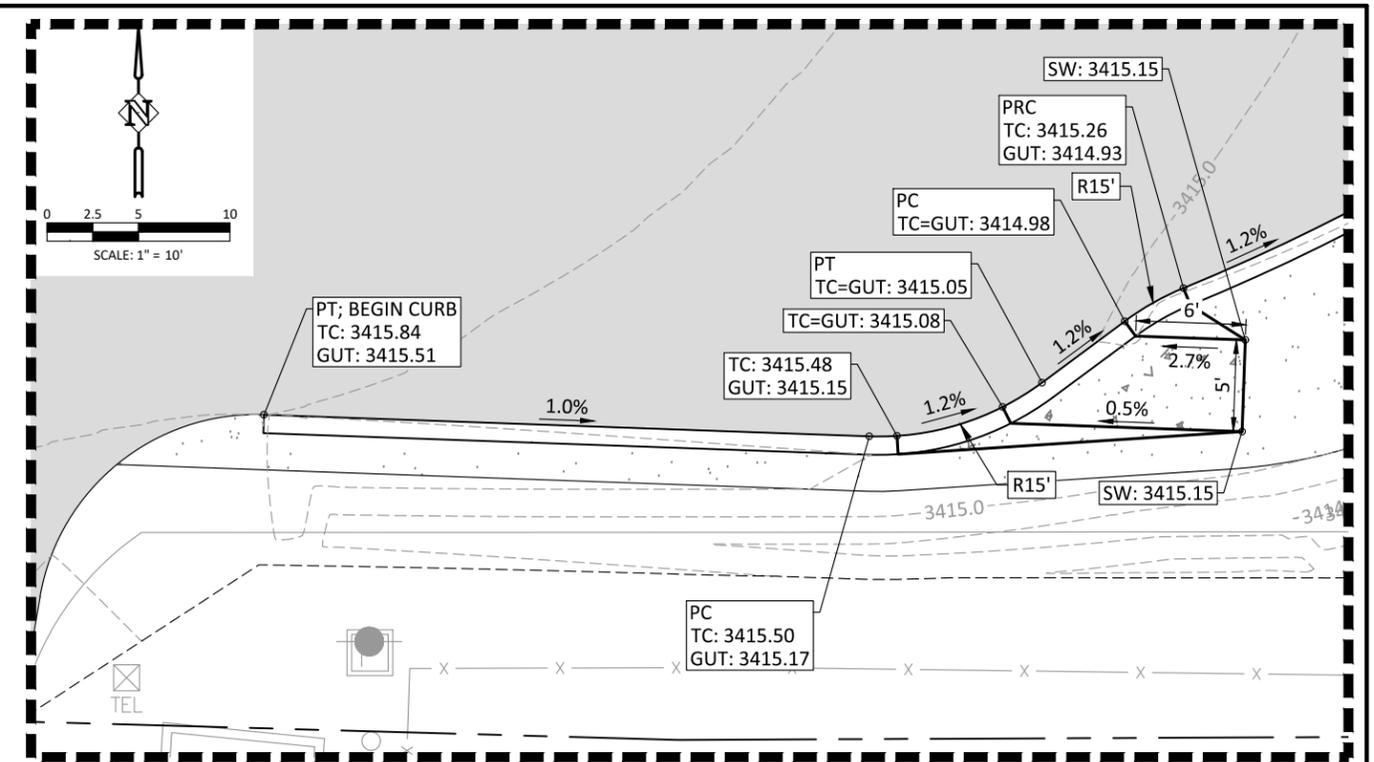
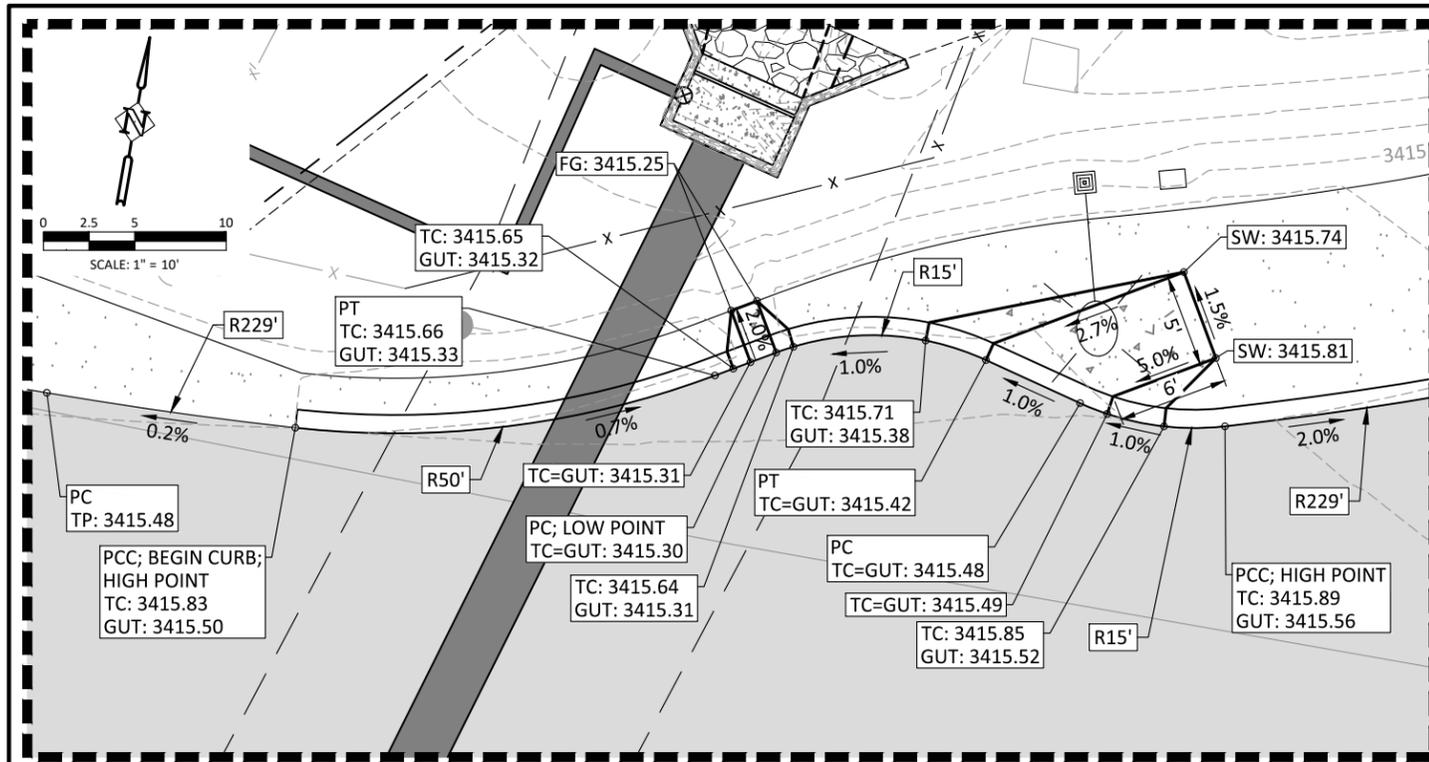
**100% SUBMITTAL**

WEST LEG GRADING DETAILS - SPLITTER ISLAND  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

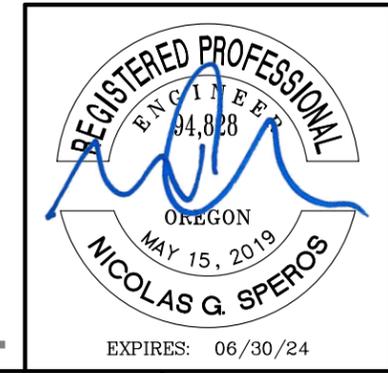


REGISTERED PROFESSIONAL  
 ENGINEER  
 94,828  
 OREGON  
 MAY 15, 2019  
**NICOLAS G. SPEROS**  
 EXPIRES: 06/30/24

SHEET NO.	<b>C6.1</b>
JOB NO.	DCO-02



ABBREVIATIONS	
GUT	GUTTER (BOTTOM OF CURB)
TC	TOP BACK OF CURB
FG	FINISHED GRADE
EG	EXISTING GRADE
CL	CENTERLINE
TP	TOP OF PAVEMENT
MATCH	MATCH EXISTING



**100% SUBMITTAL**

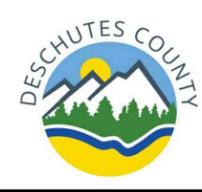
WEST LEG GRADING DETAILS - DRIVEWAYS & BIKE RAMPS  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

SHEET NO. **C6.2**  
 JOB NO. DCO-02

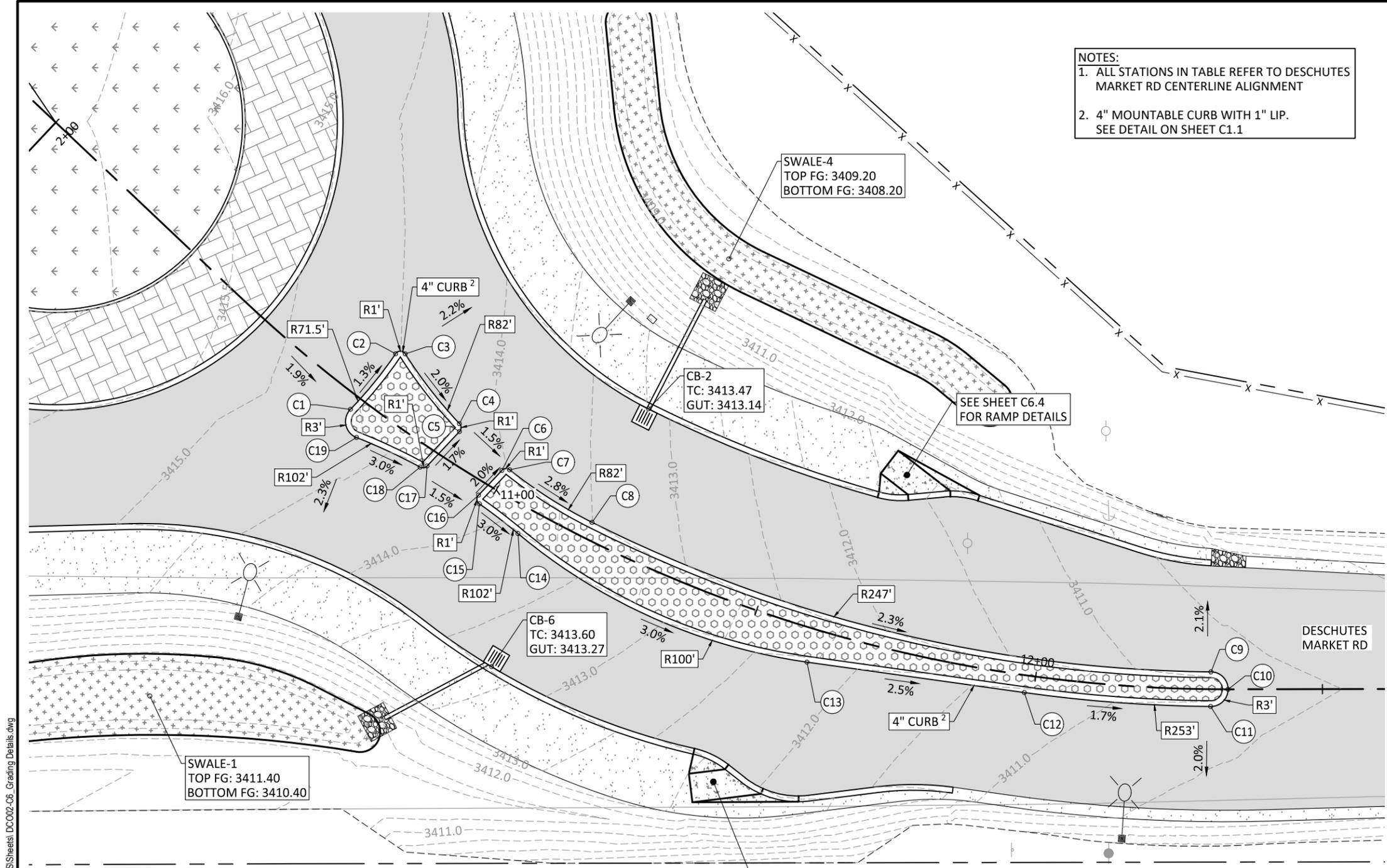
DATE	NO.	DESCRIPTION
REVISIONS		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

**HHPR** Harper Houf Peterson Righellis Inc.  
 ENGINEERS \* PLANNERS  
 LANDSCAPE ARCHITECTS \* SURVEYORS  
 250 NW Franklin Ave., Suite 404, Bend, OR 97703  
 phone: 541.318.1161 www.hhpr.com fax: 541.318.1141



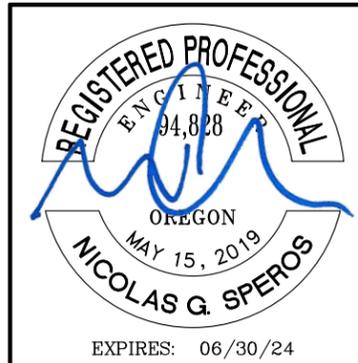
P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\SS\Sheets\DCO02-C6\_Grading\_Details.dwg



**NOTES:**  
 1. ALL STATIONS IN TABLE REFER TO DESCHUTES MARKET RD CENTERLINE ALIGNMENT  
 2. 4" MOUNTABLE CURB WITH 1" LIP. SEE DETAIL ON SHEET C1.1

ISLAND - C				
#	STATION <sup>1</sup>	OFFSET	GUTTER ELEVATION	DESCRIPTION
C1	10+71.27	2.5'R	3414.69	PRC
C2	10+71.74	9.9'L	3414.54	PRC
C3	10+73.15	10.9'L	3414.46	PRC
C4	10+88.35	6.4'L	3414.16	PRC
C5	10+89.12	5.2'L	3414.16	PT
C6	10+99.13	3.4'L	3414.03	PC
C7	11+00.26	4.2'L	3413.98	PRC
C8	11+17.46	3.0'L	3413.50	PCC
C9	12+30.58	3.0'L	3410.70	PRC
C10	12+33.58	0.0'	3410.73	MIDPOINT
C11	12+30.58	3.0'R	3410.72	PCC
C12	11+98.43	3.0'R	3411.27	PT
C13	11+60.96	5.9'R	3412.22	PC
C14	11+06.99	4.7'R	3413.89	PRC
C15	10+98.73	3.6'R	3414.15	PRC
C16	10+97.84	2.4'R	3414.15	PT
C17	10+87.66	2.9'R	3414.30	PC
C18	10+86.77	3.7'R	3414.33	PRC
C19	10+74.97	5.8'R	3414.69	PRC

ABBREVIATIONS	
GUT	GUTTER (BOTTOM OF CURB)
TC	TOP BACK OF CURB
FG	FINISHED GRADE
EG	EXISTING GRADE
CL	CENTERLINE
TP	TOP OF PAVEMENT
MATCH	MATCH EXISTING



P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C6\_Grading Details.dwg



DATE	NO.	DESCRIPTION
REVISIONS		

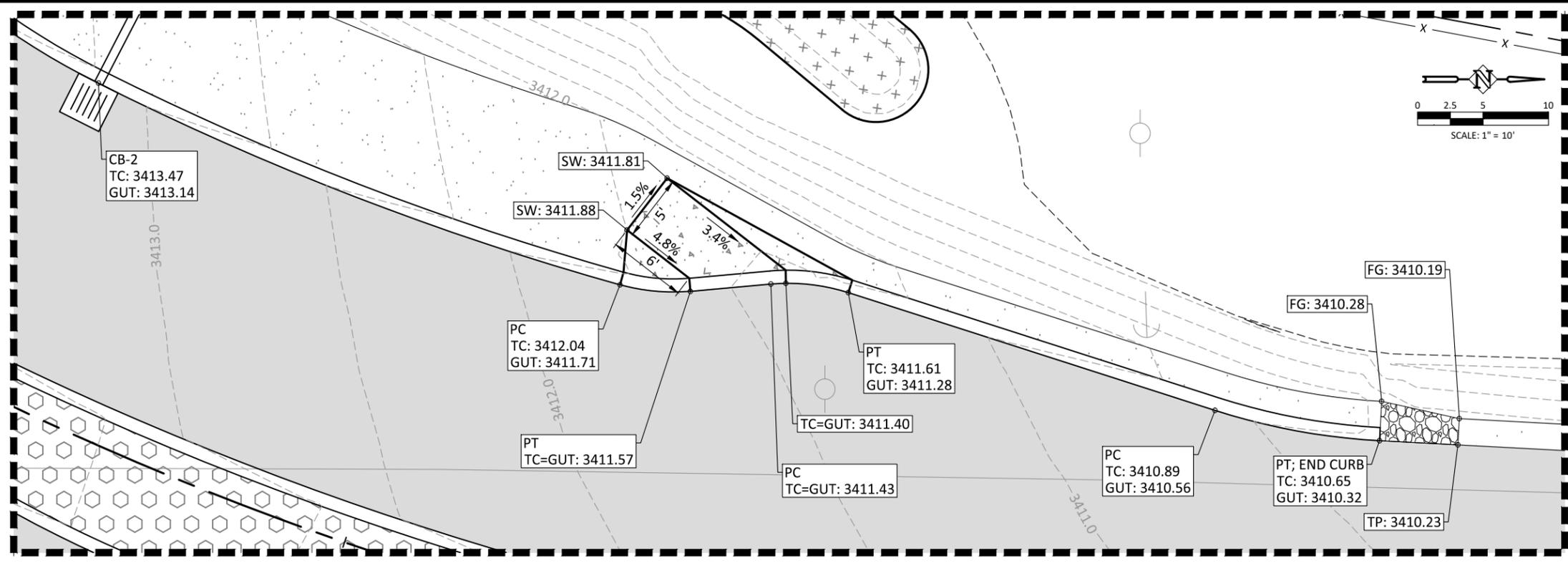
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DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

**HHPR** Harper Houf Peterson Righellis Inc.  
 ENGINEERS \* PLANNERS  
 LANDSCAPE ARCHITECTS \* SURVEYORS  
 250 NW Franklin Ave., Suite 404, Bend, OR 97703  
 phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

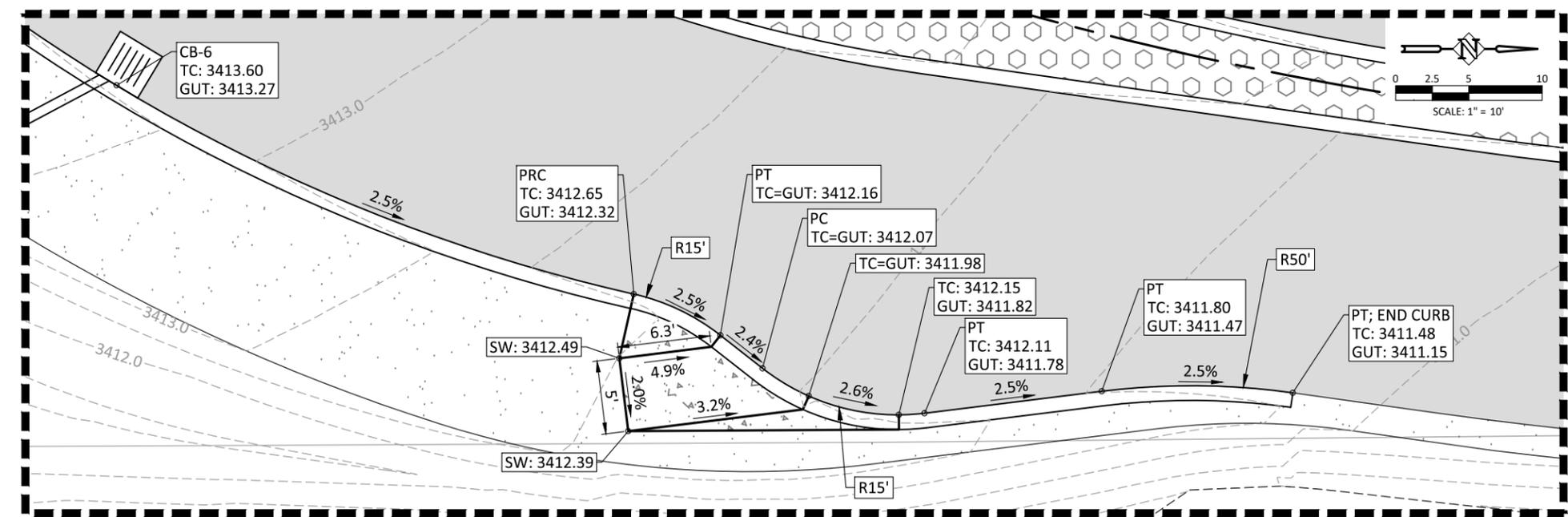
**100% SUBMITTAL**

NORTH LEG GRADING DETAILS - SPLITTER ISLAND  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

SHEET NO.  
**C6.3**  
 JOB NO.  
 DCO-02

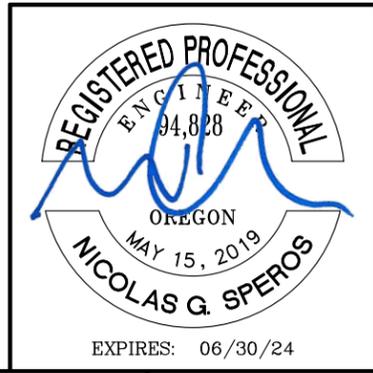


**BIKE RAMP N-1**  
SCALE: 1" = 10'



**BIKE RAMP N-2**  
SCALE: 1" = 10'

ABBREVIATIONS	
GUT	GUTTER (BOTTOM OF CURB)
TC	TOP BACK OF CURB
FG	FINISHED GRADE
EG	EXISTING GRADE
CL	CENTERLINE
TP	TOP OF PAVEMENT
MATCH	MATCH EXISTING



**100% SUBMITTAL**

NORTH LEG GRADING DETAILS - BIKE RAMPS  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.  
**C6.4**  
JOB NO.  
DC0-02

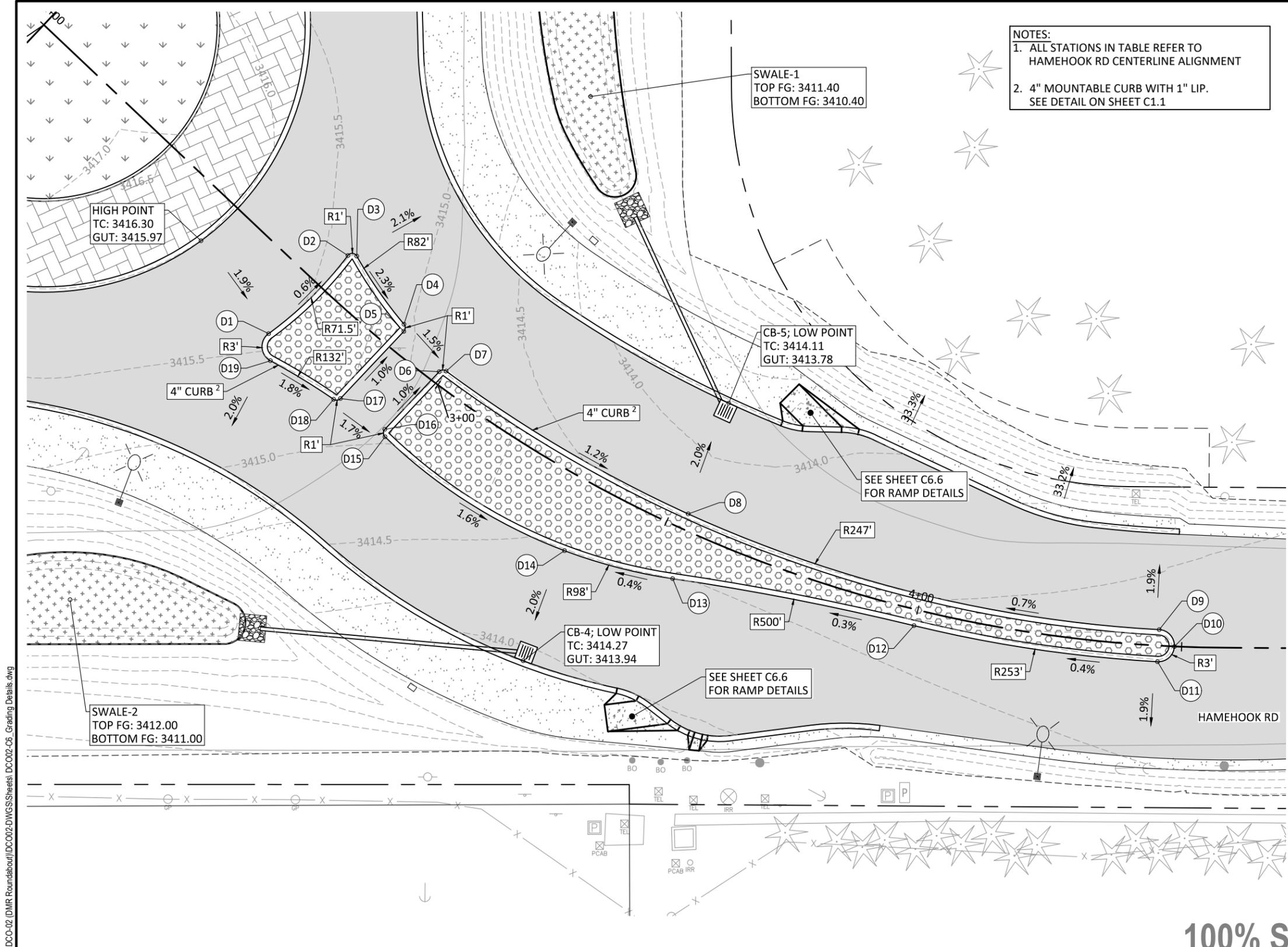
P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\S\Sheets\DCO02-C6\_Grading\_Details.dwg



DATE	NO.	DESCRIPTION
REVISIONS		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

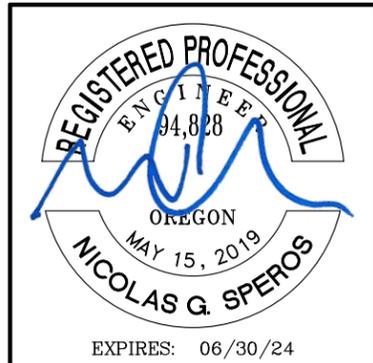
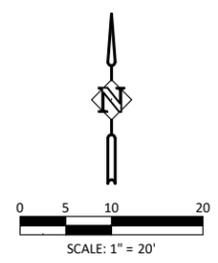
**HHPR** Harper Houf Peterson Righellis Inc.  
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LANDSCAPE ARCHITECTS \* SURVEYORS  
250 NW Franklin Ave., Suite 404, Bend, OR 97703  
phone: 541.318.1161 www.hhpr.com fax: 541.318.1141



NOTES:  
 1. ALL STATIONS IN TABLE REFER TO HAMEHOOK RD CENTERLINE ALIGNMENT  
 2. 4" MOUNTABLE CURB WITH 1" LIP. SEE DETAIL ON SHEET C1.1

ISLAND - D				
#	STATION <sup>1</sup>	OFFSET	GUTTER ELEVATION	DESCRIPTION
D1	2+70.30	13.1'R	3415.57	BC; PRC
D2	2+71.10	7.8'L	3415.41	BC; PRC
D3	2+72.45	8.8'L	3415.40	BC; PRC
D4	2+87.90	5.0'L	3415.04	BC; PRC
D5	2+88.73	4.0'L	3415.04	BC; PT
D6	2+98.72	2.1'L	3414.90	BC; PC
D7	2+99.73	3.0'L	3414.87	BC; PRC
D8	3+53.11	3.0'L	3414.23	BC; LOW POINT
D9	4+45.65	3.0'L	3414.71	BC; PRC
D10	4+48.65	0.0'	3414.85	BC; CL
D11	4+45.65	3.0'R	3414.88	BC; PCC
D12	4+00.00	3.0'R	3414.68	BC; PRC
D13	3+55.36	9.2'R	3414.48	BC; PRC
D14	3+35.74	13.5'R	3414.39	BC; LOW POINT
D15	2+97.95	13.7'R	3415.03	BC; PCC
D16	2+97.12	12.6'R	3415.05	BC; PT
D17	2+87.52	13.2'R	3415.21	BC; PC
D18	3+86.66	14.2'R	3415.23	BC; PRC
D19	2+73.79	16.5'R	3415.46	BC; PRC

ABBREVIATIONS	
GUT	GUTTER (BOTTOM OF CURB)
TC	TOP BACK OF CURB
FG	FINISHED GRADE
EG	EXISTING GRADE
CL	CENTERLINE
TP	TOP OF PAVEMENT
MATCH	MATCH EXISTING



**100% SUBMITTAL**

P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\Sheets\DCO02-C6\_Grading\_Details.dwg



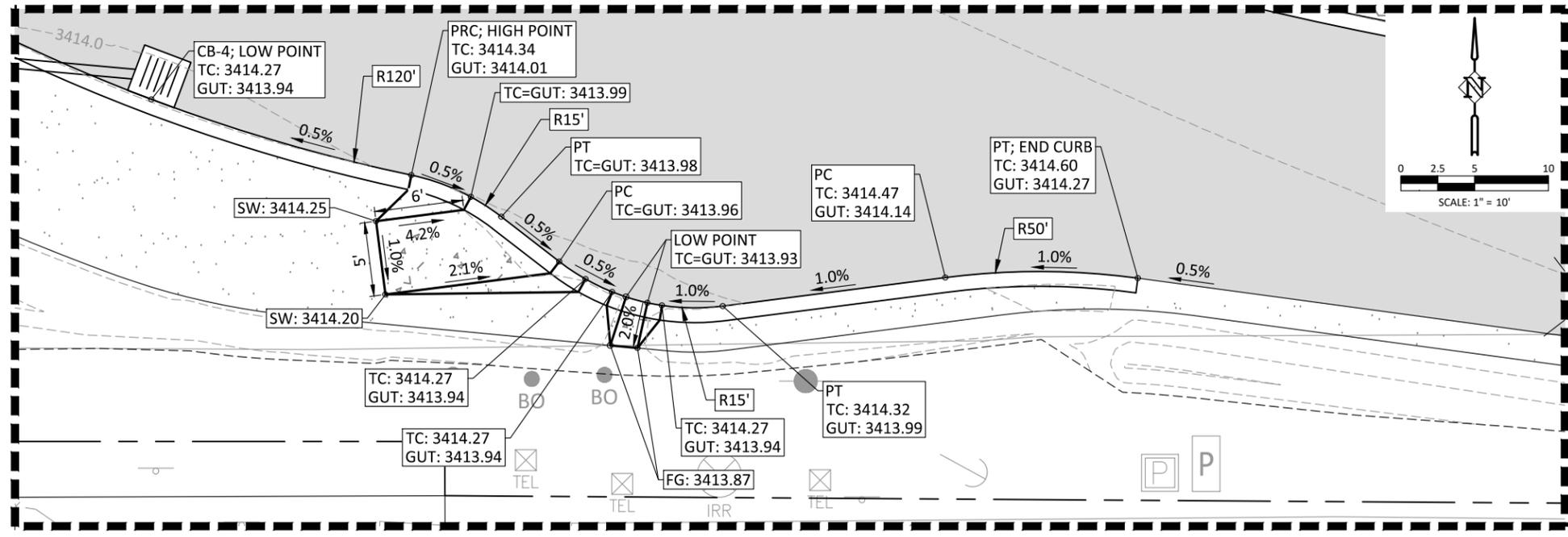
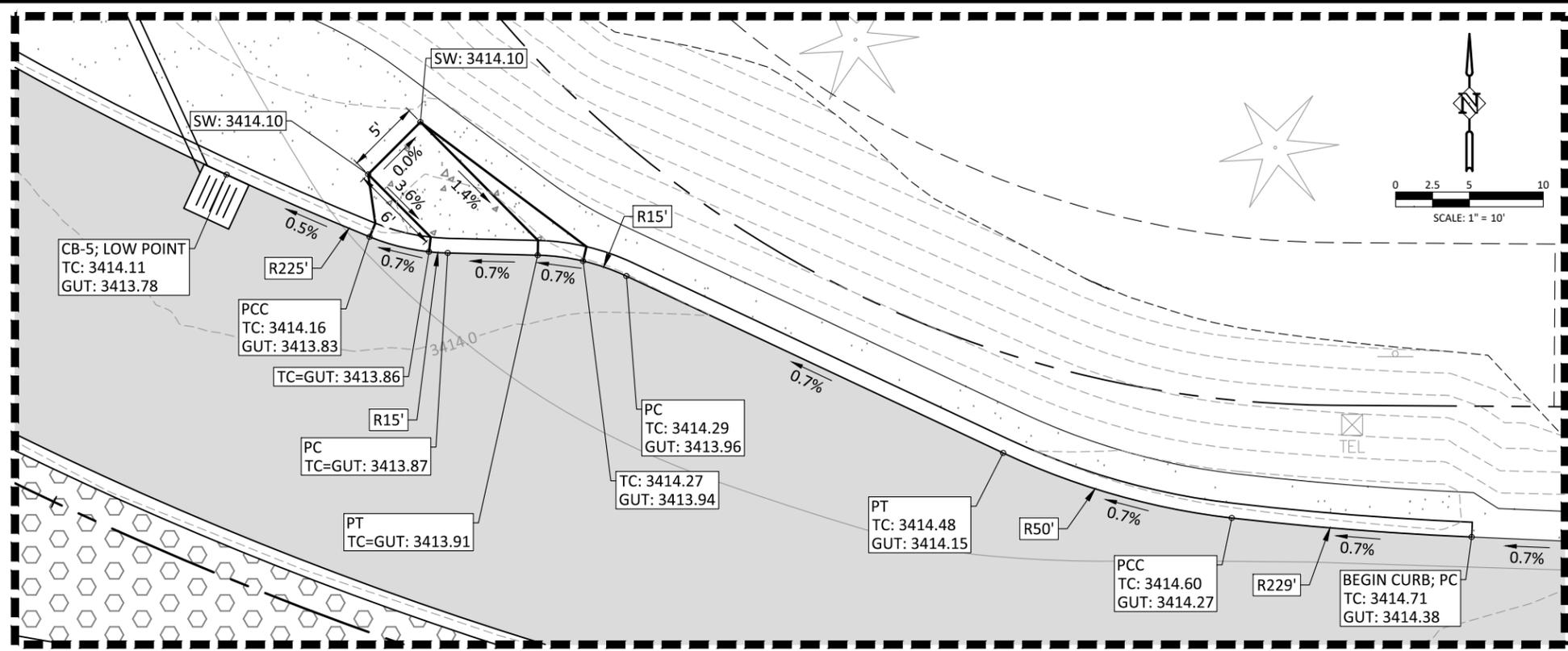
DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

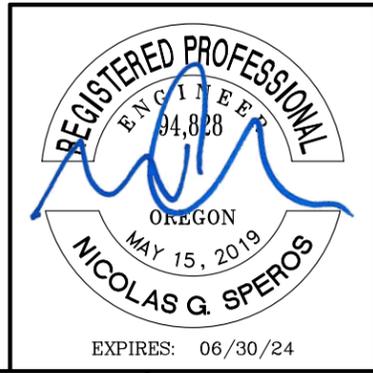
**HHPR** Harper Houf Peterson Righellis Inc.  
 ENGINEERS \* PLANNERS  
 LANDSCAPE ARCHITECTS \* SURVEYORS  
 250 NW Franklin Ave., Suite 404, Bend, OR 97703  
 phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

**EAST LEG GRADING DETAILS - SPLITTER ISLAND**  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

SHEET NO.  
**C6.5**  
 JOB NO.  
 DCO-02



ABBREVIATIONS	
GUT	GUTTER (BOTTOM OF CURB)
TC	TOP BACK OF CURB
FG	FINISHED GRADE
EG	EXISTING GRADE
CL	CENTERLINE
TP	TOP OF PAVEMENT
MATCH	MATCH EXISTING



**100% SUBMITTAL**

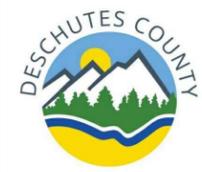
EAST LEG GRADING DETAILS - BIKE RAMPS  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.  
**C6.6**  
JOB NO.  
DC0-02

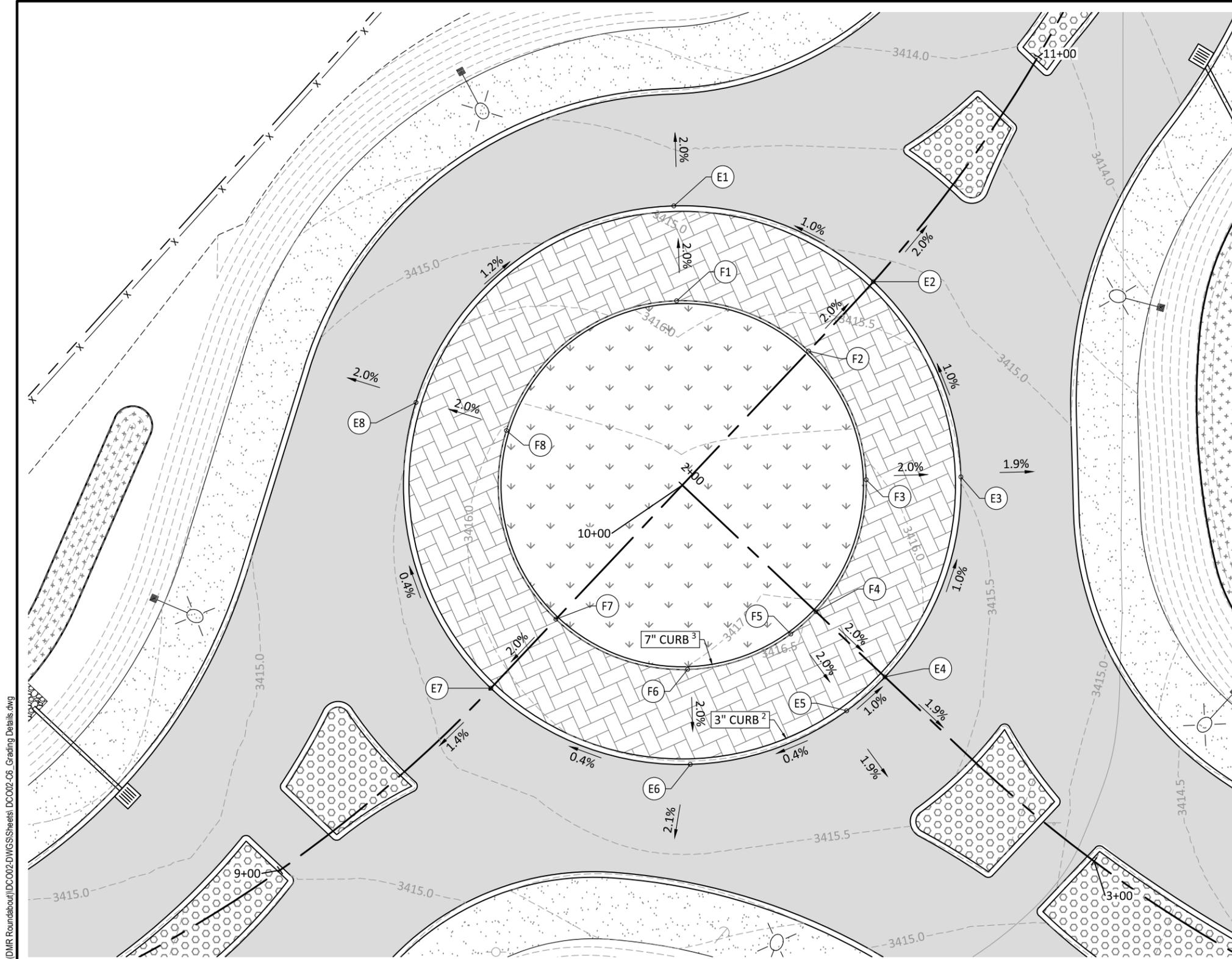
DATE	NO.	DESCRIPTION
REVISIONS		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

**HHPR** Harper Houf Peterson Righellis Inc.  
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P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\S\Sheets\DCO02-C6\_Grading\_Details.dwg

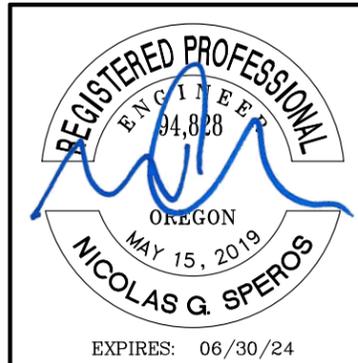
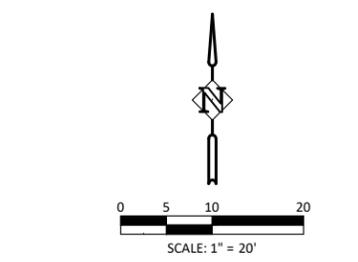


INNER CIRCLE (4" MOUNTABLE CURB) - E				
#	STATION <sup>1</sup>	OFFSET	GUTTER ELEVATION	DESCRIPTION
E1	10+35.29	35.4'L	3414.70	LOW POINT
E2	10+50.00	0.0'	3415.10	CL DESCHUTES MARKET RD
E3	10+35.38	35.3'R	3415.49	
E4	10+00.00	50.0'R	3415.88	CL HAMEHOOK RD
E5	9+90.87	49.2'R	3415.97	HIGH POINT
E6	9+64.64	35.4'R	3415.85	
E7	9+50.00	0.0'	3415.68	CL DESCHUTES MARKET RD
E8	9+77.96	44.9'L	3415.45	GRADE BREAK

INNER CIRCLE (7" BARRIER CURB) - F				
#	STATION <sup>1</sup>	OFFSET	GUTTER ELEVATION	DESCRIPTION
F1	10+23.29	23.4'L	3415.28	LOW POINT
F2	10+33.00	0.0'	3415.67	CL DESCHUTES MARKET RD
F3	10+23.35	23.3'R	3416.06	
F4	10+00.00	33.0'R	3416.46	CL HAMEHOOK RD
F5	9+93.97	32.4'R	3416.55	HIGH POINT
F6	9+76.67	23.3'R	3416.42	
F7	9+67.00	0.0'	3416.26	CL DESCHUTES MARKET RD
F8	9+85.45	29.6'L	3416.02	GRADE BREAK

ABBREVIATIONS	
GUT	GUTTER (BOTTOM OF CURB)
TC	TOP BACK OF CURB
FG	FINISHED GRADE
EG	EXISTING GRADE
CL	CENTERLINE
TP	TOP OF PAVEMENT
MATCH	MATCH EXISTING

NOTES:  
 1. ALL STATIONS IN TABLE REFER TO DESCHUTES MARKET RD CENTERLINE ALIGNMENT  
 2. 3" MOUNTABLE CURB FOR TRUCK APRON WITH 0" LIP. SEE DETAIL ON SHEET C1.1.  
 3. 7" HIGH-STRENGTH CURB. SEE DETAIL ON SHEET C1.1



**100% SUBMITTAL**

P:\03-Bend\DCO (Deschutes County)\DCO-02 (DMR Roundabout)\DCO02-DWG\S\S\Sheets\DCO02-C6\_Grading\_Details.dwg



DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

**HHPR** Harper Houf Peterson Righellis Inc.  
 ENGINEERS \* PLANNERS  
 LANDSCAPE ARCHITECTS \* SURVEYORS  
 250 NW Franklin Ave., Suite 404, Bend, OR 97703  
 phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

**INNER CIRCLE GRADING DETAILS**  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

SHEET NO.  
**C6.7**  
 JOB NO.  
 DCO-02

EXPIRES: 06/30/24

**PLANTING SCHEDULE**

TREES*	BOTANICAL / COMMON NAME	CAL.	QTY
	PINUS PONDEROSA / PONDEROSA PINE	6' HT	2

**SEEDING**

 NATIVE SEEDING ON DISTURBED AREA

**HARDSCAPE SCHEDULE**

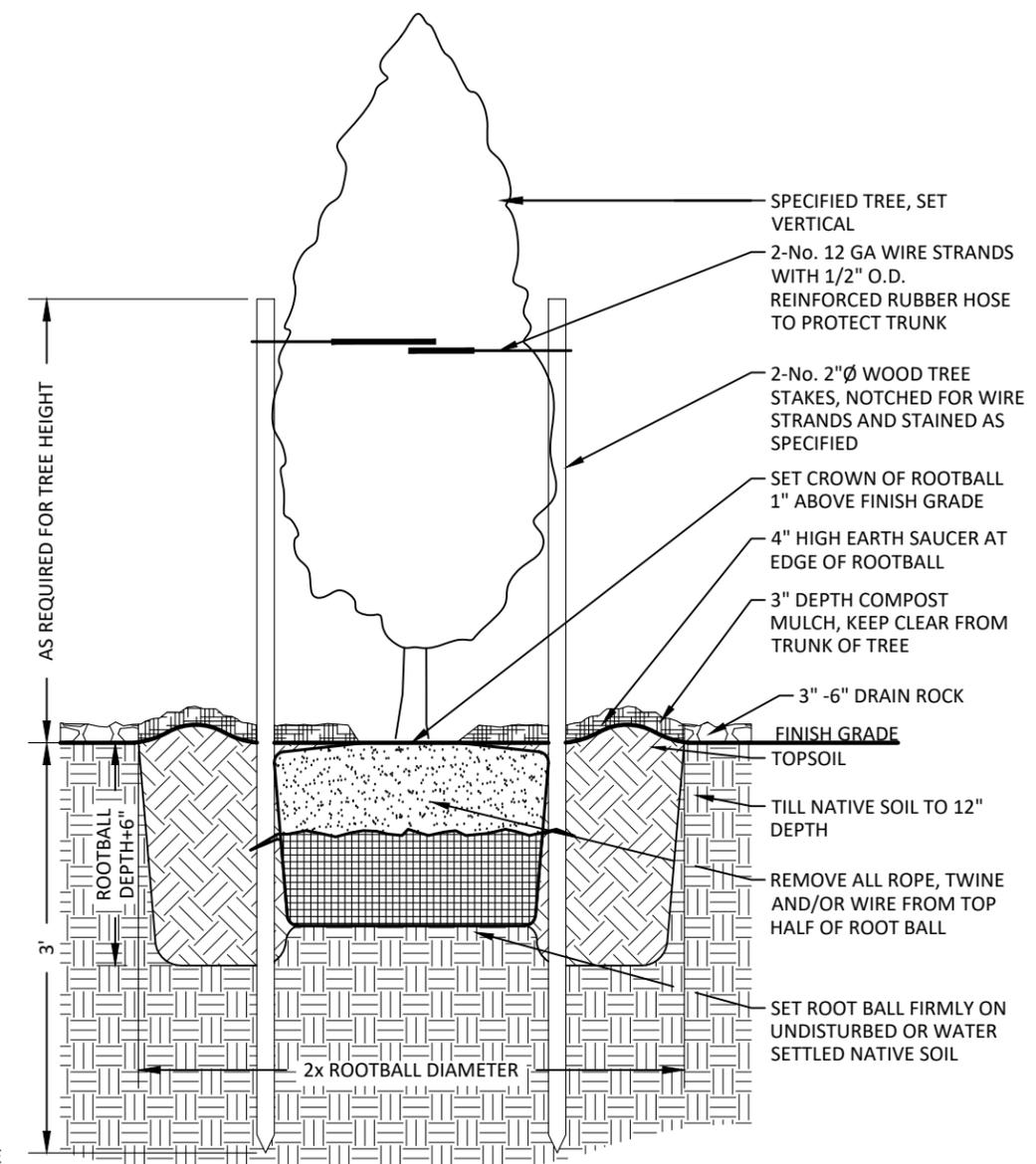
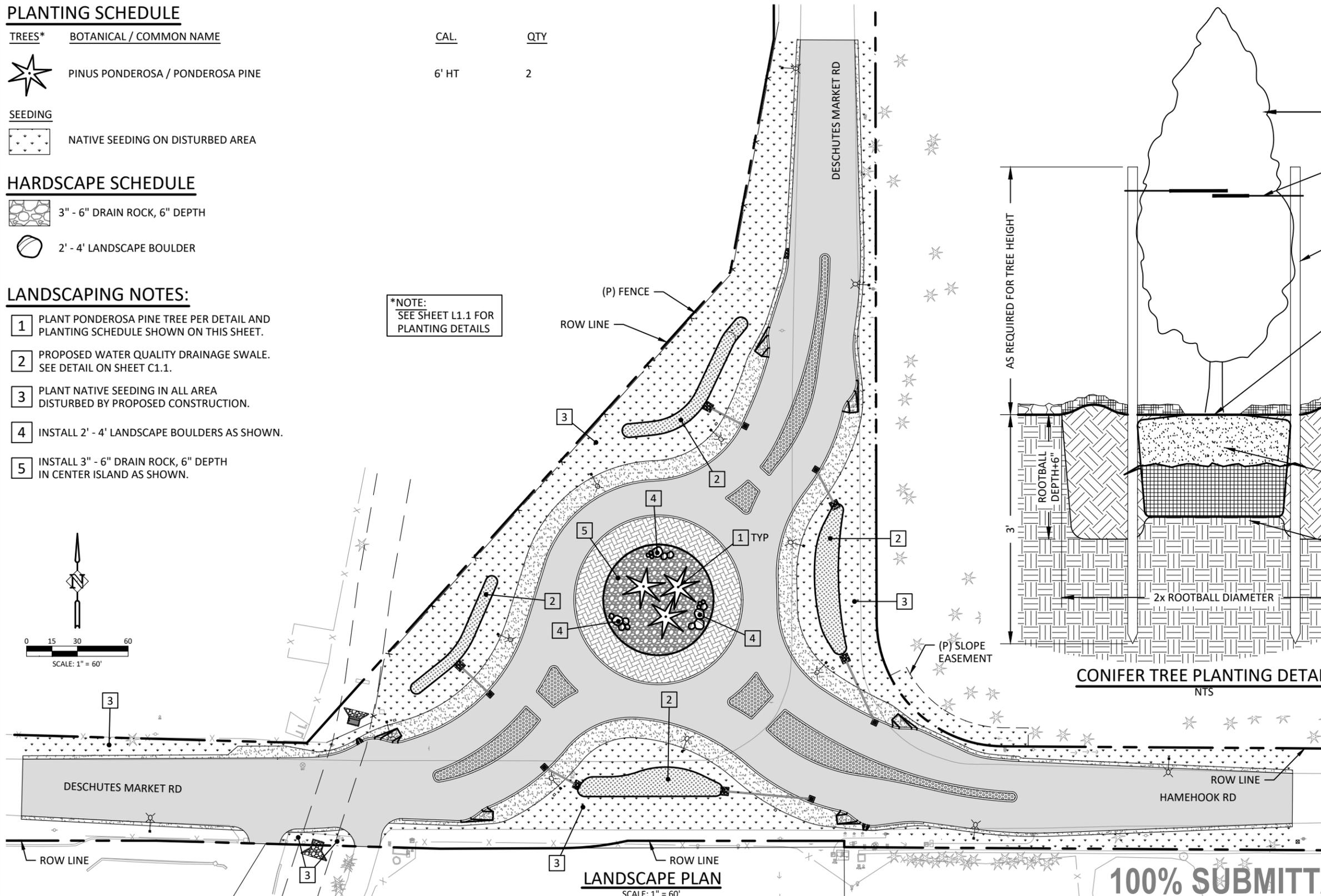
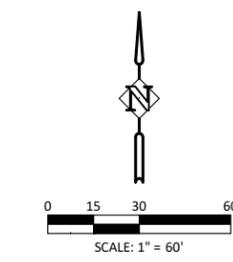
 3" - 6" DRAIN ROCK, 6" DEPTH

 2' - 4' LANDSCAPE BOULDER

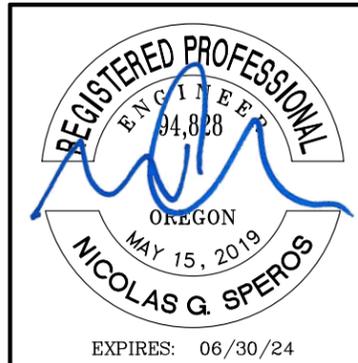
**LANDSCAPING NOTES:**

- 1 PLANT PONDEROSA PINE TREE PER DETAIL AND PLANTING SCHEDULE SHOWN ON THIS SHEET.
- 2 PROPOSED WATER QUALITY DRAINAGE SWALE. SEE DETAIL ON SHEET C1.1.
- 3 PLANT NATIVE SEEDING IN ALL AREA DISTURBED BY PROPOSED CONSTRUCTION.
- 4 INSTALL 2' - 4' LANDSCAPE BOULDERS AS SHOWN.
- 5 INSTALL 3" - 6" DRAIN ROCK, 6" DEPTH IN CENTER ISLAND AS SHOWN.

\*NOTE:  
SEE SHEET L1.1 FOR  
PLANTING DETAILS



CONIFER TREE PLANTING DETAIL  
NTS



**100% SUBMITTAL**



DATE	NO.	DESCRIPTION
REVISIONS		

DESIGNED:	MD
DRAWN:	MD
CHECKED:	NS
DATE:	01.30.2023

**HHPR** Harper Houf Peterson Righellis Inc.  
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phone: 541.318.1161 www.hhpr.com fax: 541.318.1141

LANDSCAPE PLAN  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.	<b>L1.0</b>
JOB NO.	DC0-02

SIGNING AND STRIPING LEGEND  
DESCHUTES MARKET RD/HAMEHOOK RD IMPROVEMENTS

**LEGEND**

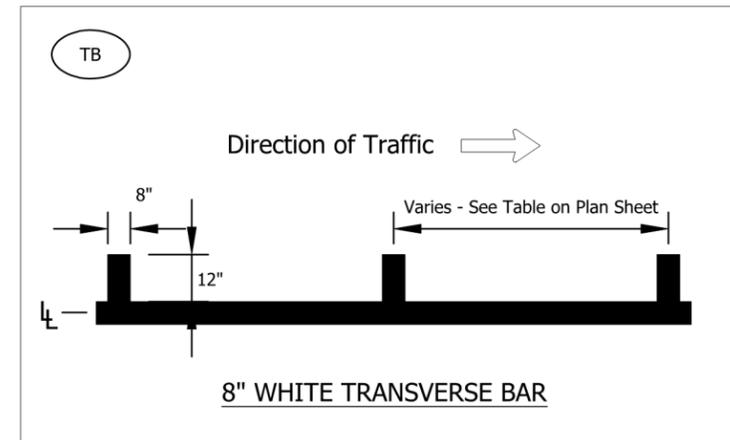
- ND Install narrow double no-pass two 4" yellow lines
- W-2 Install 8" white line
- WD-2 Install 8" white dotted line
- Y Install 4" yellow line
- YLD Install yield line (white)
- TB Install transverse speed bars. See detail on this sheet.
- BS Install bike lane symbol

- N Install new sign (N)
- N  
M Install new sign (N) on new (M) sign support
- EXN  
M Maintain and protect existing sign (N) and (M) sign support
- RXN  
M Remove existing sign (N) and (M) sign support
- RSN  
M Remove and save existing sign (N) and remove (M) sign support
- RIN  
M Reinstall existing sign (N) on new (M) sign support

N = Sign Number  
M = Material Options:  
S = Steel Breakaway Support (TBB or MPB)  
ST = Perforated Steel Square Tube Sign Support  
W = Wood Post

**GENERAL NOTES**

1. All signage and pavement marking shall conform to the requirements and specifications of the Manual on Uniform Traffic Control Devices (M.U.T.C.D.) latest edition, the Oregon supplement of the M.U.T.C.D., the Oregon Standard Specifications for Construction, and the project special provisions.
2. All pre-markings for pavement markings and striping, as well as signs locations shall be approved by the Engineer prior to final placement.
3. All longitudinal pavement markings shall be Thermoplastic, Extruded or Sprayed, Surface, Non-Profiled.
4. All transverse bars and legends shall be Type "B".
5. All signs and sign supports removed from the project shall be salvaged to Deschutes County.
6. Preserve and protect all existing striping outside of the project limits.
7. Reference ODOT standards TM500, TM501, TM502, TM503, and TM530.



H:\26\06\102 - Deschutes Market\_Hamehook\_Improvement\design\CD\CD\_SS\_26102.dwg



DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED:	KAI TEAM
DRAWN:	KAI TEAM
CHECKED:	KAI TEAM
DATE:	12.1.2022

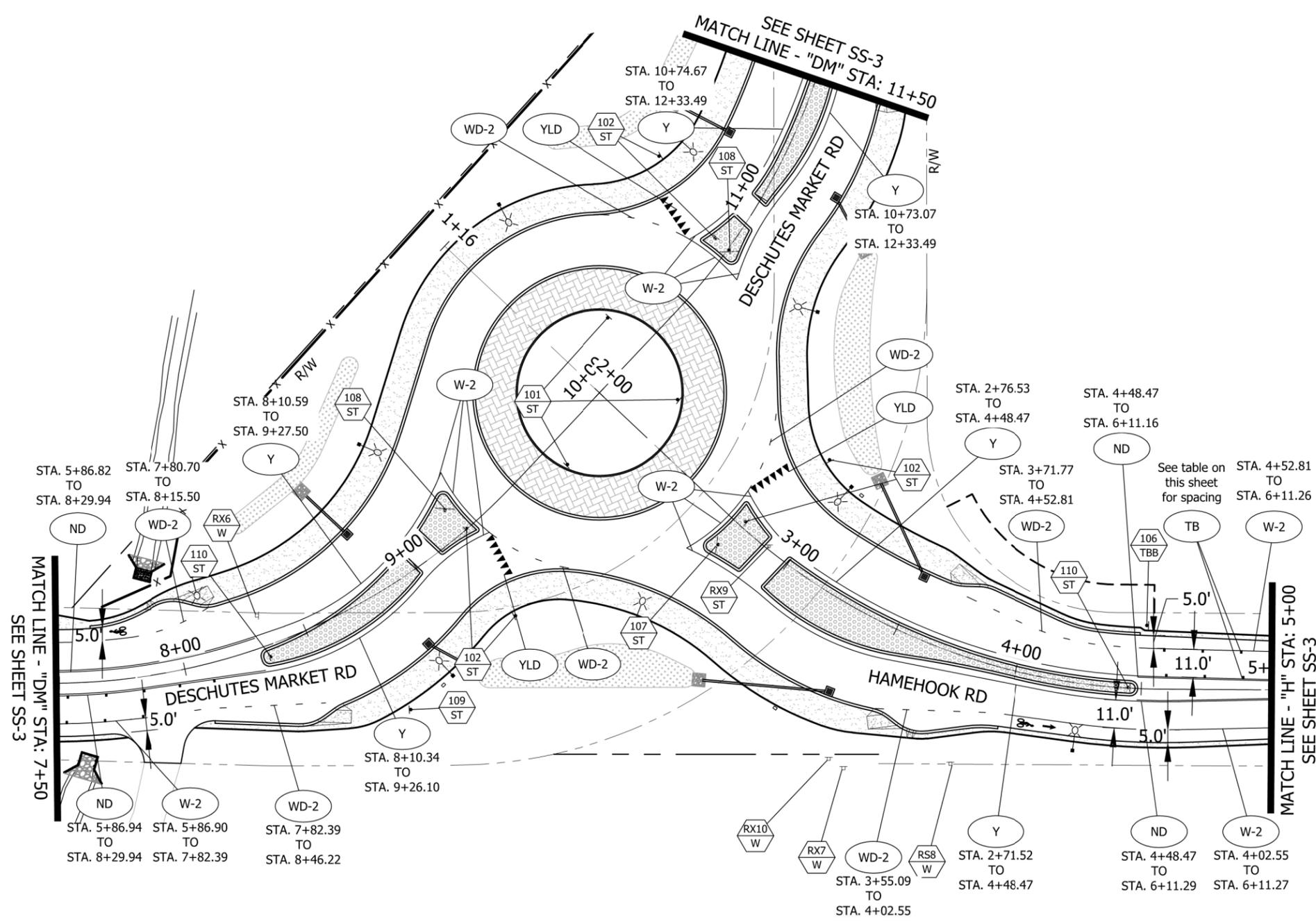


SIGNING AND STRIPING LEGEND  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON



SHEET NO.	<b>SS-1</b>
JOB NO.	DC0-02

SIGNING AND STRIPING PLAN  
 DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENTS



Speed Reduction Transverse Bar Spacing

Leg	Station	Spacing
Deschutes Market Rd West Leg	4+10 to 6+10	25'
	6+10 to 7+10	20'
	7+10 to 8+10	15'
Deschutes Market Rd North Leg	12+33 to 13+33	15'
	13+33 to 14+33	20'
	14+33 to 16+83	25'
Hamehook Rd East Leg	4+48 to 5+48	15'
	5+48 to 6+48	20'
	6+48 to 8+48	25'



REGISTERED PROFESSIONAL ENGINEER  
 65552PE  
 Digitally Signed Jan 19 2023 2:48 PM  
 OREGON  
 MADE JULY 9, 2001  
 E. SCARBROUGH  
 EXPIRES: 06/30/24



DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED: KAI TEAM  
 DRAWN: KAI TEAM  
 CHECKED: KAI TEAM  
 DATE: 12.1.2022

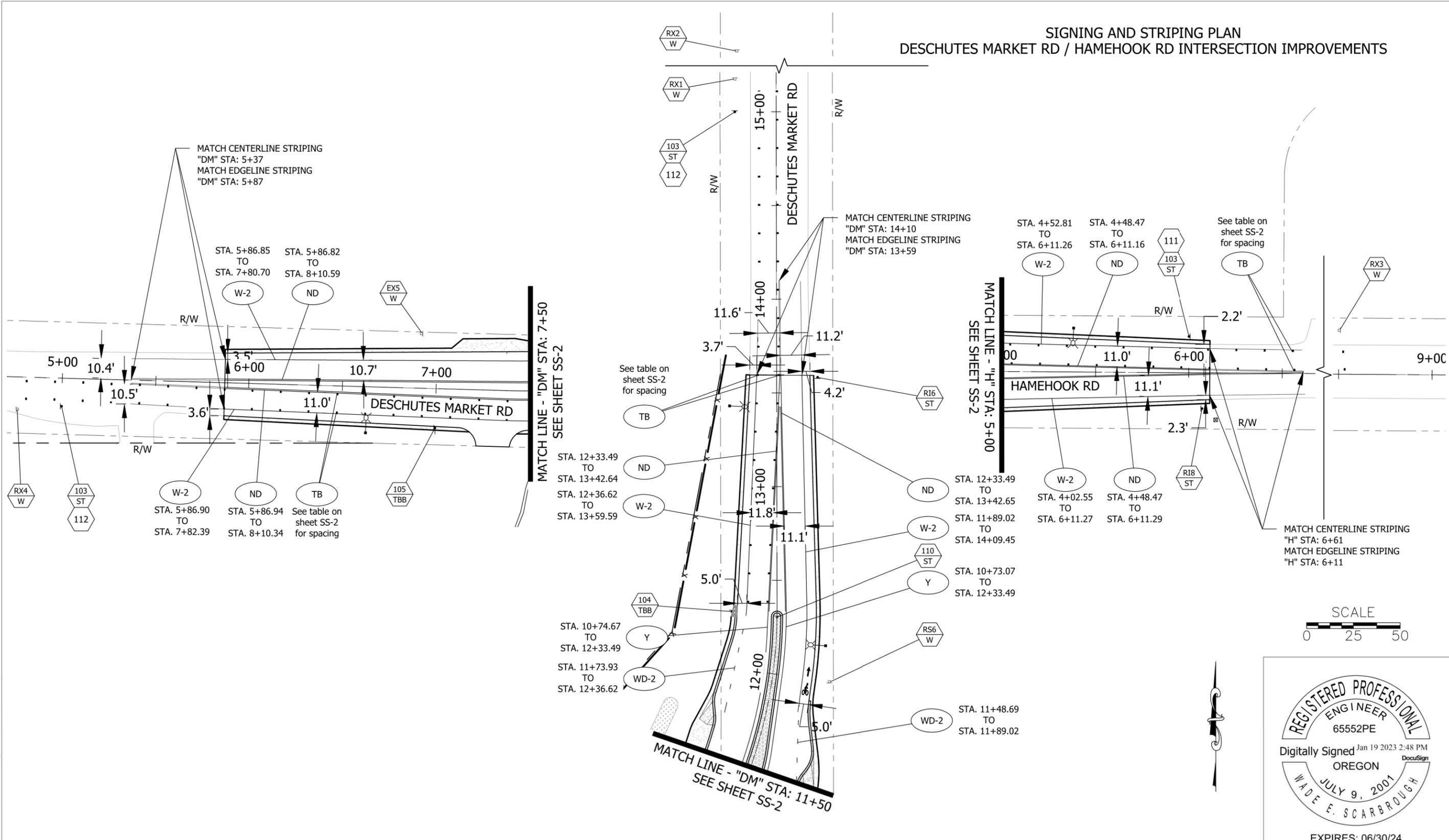


SIGNING AND STRIPING PLAN  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

SHEET NO.  
**SS-2**  
 JOB NO.  
 DC0-02

H:\26102 - Deschutes Market\_Hamehook\_Improvement\design\CD\CD\_SS\_26102.dwg

SIGNING AND STRIPING PLAN  
 DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENTS



REGISTERED PROFESSIONAL  
 ENGINEER  
 65552PE  
 Digitally Signed Jan 19 2023 2:48 PM  
 OREGON  
 MADE JULY 9, 2001  
 E. SCARBROUGH  
 EXPIRES: 06/30/24

DATE	NO.	DESCRIPTION
REVISIONS		

DESIGNED: KAI TEAM  
 DRAWN: KAI TEAM  
 CHECKED: KAI TEAM  
 DATE: 12.1.2022



SIGNING AND STRIPING PLAN  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

SHEET NO.  
**SS-3**  
 JOB NO.  
 DC0-02

H:\26\06\102 - Deschutes Market\_Hamehook\_Improvement\design\CD\CD\_SS\_26102.dwg



EXISTING SIGN DETAILS  
 DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENTS

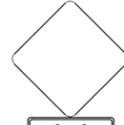


Sign 1



DESCHUTES MKT RD

Sign 4



Sign 7

← Redmond 10e



10d



10c



10b



10a

Sign 10



DESCHUTES MKT RD

Sign 2



40  
M.P.H.

Sign 5

ADOPT  
-A-  
ROAD

8a

DYER  
FAMILY

8b

Sign 8

Deschutes Mkt →  
← Hamehook Rd

DESCHUTES MKT RD



CROSS TRAFFIC  
DOES NOT STOP

Sign 9



DESCHUTES MKT RD

Sign 3



Sign 6



DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED:	KAI TEAM
DRAWN:	KAI TEAM
CHECKED:	KAI TEAM
DATE:	12.1.2022



EXISTING SIGN DETAILS  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

SHEET NO.	<b>SS-4</b>
JOB NO.	DC0-02

H:\26\06\02 - Deschutes Market\_Hamehook\_Improvement\design\_CD\CD\_Details\_26102.dwg

PROPOSED SIGN DETAILS  
 DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENTS



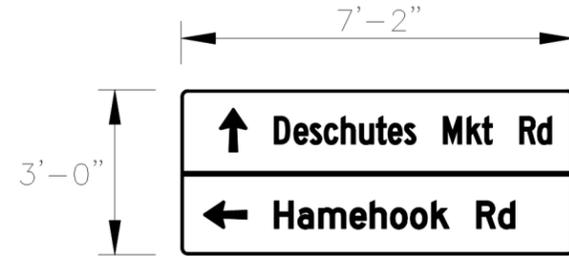
Sign 101



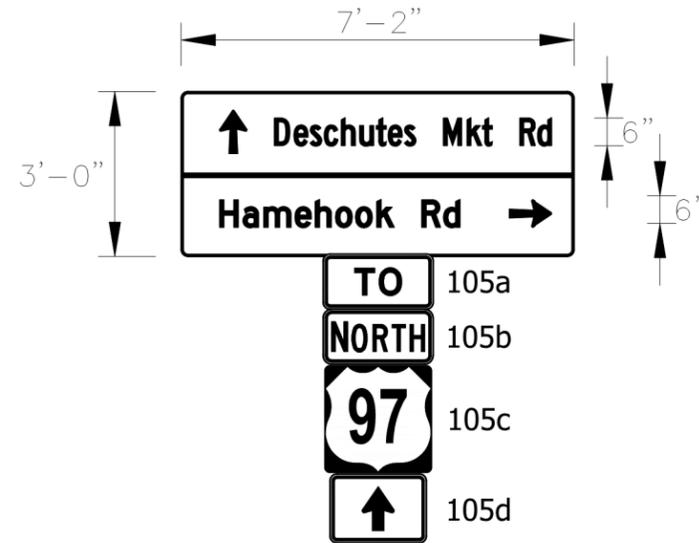
Sign 102



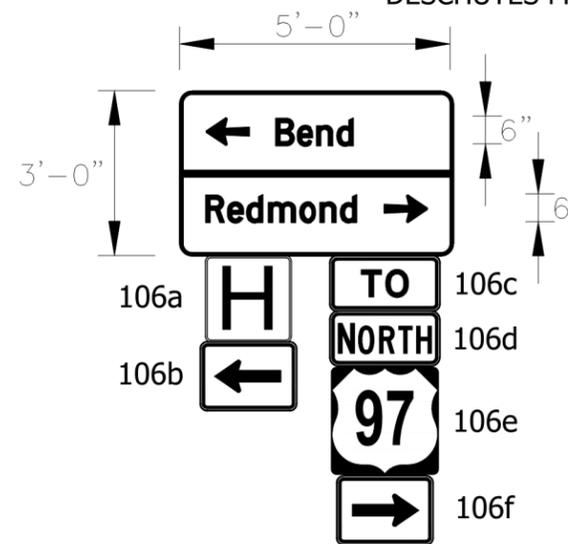
Sign 103



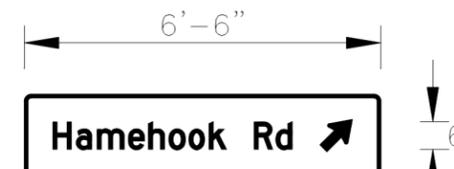
Sign 104



Sign 105



Sign 106



Sign 107



Sign 108



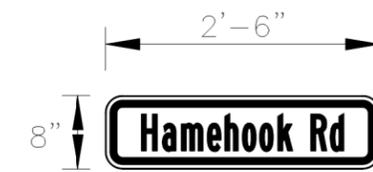
Sign 109



Sign 110



Sign 111



Sign 112

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DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED:	KAI TEAM
DRAWN:	KAI TEAM
CHECKED:	KAI TEAM
DATE:	12.1.2022



PROPOSED SIGN DETAILS  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON



SHEET NO.  
**SS-5**  
 JOB NO.  
 DC0-02





**ILLUMINATION LEGEND  
DESCHUTES MARKET RD/HAMEHOOK RD IMPROVEMENTS**

**LEGEND**

-  Install street light sleeve for embedded street light pole.
-  Install 17"x10"x12" (min. dimension) precast concrete junction box. Cover to be marked "Street Lights".
-  Install CEC-furnished street light pole number (N). Shall be HAPCO embedded aluminum alloy light pole (Model No. RTA25C7BEM18) or approved equal. Install CEC-furnished American Electric Lighting street light (Model: ATB0 SERIES LED 1300MA TYPE 3 3000K CCT) or approved equal. See "Street Light Pole Schedule."
-  Install poly pull line (500# minimum strength).
-  Install (S) inch electrical grade sch 40 PVC conduit.
-  Power source for 120/240 volt, single phase.
-  Install post mounted type B control cabinet (See TM 300)

**STREET LIGHT POLE SCHEDULE**

POLE NO.	STREET	STATION	OFFSET FROM ROADWAY CENTERLINE	OFFSET FROM EDGE OF PAVEMENT	LUMINAIRE ARM LENGTH (FT)	LAMP	LUMINAIRE MOUNTING HEIGHT (FT)	TYPE	NOTES
1	Deschutes Market Rd	6+63.00	24.57' Rt.	5.3'	8'	LED	30'	III	126 Watts
2	Deschutes Market Rd	8+12.00	35.00' Lt.	12.6'	8'	LED	30'	III	126 Watts
3	Deschutes Market Rd	8+89.33	43.08' Rt.	14.0'	8'	LED	30'	III	126 Watts
4	Deschutes Market Rd	9+11.93	52.58' Lt.	14.0'	8'	LED	30'	III	126 Watts
5	Hamehook Rd	2+71.33	55.28' Rt.	14.0'	8'	LED	30'	III	126 Watts
6	Deschutes Market Rd	10+26.56	79.69' Lt.	14.0'	8'	LED	30'	III	126 Watts
7	Hamehook Rd	3+02.60	39.37' Lt.	14.0'	8'	LED	30'	III	126 Watts
8	Deschutes Market Rd	11+04.23	40.05' Lt.	14.0'	8'	LED	30'	III	126 Watts
9	Deschutes Market Rd	10+76.51	43.05' Rt.	14.0'	8'	LED	30'	III	126 Watts
10	Deschutes Market Rd	13+43.12	25.08' Lt.	9.9'	8'	LED	30'	III	126 Watts
11	Deschutes Market Rd	12+16.78	26.55' Rt.	5.5'	8'	LED	30'	III	126 Watts
12	Hamehook Rd	4+26.32	26.53' Rt.	5.5'	8'	LED	30'	III	126 Watts
13	Hamehook Rd	5+38.14	23.38' Lt.	5.5'	8'	LED	30'	III	126 Watts

**INTERSECTION LIGHT LEVEL SUMMARY**

INTERSECTION	CLASSIFICATION		LIGHT LEVEL (fc)	UNIFORMITY (avg/min)	LIGHT LOSS FACTOR	BUG RATING
Deschutes Market Road/ Hamehook Road	Major/Collector	Target	≥ 1.4 fc	≤ 3.0 : 1	0.85	B2 U0 G2
		Design	1.7 fc	1.7 : 1		

Note: Target Values based on Table 12-4, Chapter 12 - ANSI/IES RP8-18

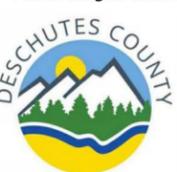
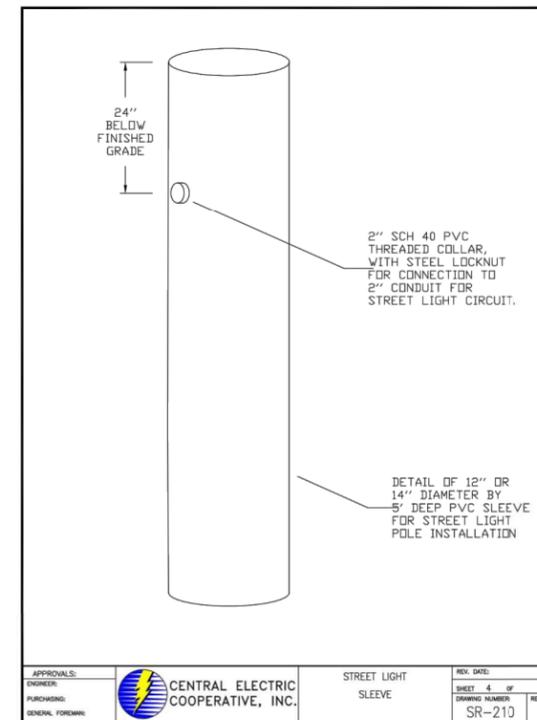
**ROADWAY LIGHT LEVEL SUMMARY**

ROADWAY	CLASSIFICATION, PEDESTRIAN CONFLICT		LIGHT LEVEL	AVERAGE UNIFORMITY	LIGHT LOSS FACTOR	BUG RATING
Deschutes Market Rd- West Leg	Major, Low	Target	≥ 0.8 fc	≤ 5.5 : 1	0.85	B2 U0 G2
		Design	1.2 fc	3.0 : 1		
Deschutes Market Rd- North Leg	Major, Low	Target	≥ 0.8 fc	≤ 5.5 : 1	0.85	B2 U0 G2
		Design	1.3 fc	2.1 : 1		
Hamehook Rd- East Leg	Collector, Low	Target	≥ 0.8 fc	≤ 5.5 : 1	0.85	B2 U0 G2
		Design	1.2 fc	2.9 : 1		

Note: Target Values based on Table 11-1, Chapter 11 & Section 3.2, Chapter 3 - ANSI/IES RP8-18

**GENERAL NOTES**

- All illumination related work other than pole foundation shall be paid for at the contract price for "Switching, conduit, and wiring - Lump Sum."
- Foundations, junction boxes, and conduit shall be installed at locations shown on plans. If conflicts arise, foundation, junction box, and conduit locations may be modified in the field per engineer's approval. All lighting equipment must be placed within the right-of-way. Place conduit in same trench as other conduits whenever possible.
- Location of all existing utilities shall be verified prior to beginning any work. Coordinate all work with utility companies to eliminate conflicts.
- All proposed pole bases, poles, luminaires, and wiring to be supplied by CEC and installed by contractor.
- Final light pole location(s) shall be approved in the field by the engineer prior to foundation installation.
- This illumination plans set is accompanied by Oregon Department of Transportation (ODOT) Standard Drawing TM471, TM472, & TM482.
- All conduit elbows shall be factory made and be long radius 36". For conduit runs longer than 150' or containing more than 270 degrees of bends, elbows shall be fiberglass.
- Contractor to coordinate with Central Electric Cooperative (CEC) ten (10) business days in advance of commencing illumination work. Contact Christy Ward (cward@cec.coop // 541.312.7778) OR Juan Tovar (jtovar@cec.coop // 541.419.7708).
- Contract to coordinate with Juan Tovar (jtovar@cec.coop // 541.419.7708) at Central Electric Cooperative (CEC) to get necessary foundation and sleeve details.
- All conduit runs shall be approved by Central Electric Cooperative (CEC) before backfill.
- Cover and protect all new light pole foundations.
- Light levels are based on ANSI/IES RP-8-18, Design and Maintenance of Roadway and Parking Facility Lighting criteria and the most recent applicable Deschutes County and ODOT Standards.
- Conduit runs and junction box locations shown are schematic. Place junction boxes in a flat area (<2%), accessible to maintenance personnel.



DATE	NO.	DESCRIPTION
R E V I S I O N S		

DESIGNED:	KAI TEAM
DRAWN:	KAI TEAM
CHECKED:	KAI TEAM
DATE:	12.1.2022

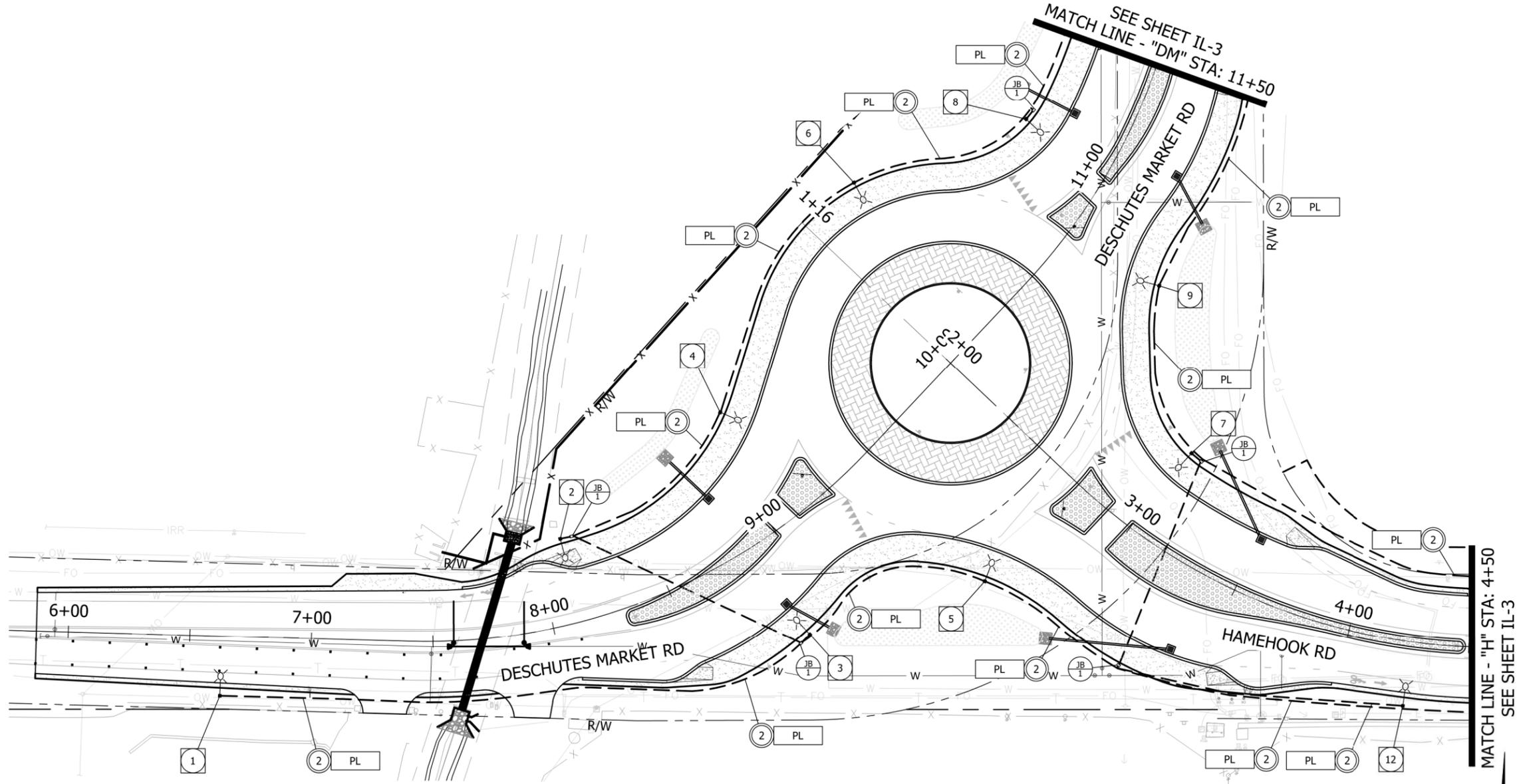


**ILLUMINATION LEGEND  
DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT  
DESCHUTES COUNTY, OREGON**

SHEET NO. **IL-1**  
JOB NO. DCO-02

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ILLUMINATION PLAN  
 DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENTS



REGISTERED PROFESSIONAL  
 ENGINEER  
 65552PE  
 Digitally Signed Jan 19 2023 2:47 PM  
 OREGON  
 MADE JULY 9, 2001  
 E. SCARBROUGH  
 EXPIRES: 06/30/24

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REVISIONS		

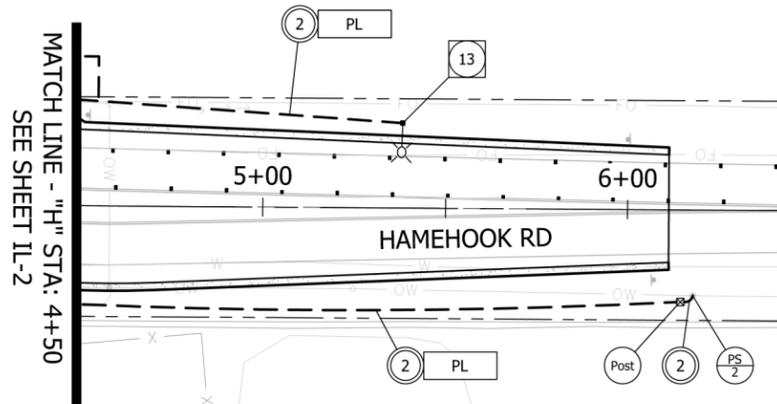
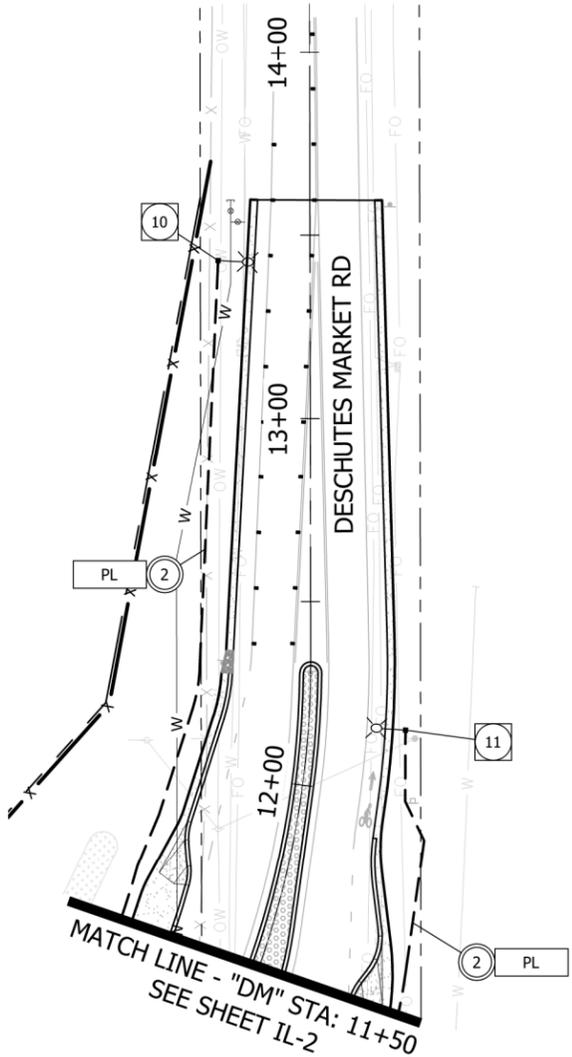
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DRAWN:	KAI TEAM
CHECKED:	KAI TEAM
DATE:	12.1.2022



ILLUMINATION PLAN  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

SHEET NO.  
**IL-2**  
 JOB NO.  
 DCO-02

ILLUMINATION PLAN  
 DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENTS



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 ENGINEER  
 65552PE  
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 OREGON  
 JULY 9, 2001  
 MADE E. SCARBROUGH  
 EXPIRES: 06/30/24

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DESIGNED:	KAI TEAM
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CHECKED:	KAI TEAM
DATE:	12.1.2022



ILLUMINATION PLAN  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

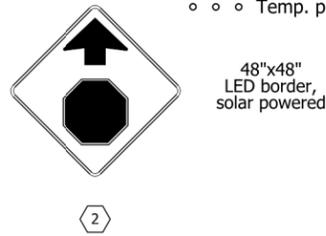
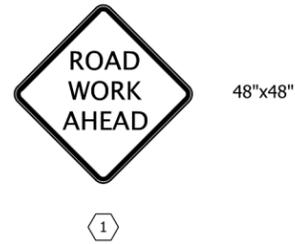
SHEET NO.  
**IL-3**  
 JOB NO.  
 DC0-02

**GENERAL NOTES**

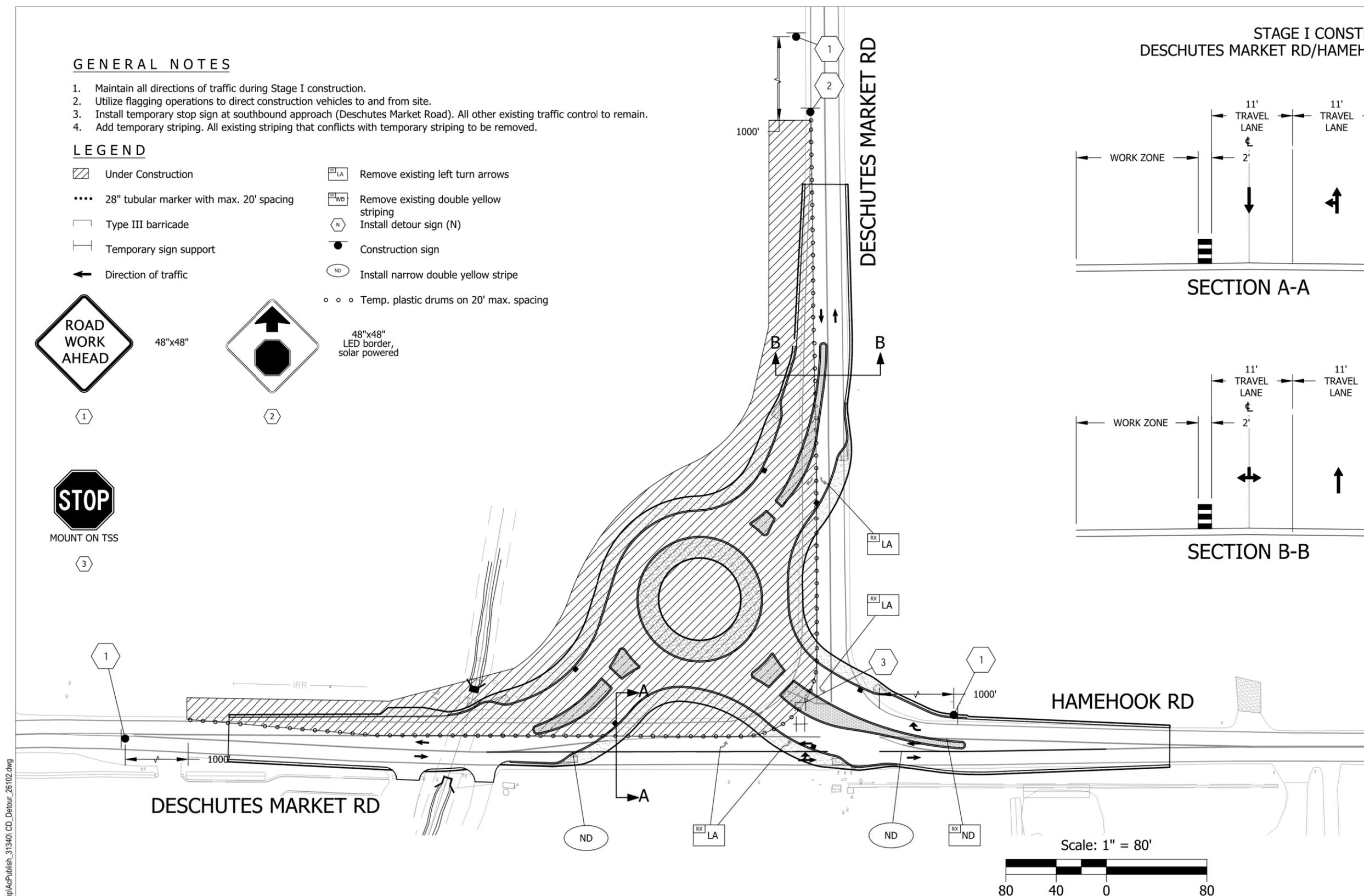
- Maintain all directions of traffic during Stage I construction.
- Utilize flagging operations to direct construction vehicles to and from site.
- Install temporary stop sign at southbound approach (Deschutes Market Road). All other existing traffic control to remain.
- Add temporary striping. All existing striping that conflicts with temporary striping to be removed.

**LEGEND**

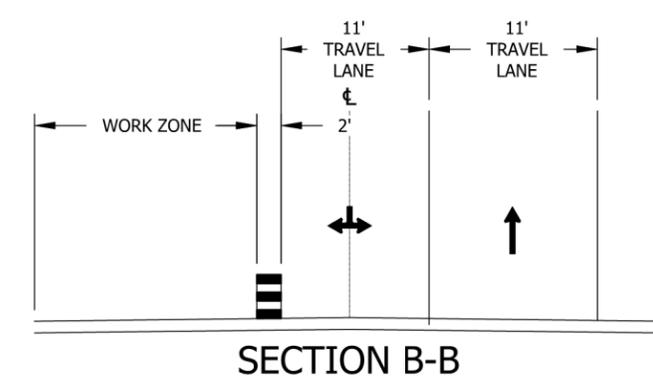
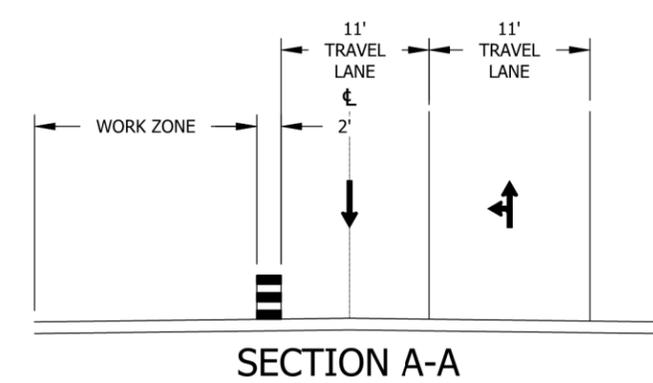
- Under Construction
- 28" tubular marker with max. 20' spacing
- Type III barricade
- Temporary sign support
- Direction of traffic
- Remove existing left turn arrows
- Remove existing double yellow striping
- Install detour sign (N)
- Construction sign
- Install narrow double yellow stripe
- Temp. plastic drums on 20' max. spacing



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**STAGE I CONSTRUCTION  
DESCHUTES MARKET RD/HAMEHOOK RD IMPROVEMENTS**



HAMEHOOK RD

DESCHUTES MARKET RD

Scale: 1" = 80'



**REGISTERED PROFESSIONAL ENGINEER**  
65552PE  
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OREGON  
MADE E. SCARBROUGH  
EXPIRES: 06/30/24



DATE	NO.	DESCRIPTION
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CHECKED:	KAI TEAM
DATE:	12.1.2022



**STAGE I CONSTRUCTION  
DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
DESCHUTES COUNTY, OREGON

SHEET NO.  
**TC-1**  
OF  
JOB NO.  
DC0-02

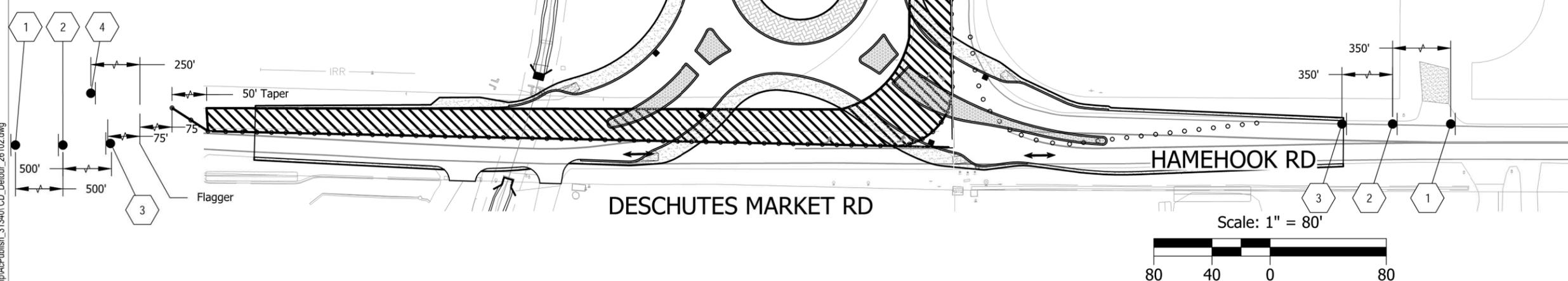
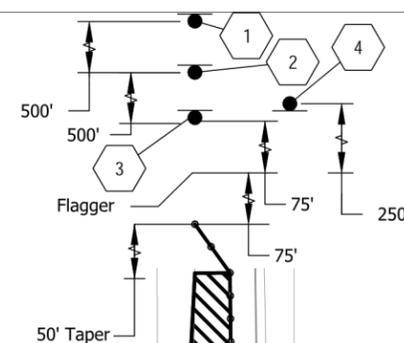
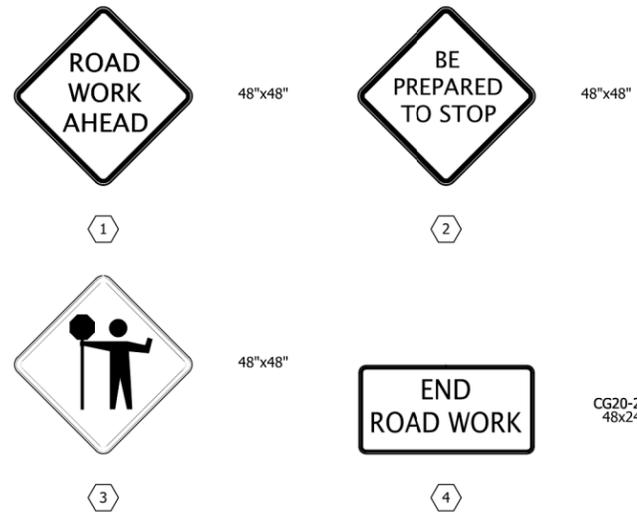
STAGE II CONSTRUCTION  
 DESCHUTES MARKET RD/HAMEHOOK RD IMPROVEMENTS

**GENERAL NOTES**

1. Single lane closure on Deschutes Market Rd with flagging on all three legs.

**LEGEND**

-  Under Construction
-  Construction sign
-  28" tubular marker with max. 20' spacing
-  Temp. plastic drums on 20' max. spacing
-  Type III barricade
-  Temporary sign support
-  Direction of traffic



REGISTERED PROFESSIONAL  
 ENGINEER  
 65552PE  
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 OREGON  
 WADE E. SCARBROUGH  
 EXPIRES: 06/30/24



DATE	NO.	DESCRIPTION
REVISIONS		

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DATE:	12.1.2022



STAGE II CONSTRUCTION  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

SHEET NO.  
**TC-2**  
 OF  
 JOB NO.  
 DC0-02

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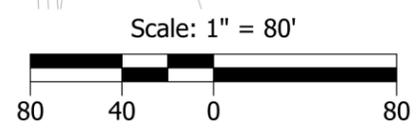
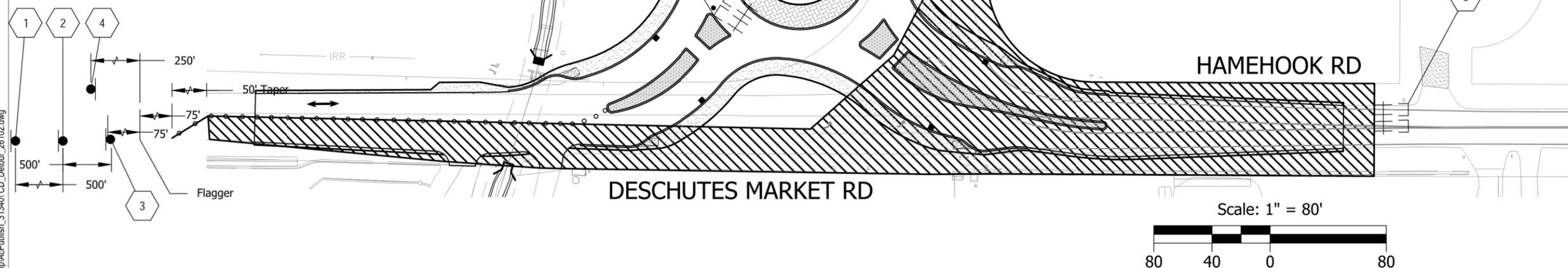
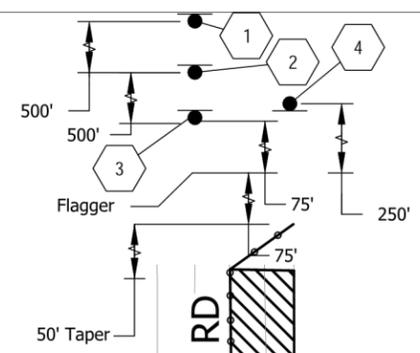
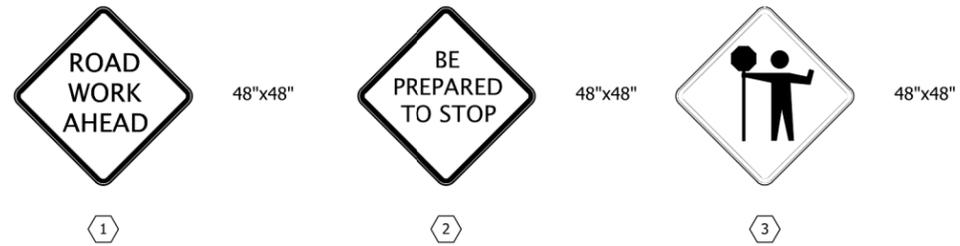
STAGE III (PHASE 1) CONSTRUCTION  
 DESCHUTES MARKET RD/HAMEHOOK RD IMPROVEMENTS

**GENERAL NOTES**

1. Single lane closure on Deschutes Market Rd with flagging
2. See sheet TC-5 for additional detour signing.

**LEGEND**

-  Under Construction
-  Construction sign
-  28" tubular marker with max. 20' spacing
-  Temp. plastic drums on 20' max. spacing
-  Type III barricade
-  Temporary sign support
-  Direction of traffic



REGISTERED PROFESSIONAL  
 ENGINEER  
 65552PE  
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 WADE E. SCARBROUGH  
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DATE:	12.1.2022



STAGE III (PHASE 1) CONSTRUCTION  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

SHEET NO.  
**TC-3**  
 OF  
 JOB NO.  
 DC0-02

STAGE III (PHASE 2) CONSTRUCTION  
 DESCHUTES MARKET RD/HAMEHOOK RD IMPROVEMENTS

**GENERAL NOTES**

1. Maintain or provide access as needed to residential driveways within project footprint
2. Stage 5 (top lifting paving) to be completed under flagging
3. Cover yield signs during this stage.
4. See sheet TC-5 for additional detour signing.

**LEGEND**

-  Under Construction
-  28" tubular marker with max. 20' spacing
-  Type III barricade
-  Temporary sign support
-  Direction of traffic
-  Construction sign



48"x48"

1



MOUNT ON BARRICADE

2

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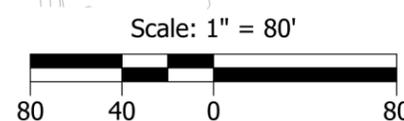
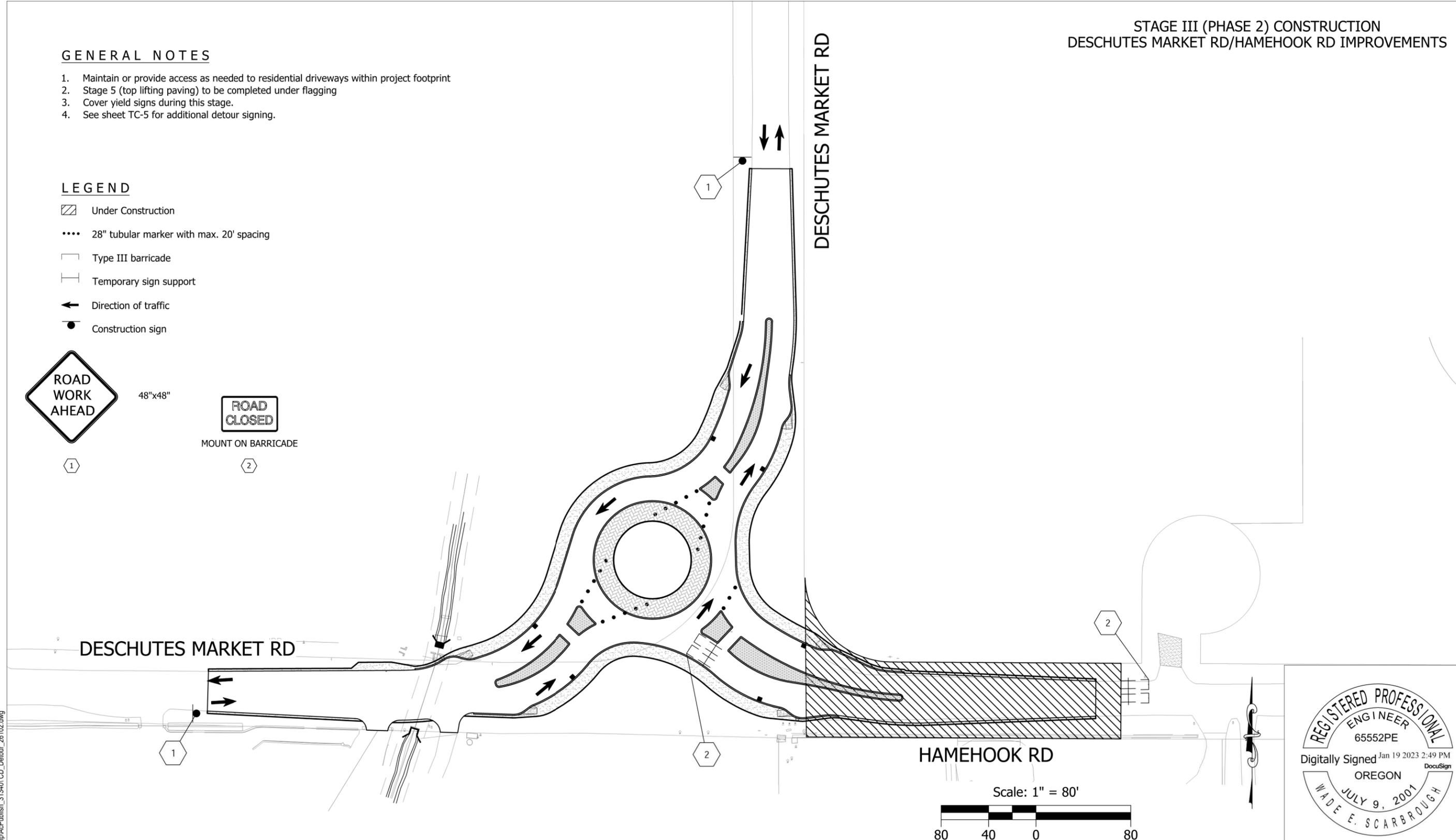


DATE	NO.	DESCRIPTION
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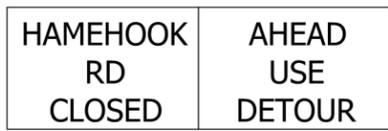
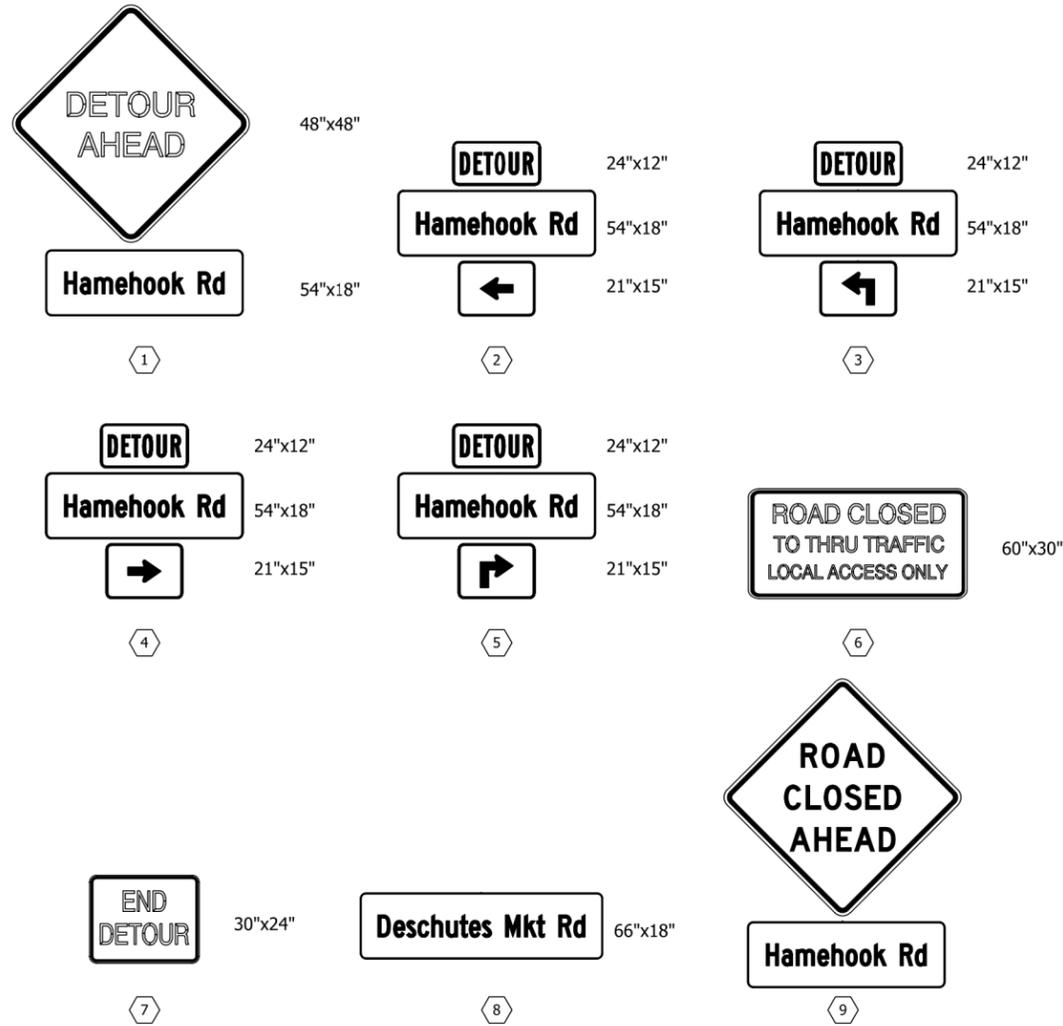
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DATE:	12.1.2022



STAGE III (PHASE 2) CONSTRUCTION  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON



STAGE III CONSTRUCTION DETOUR  
DESCHUTES MARKET RD/HAMEHOOK RD IMPROVEMENTS



PORTABLE CHANGEABLE MESSAGE SIGN

(Suggested Message)  
(Locate As Directed)  
(Message During Detour)

GENERAL NOTES

1. Install two portable changeable message signs at beginning and end of detour as directed by County or Engineer of Record.

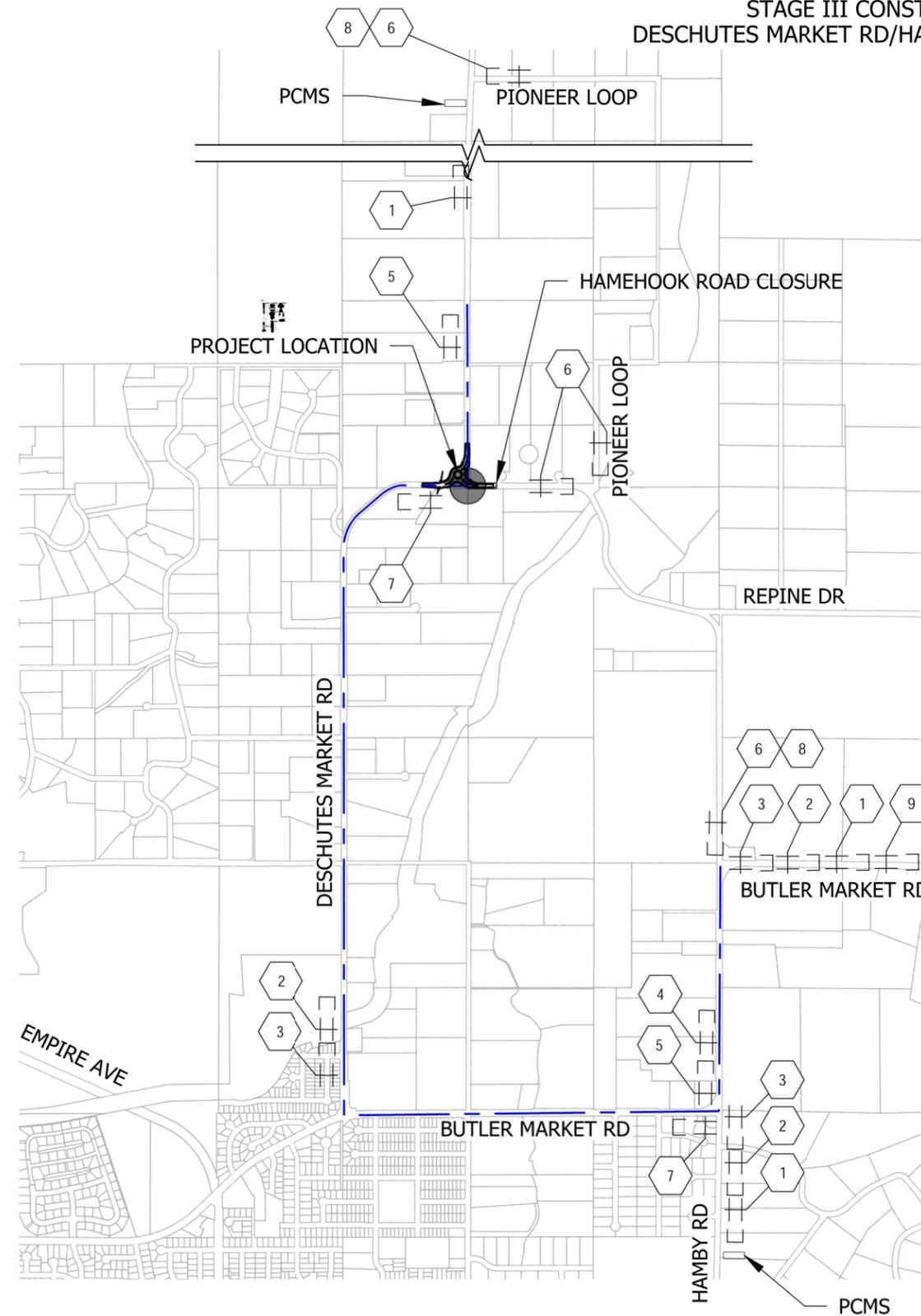
LEGEND

- Marked detour route
- Type III barricade
- Temporary sign support



DATE	NO.	DESCRIPTION
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DATE:	12.1.2022



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 OREGON  
 WADE E. SCARBROUGH  
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STAGE III CONSTRUCTION DETOUR  
**DESCHUTES MARKET RD / HAMEHOOK RD INTERSECTION IMPROVEMENT**  
 DESCHUTES COUNTY, OREGON

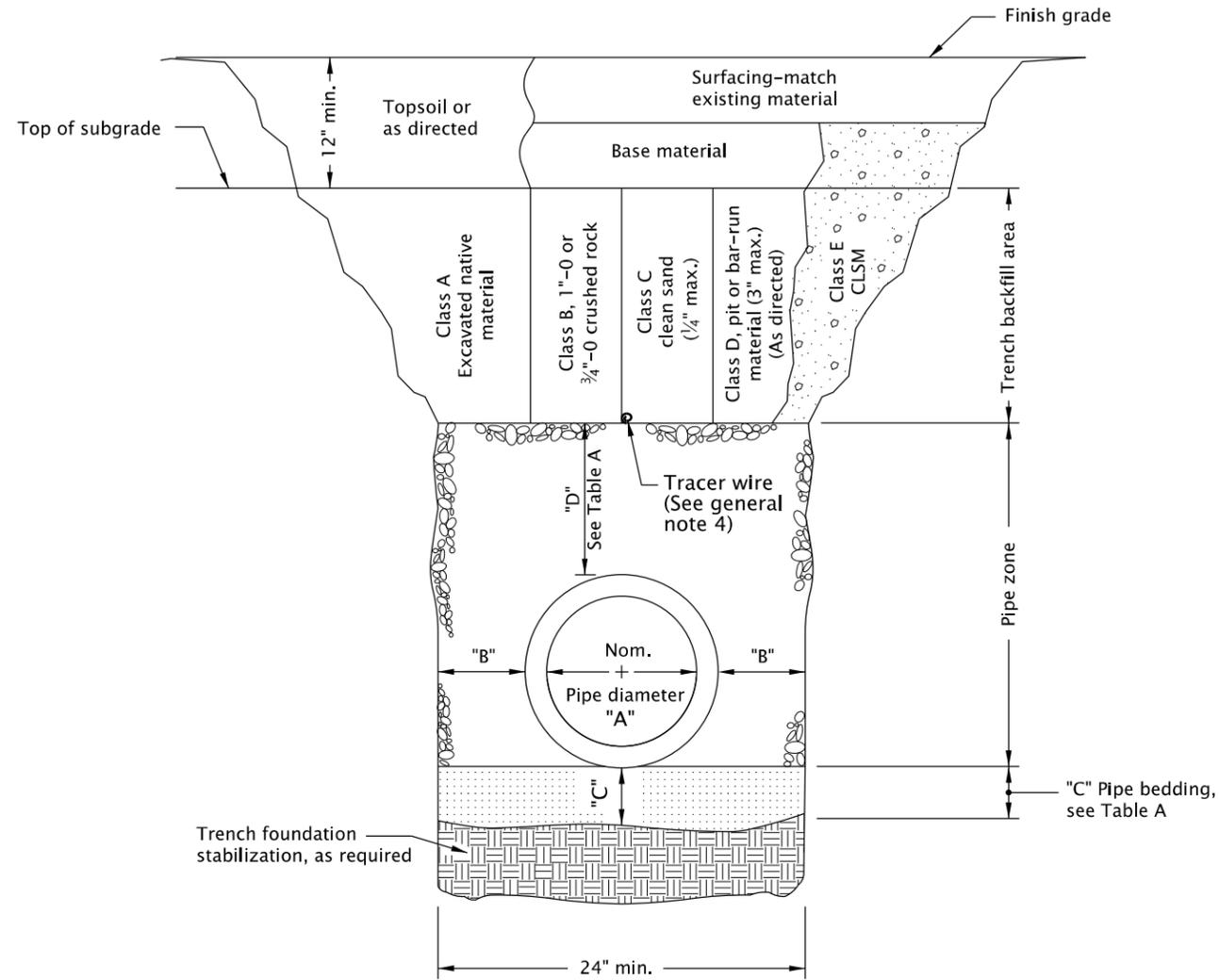
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**TC-5**  
 OF  
 JOB NO.  
 DC0-02

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**TABLE A**

"A" (in)	"B" (in)	"C" (in)	"D" (in)
4	10	4	8
6	10	4	8
8	10	6	10
10	10	6	10
12	12	6	10
15	12	6	10
18	16	6	12
21	16	6	12
24	18	6	12
30	18	6	12
36	24	6	14
42	24	6	14
48	24	6	14
54	24	6	14
60	24	6	14
66	24	6	14
72	24	6	14

For pipes over 72" diameter, see general note 3.



MULTIPLE INSTALLATIONS	
DIAMETER	MIN. SPACE BETWEEN PIPES
Up to 48"	24"
48" to 72"	One half (1/2) dia. of pipe

**GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:**

1. Surfacing of paved areas shall comply with street cut Std. Dwg. RD302.
2. For pipe installation in embankment areas where the trench method will not be used and the pipe is  $\geq 36$ " diameter, increase dimension "B" to nominal pipe diameter.
3. Pipes over 72" diameter are structures, and are not applicable to this drawing.
4. See Std. Dwg. RD336 for tracer wire details (When required).

CALC. BOOK NO. <u>N/A</u>	SDR DATE <u>14-JUL-2014</u>
---------------------------	-----------------------------

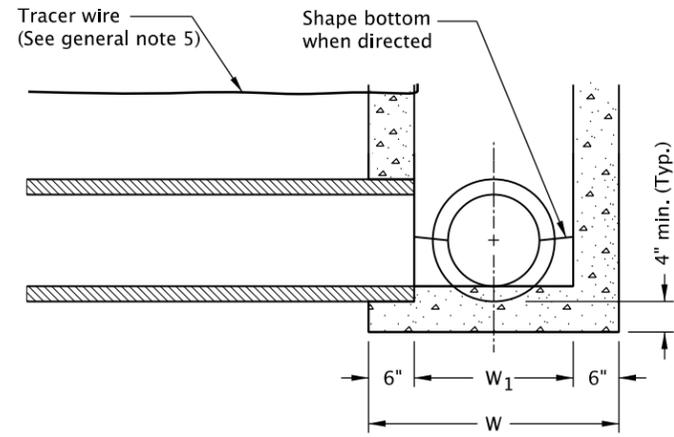
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

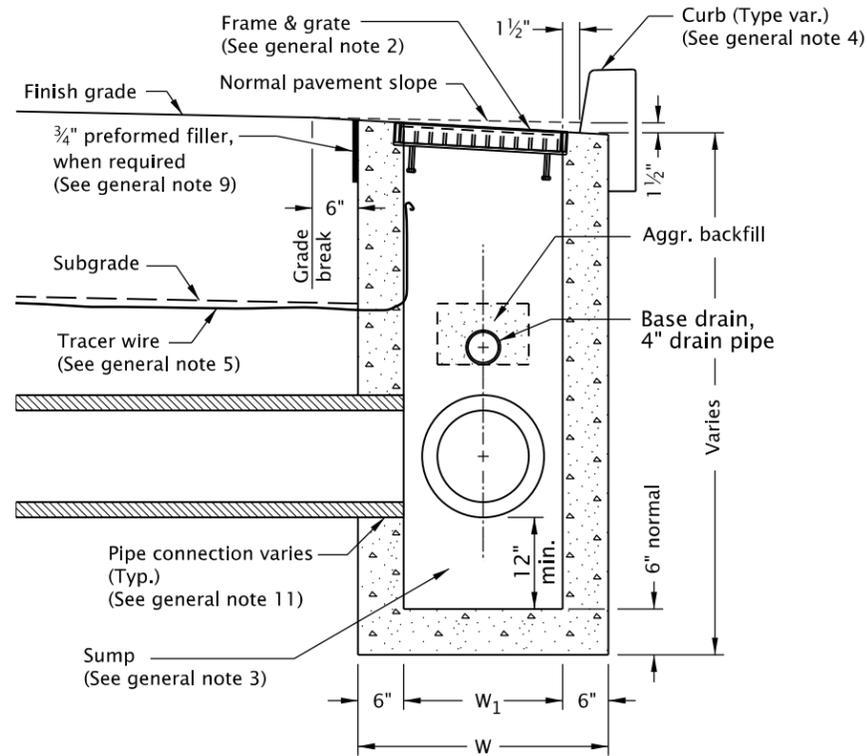
**OREGON STANDARD DRAWINGS  
TRENCH BACKFILL, BEDDING,  
PIPE ZONE AND MULTIPLE  
INSTALLATIONS**

2021

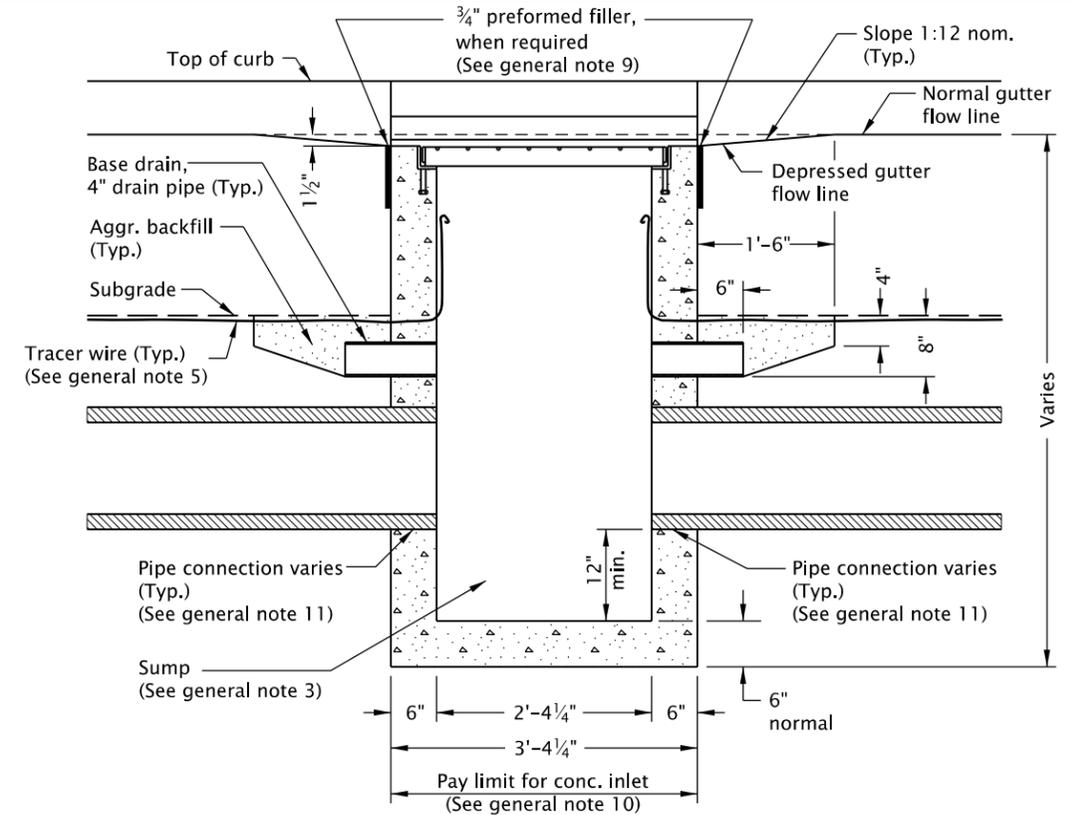
DATE	REVISION DESCRIPTION



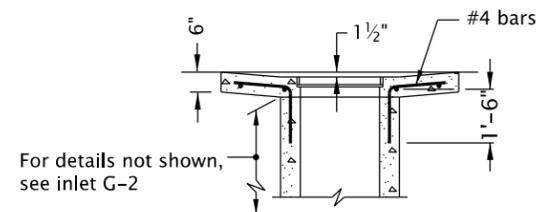
**DETAIL A  
WITHOUT SUMP**



**SECTION B - B**

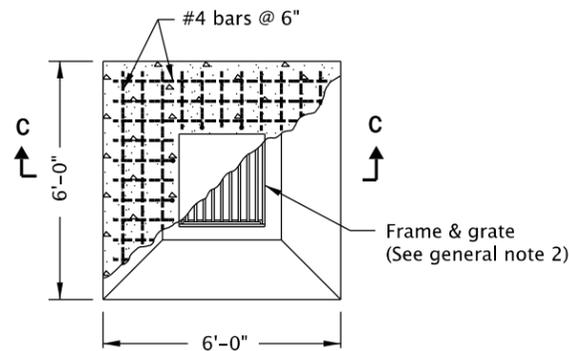


**SECTION A - A**



**SECTION C - C**

NOTE:  
All reinforcement to be placed 2" clear of nearest face of concrete unless shown or noted otherwise

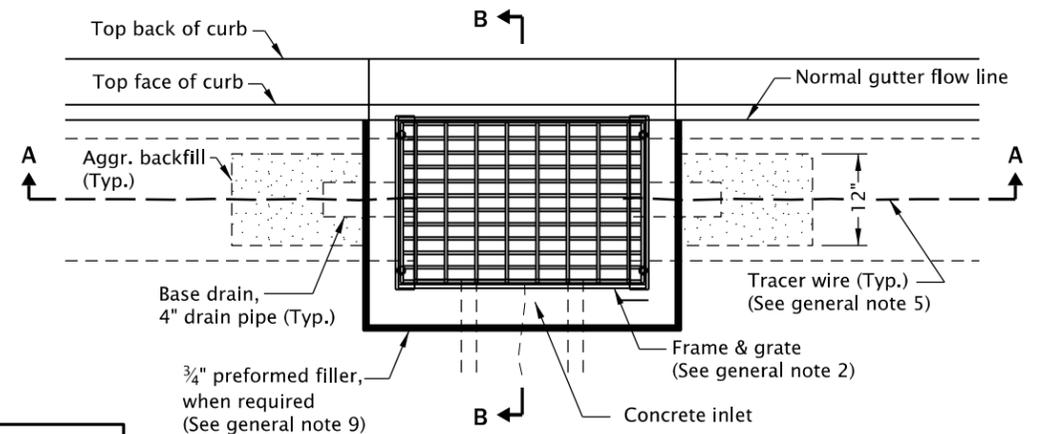


**PLAN  
TYPE G-2MA**

TABLE A		
INLET TYPE	W	W <sub>1</sub>
G-1	2'-8 <sup>7</sup> / <sub>8</sub> "	1'-8 <sup>7</sup> / <sub>8</sub> "
G-2, G-2M, G-2MA	3'-3 <sup>3</sup> / <sub>8</sub> "	2'-3 <sup>3</sup> / <sub>8</sub> "

**GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:**

- Where precast inlets are used as an alternate to cast-in-place inlets, a 4" compacted leveling bed of sand or 1/4"-0 crushed aggregate shall be provided. All precast inlets shall conform to requirements of ASTM C913.
- Graphics show G-1 inlet with Type 2 grate. See Table A for inlet dimensions.  
Type 1 grate allowed only in locations not subject to bicycle or pedestrian use.  
For frame and grate details, see Std. Dwg. RD365.
- Provide sump only where shown on plans, and allowed by jurisdiction. See Detail A for inlet without sump.
- For curb details, see Std. Dwgs. RD700 & RD701.
- See Std. Dwg. RD336 for tracer wire details, or approved alternate.
- Max. pipe diameter varies with pipe material.
- Location, elevation, diameter, slope, and number of pipe(s) varies, see project plans.
- All concrete shall be commercial grade concrete.
- 3/4" preformed filler (in concrete pavement or gutter only) to extend through thickness of concrete.
- See Std. Dwg. RD363 for gutter transition section, when curb and gutter are required.
- See Std. Dwg. RD339 for pipe to structure connections.



**PLAN  
TYPE G-1, G-2, G-2M**

CALC. BOOK NO. N/A SDR DATE 21-JUL-2015

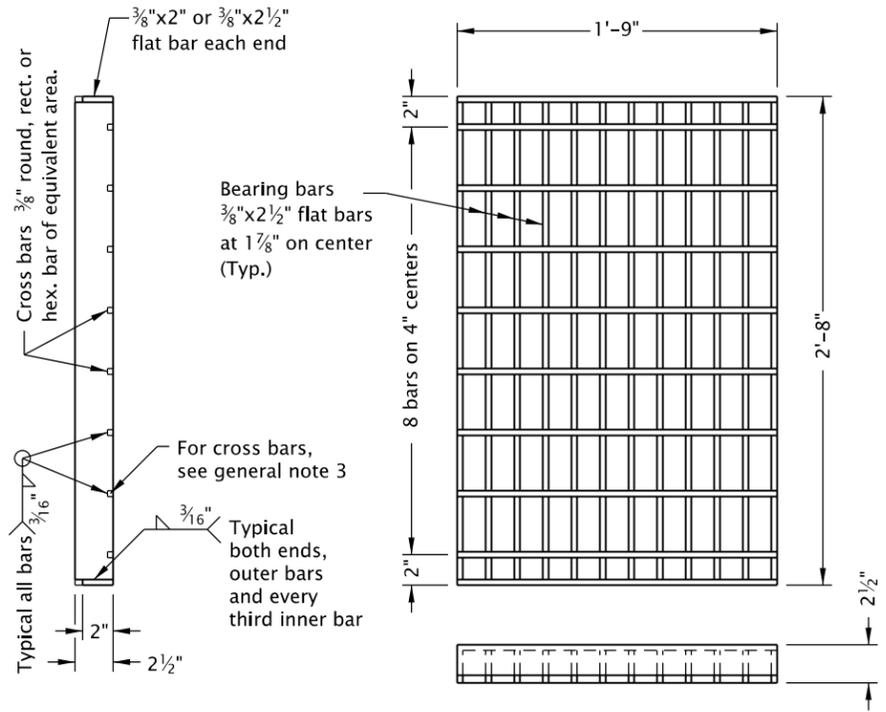
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

**OREGON STANDARD DRAWINGS  
CONCRETE INLETS  
TYPE G-1, G-2, G-2M, & G-2MA**

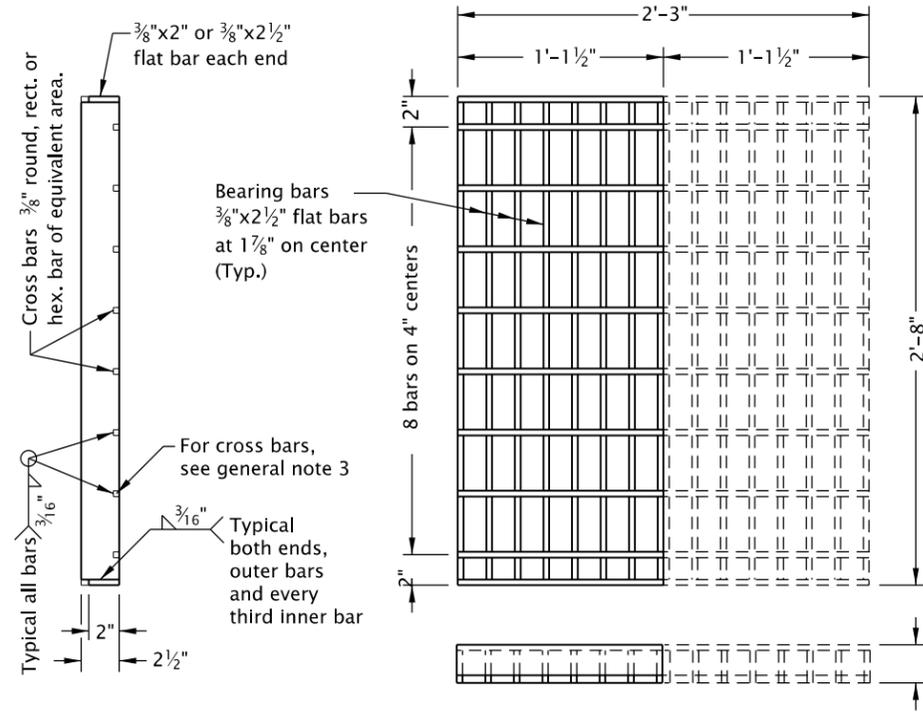
2021

DATE	REVISION DESCRIPTION

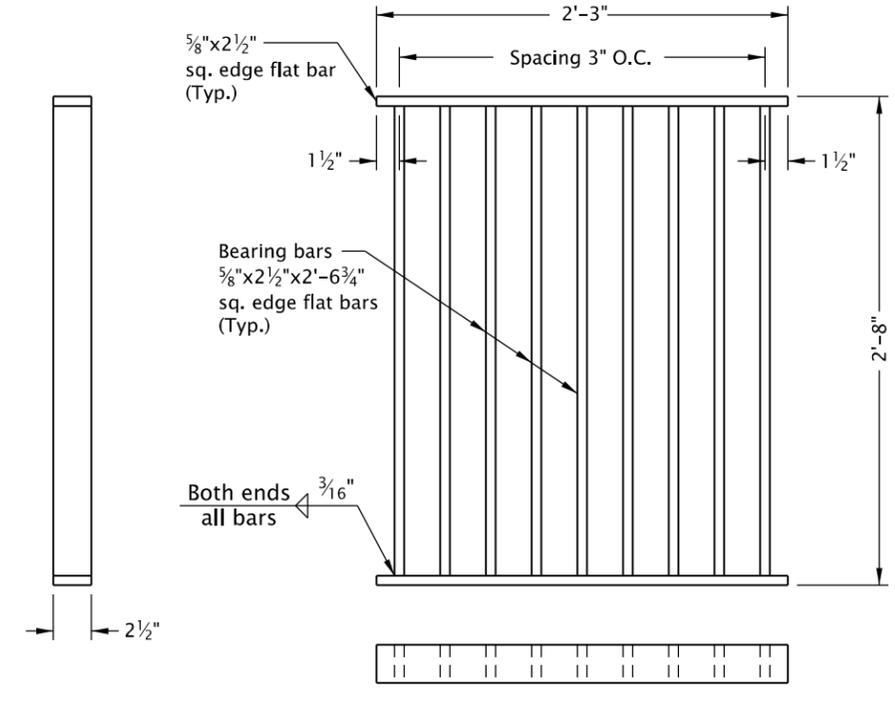
*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*



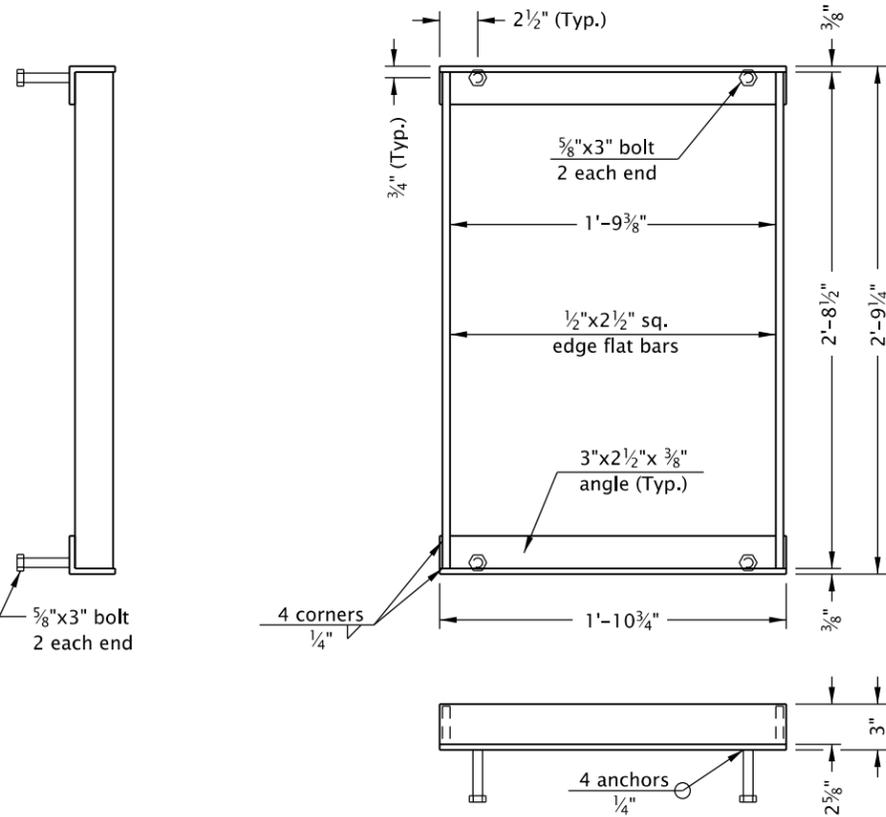
**G-1, CG-1 GRATE  
(TYPE 2)**  
(Bicycle-safe)



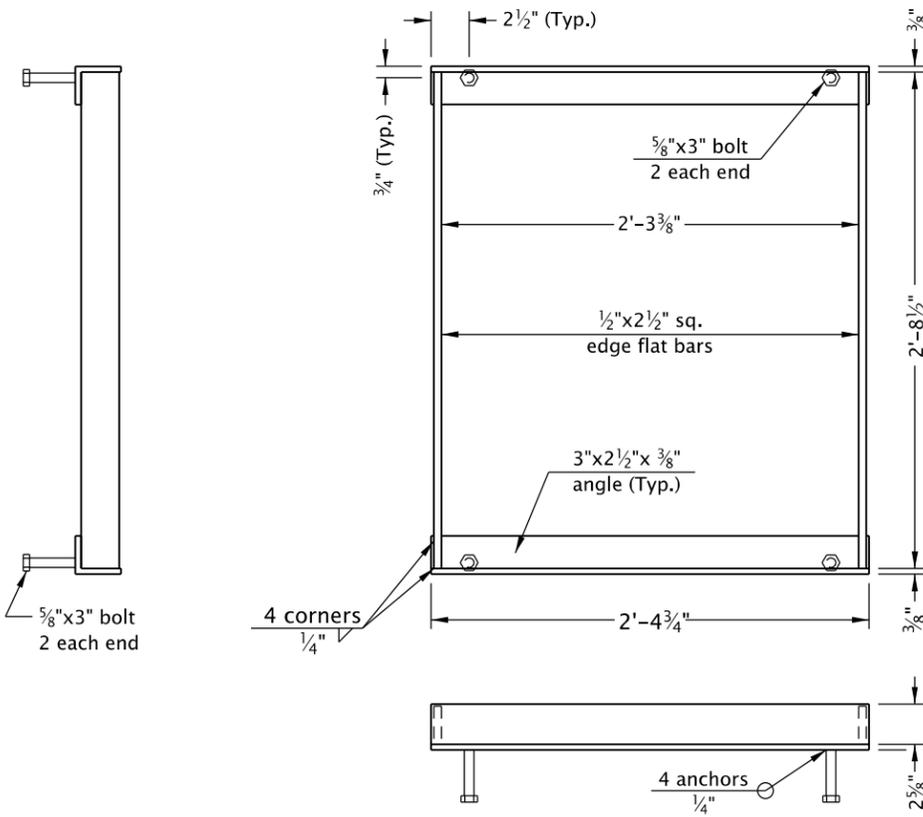
**G-2, G-2M, G-2MA, CG-2 GRATE  
(TYPE 2)**  
(Bicycle-safe)  
(2 grates required per inlet, as shown)



**G-2, G-2M, G-2MA, CG-2 GRATE  
(TYPE 1)**  
(See general note 2)



**G-1, CG-1 FRAME**



**G-2, G-2M, G-2MA, CG-2 FRAME**

GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:

1. For inlet details, see appropriate inlet standard drawing(s).
2. Type 1 grate allowed only in locations not subject to bicycle or pedestrian use.
3. 3/8" cross bars shall be flush with the top of grate surface and may be fillet welded, resistance welded or electroforged to bearing bars.
4. Hot dip galvanize after fabrication.
5. Cast iron grate and frame are acceptable alternates. See ODOT's QPL.

CALC. BOOK NO. <u>N/A</u>	SDR DATE <u>14-JUL-2014</u>
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NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

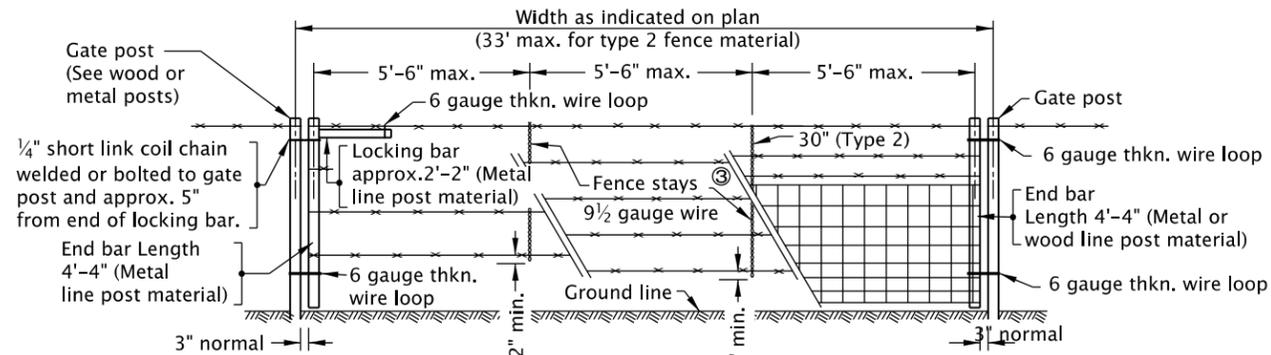
**OREGON STANDARD DRAWINGS**  
**FRAMES & GRATES**  
**FOR CONCRETE INLETS**

2021

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

DATE	REVISION DESCRIPTION

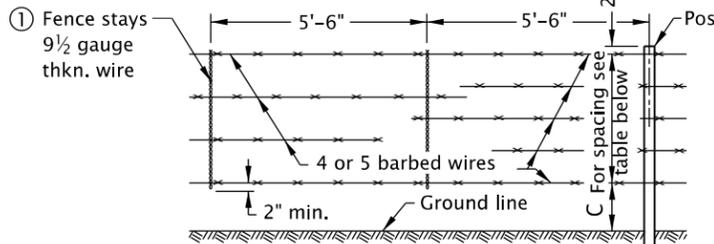
rd810.dgn 20-JUL-2020



- NOTES:  
 ① Match adjoining fence type.  
 ② For details not shown see fence type.  
 ③ For wooden stays, see Type 1 fence details.

**TYPE 1** Fence material ①②  
**TYPE 1-5W** Fence material ①②  
**TYPE 2** Fence material ①②

**GATEWAY**



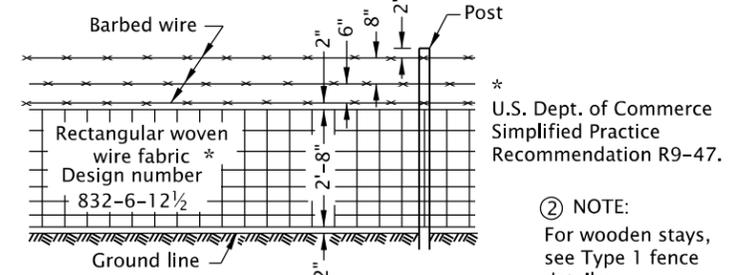
① NOTE:

Wooden Stays to be used in areas of heavy snowfall or snow drifts over 36". Stays to be 2"x2"x52" min. length, sound, untreated Douglas Fir, Western Hemlock or Western Pine, spaced as shown for wire stays and to rest firmly on the ground. Horizontal wires to be stapled are: single wires and a minimum of 4 wires for woven wire fabric.

**TYPES 1, & 1-5W**

**TABLE OF DIMENSIONS**

FENCE	C	SPACING	NO. OF WIRES
Type 1	14"	12"	4
Type 1-5W	10"	10"	5



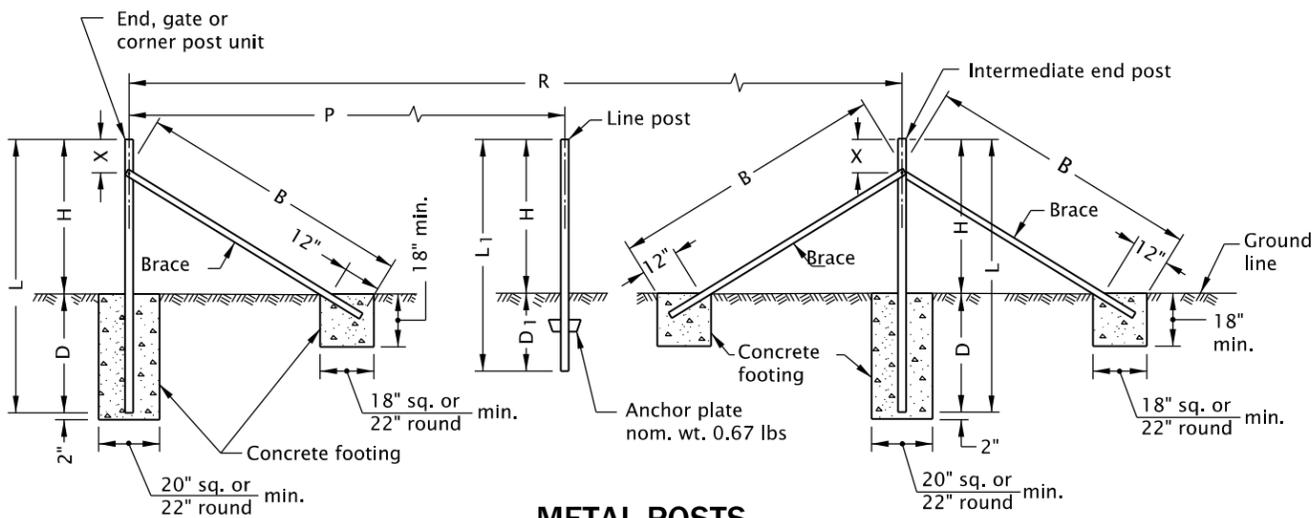
**② TYPE 2**

**TABLE 1 (For wood posts)**

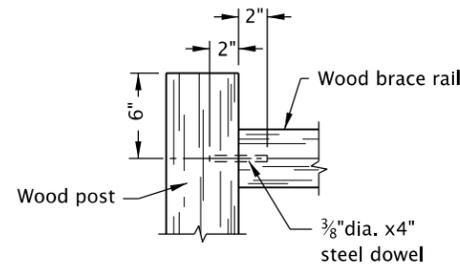
FENCE	R (ft)	UNITS REQUIRED
Types { 1, 1-5W & 2	20 or Less	* None
	20-330	A
	Over 330	A & B

\* Unit A required at gate post.

Either Unit A or Units A & B are required in existing fence line at intersection with new fence line.



**METAL POSTS**



**BRACE RAIL CONNECTION**

**TABLE 2**

FENCE	R max.	P	L min.	L1 min.	H	D min.	D1 min.	B min.	X min.-max.
All Types	660'	16'-6"	7'-6"	6'-6"	4'-4"	3'-2"	2'-2"	7'-8"	9"-22"

**TABLE 3**

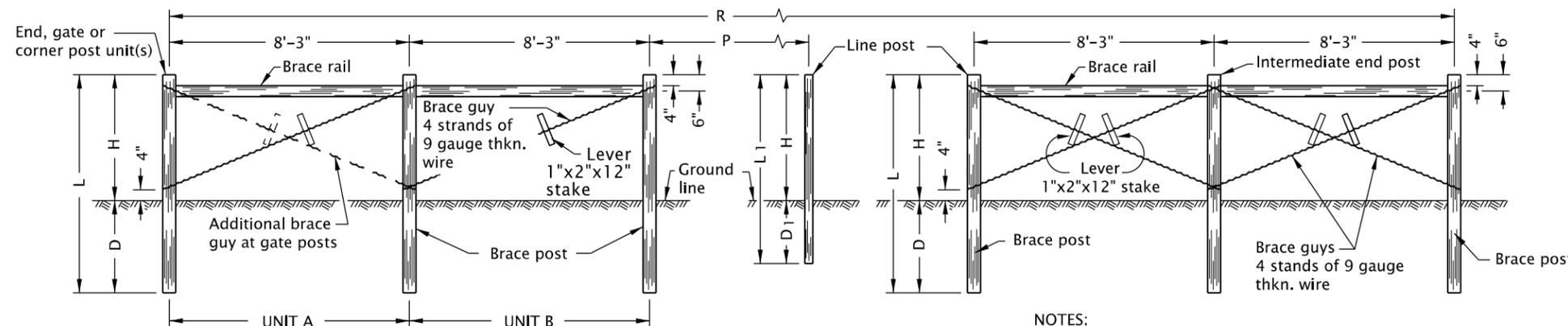
MEMBER	WOOD		SHAPE	WEIGHT PER (ft) nominal	SIZE nominal
	* ROUND	SQUARE			
	DIAMETER OF SMALL END (in) min.-max., min. avg.	SIZE nominal (in)			
Line Post	3" to 4"	3"	† 3"x3"	1.33 lb	ASTM A-702
Brace or Brace Rail	3 1/2" to 5 1/2"	4"	④ 4"x4"	④	1 1/2" +/- O.D.
			④ Angle	3.19 lb	2"x2"x1/4"
Other Post	4" to 7"	5"	† 5"x5"	b	2 3/8" O.D.
			④ Angle	4.1 lb	2 1/2"x2 1/2"x1/4"

\* Max. taper 1":48".

† Max. allowable size 1" additional in each dimension.

④ In accordance with ASTM A 702.

④ In accordance with AASHTO M 181.



**WOOD POSTS**

- NOTES:  
 1. For dimensions indicated by letter see Table 2.  
 2. Line post spacing same as dimension P.  
 3. For cross sectional dimensions of members see Table 3.

**GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:**

- For dimensions indicated by letter see Table 2.
- Line post spacing same as dimension P.
- For shapes, weights and dimensions of members see Table 3.

- All concrete shall be commercial grade concrete.
- See Std. Dwg. RD820 for fence gates.
- See project plans for details not shown.
- Add fence grounding as required.

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

CALC. BOOK NO. N/A SDR DATE 13-JAN-2020

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

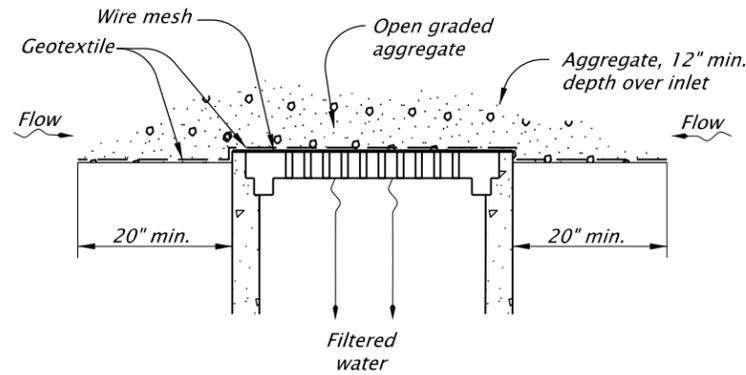
**OREGON STANDARD DRAWINGS  
 BARBED AND WOVEN WIRE FENCES**

2021

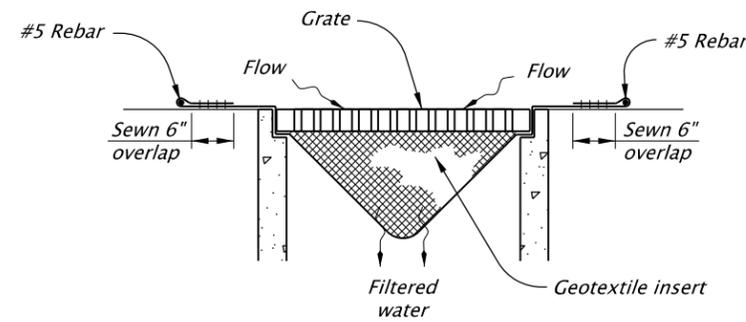
DATE	REVISION DESCRIPTION

rd1010.dgn 01-20-2021

RD1010

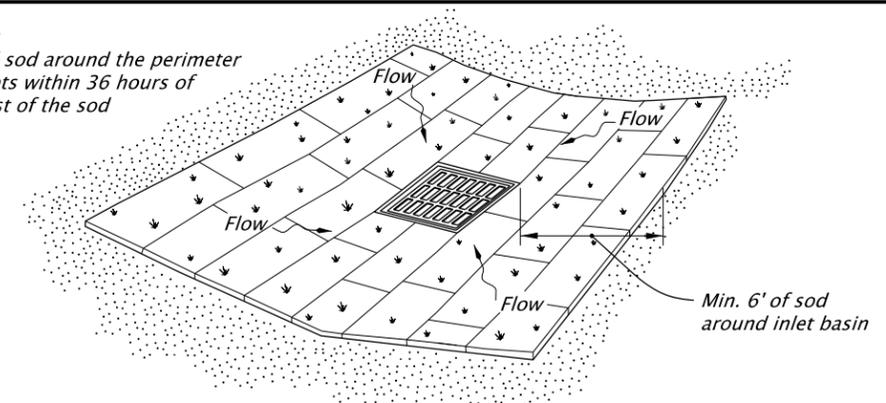


**GEOTEXTILE/WIRE MESH/AGGREGATE - TYPE 2**  
NOT TO SCALE

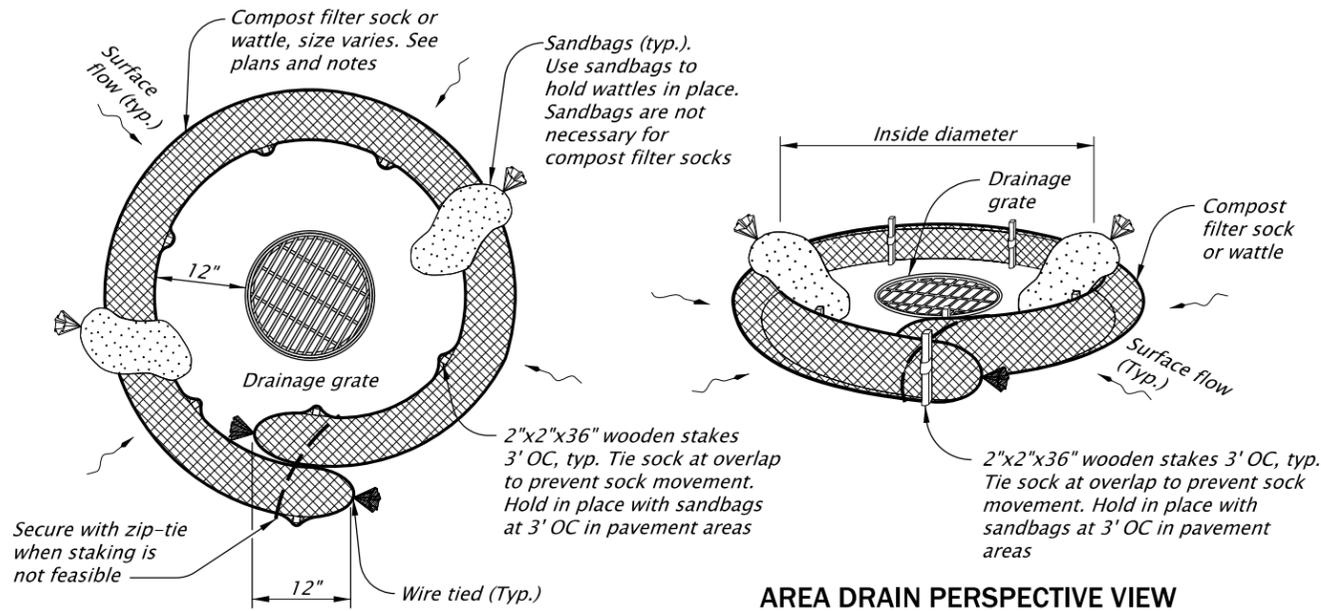


**PREFABRICATED FILTER INSERT - TYPE 3**  
NOT TO SCALE

NOTE:  
Install sod around the perimeter of inlets within 36 hours of harvest of the sod

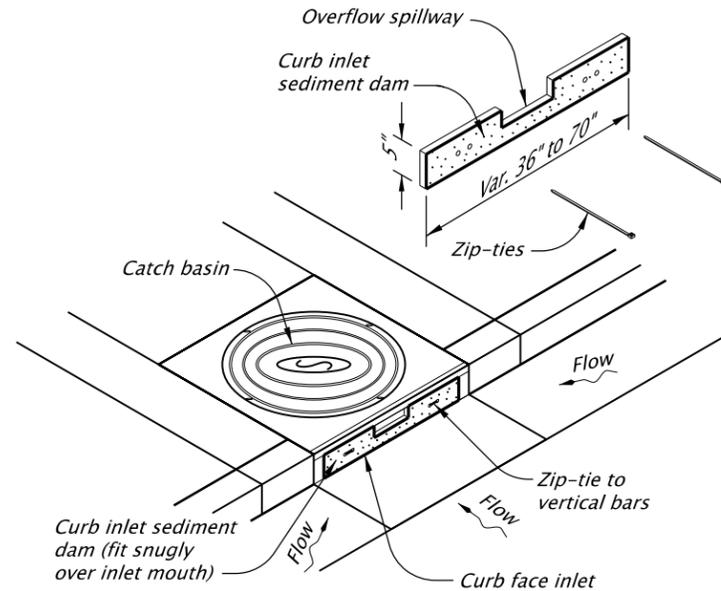


**SOD PROTECTION - TYPE 6**  
NOT TO SCALE

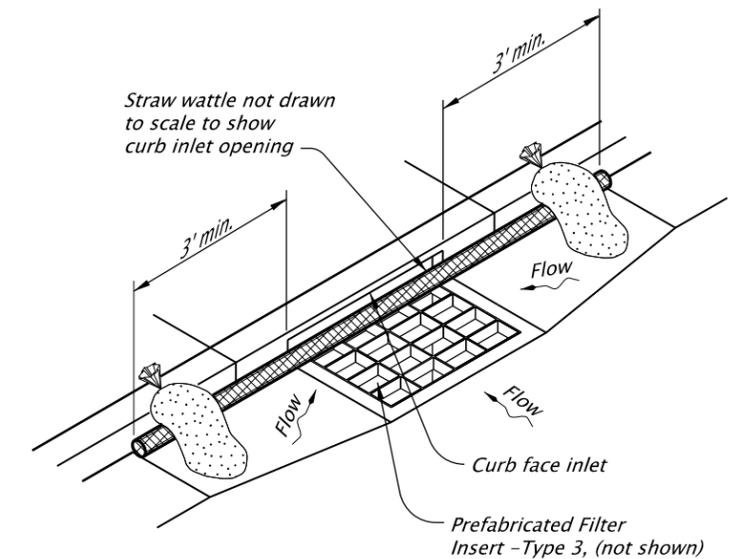


**AREA DRAIN PLAN**

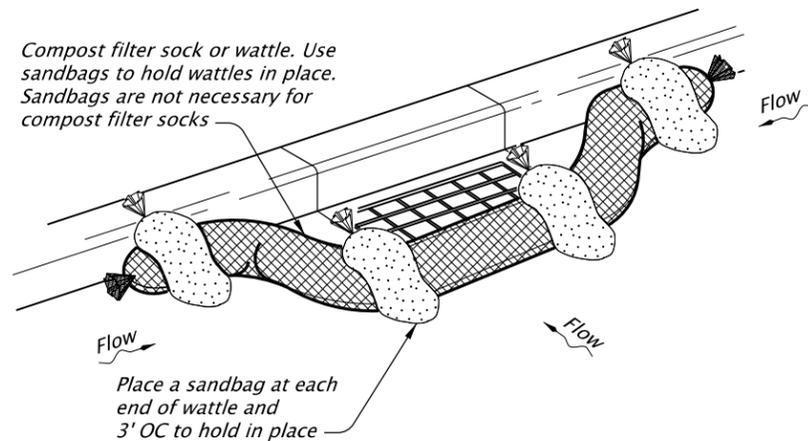
**AREA DRAIN PERSPECTIVE VIEW**



**CURB INLET SEDIMENT DAM - TYPE 10**  
NOT TO SCALE



**WATTLE BARRIER WITH FILTER INSERT - TYPE 11**  
NOT TO SCALE



**COMPOST FILTER SOCK OR WATTLE - TYPE 7**  
NOT TO SCALE

**CURB INLET PERSPECTIVE VIEW**

NOTES:  
Type 2 - Geotextile/wire mesh/aggregate  
Place the wire mesh over the grate.  
Place sediment fence geotextile over the wire mesh and perimeter area around structure.  
Install aggregate over the geotextile fabric.

Type 3 - Prefabricated filter inserts  
Install prefabricated filter inserts according to the plans, special provisions, and manufacturer recommendations.  
Prefabricated inserts with provisions for overflow are allowed only when accompanied by additional BMP's to prevent the potential of sediments entering project storm systems.  
Field fabricated inserts are not allowed.

Type 7 - Compost filter sock  
Drive 2"x2" wood stakes a minimum of 6" into ground and flush with the top of the sock.  
Overlap ends of sock per manufacturers recommendations (12" min., 36" max.).  
Use 8" to 12" dia sock on curbside in traffic areas.

(Type 7 cont.)  
Use 12" to 18" dia sock in non-traffic areas or areas where the larger socks can be used safely.  
Use synthetic mesh socks for temporary installations.

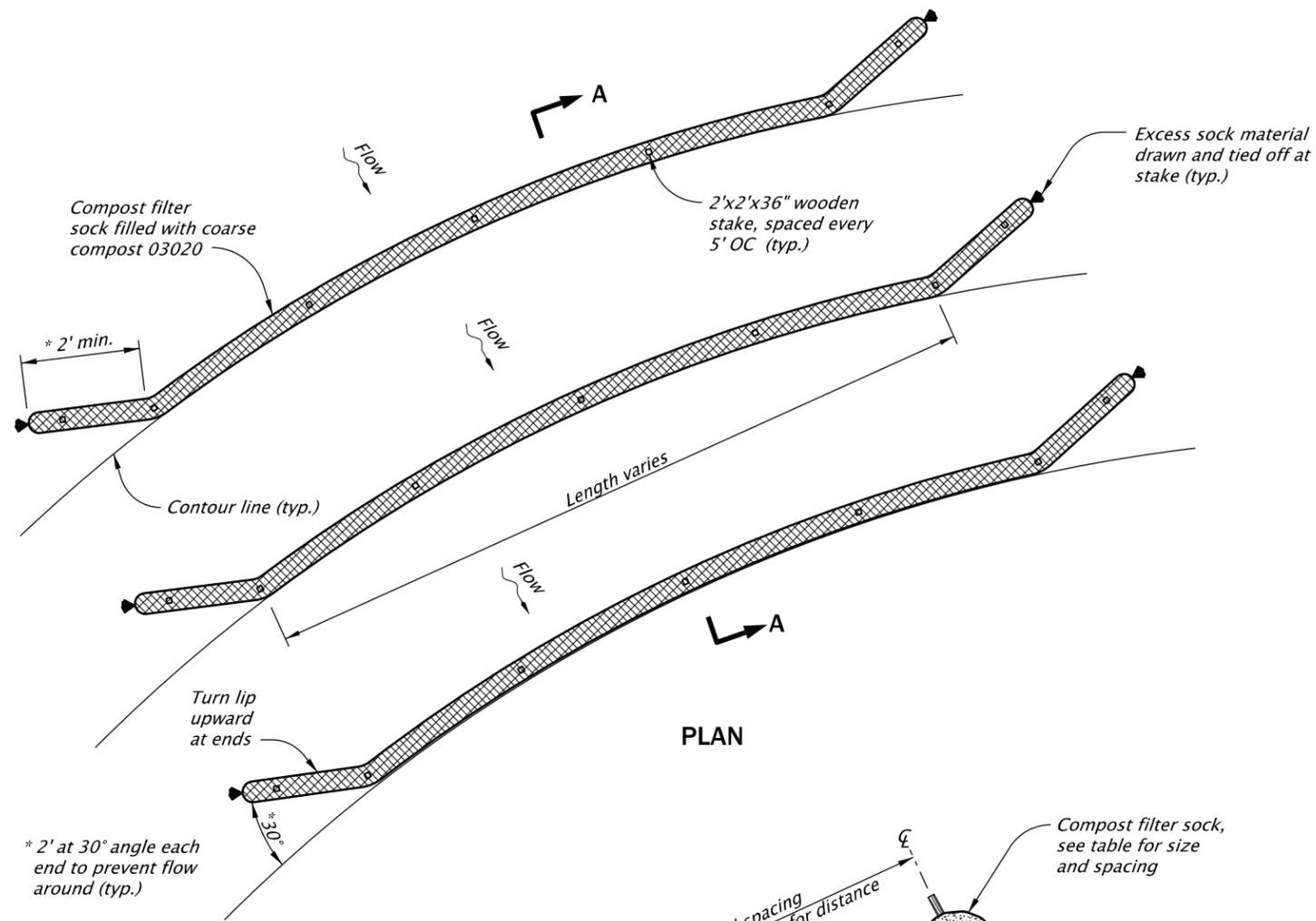
Type 10 - Curb inlet sediment dam  
Fit curb inlet sediment dam snugly into inlet mouth. Curb inlet sediment dam is required for use with inlet filter insert where at-grade inlet grate and curb inlet are combined at a catch basin.

Type 11 - Wattle barrier with filter insert  
Install prefabricated filter insert per Type 3 detail.  
Install wattles over opening and 36" to each side of opening tight against curb. Adjust wattle to force storm water to flow through filter insert or wattle prior to leaving the site.  
Adjust, replace or modify the inlet protection as needed to prevent sediment laden water from entering the catch basin.

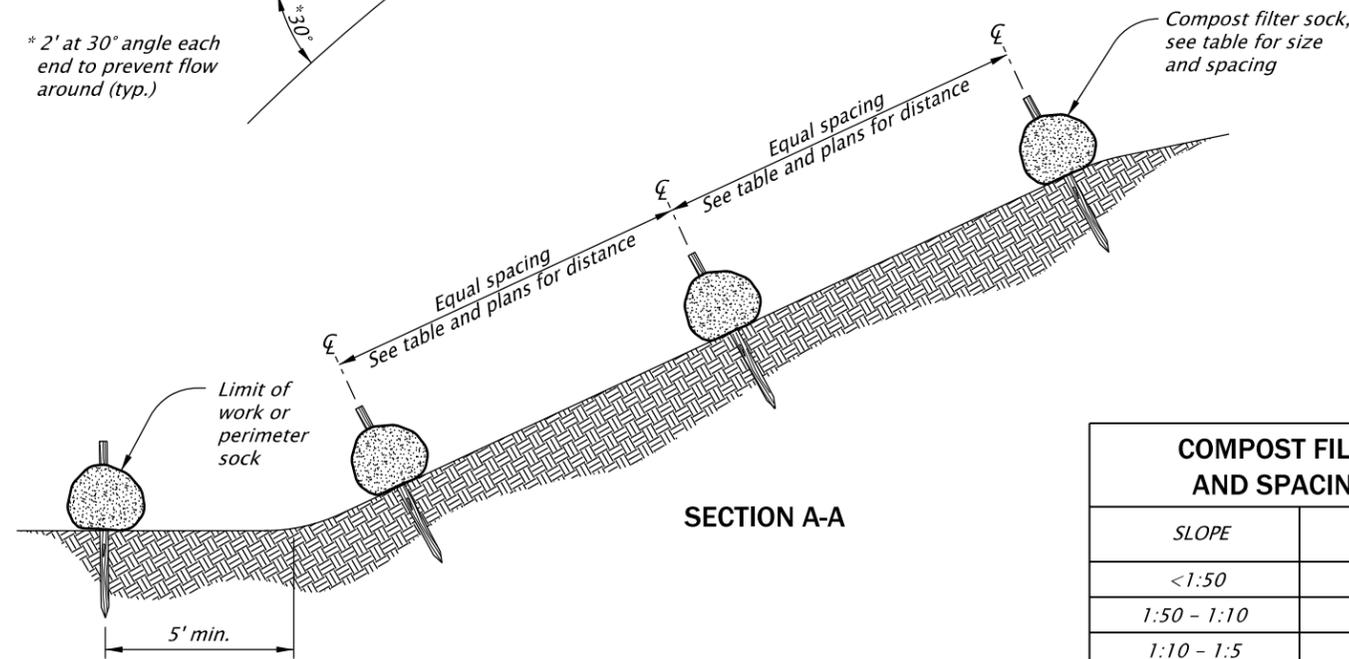
CALC. BOOK NO. <u>N/A</u>		SDR DATE <u>January, 2021</u>	
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications			
<b>OREGON STANDARD DRAWINGS</b>			
<b>INLET PROTECTION</b>			
<b>TYPE 2, 3, 6, 7, 10 AND 11</b>			
2021			
DATE	REVISION DESCRIPTION		
Jan 2021	Removed Calc book numbers		
Jan 2021	Moved notes up from overlapping the sheet border		

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

rd1032.dgn 01-20-2021



PLAN

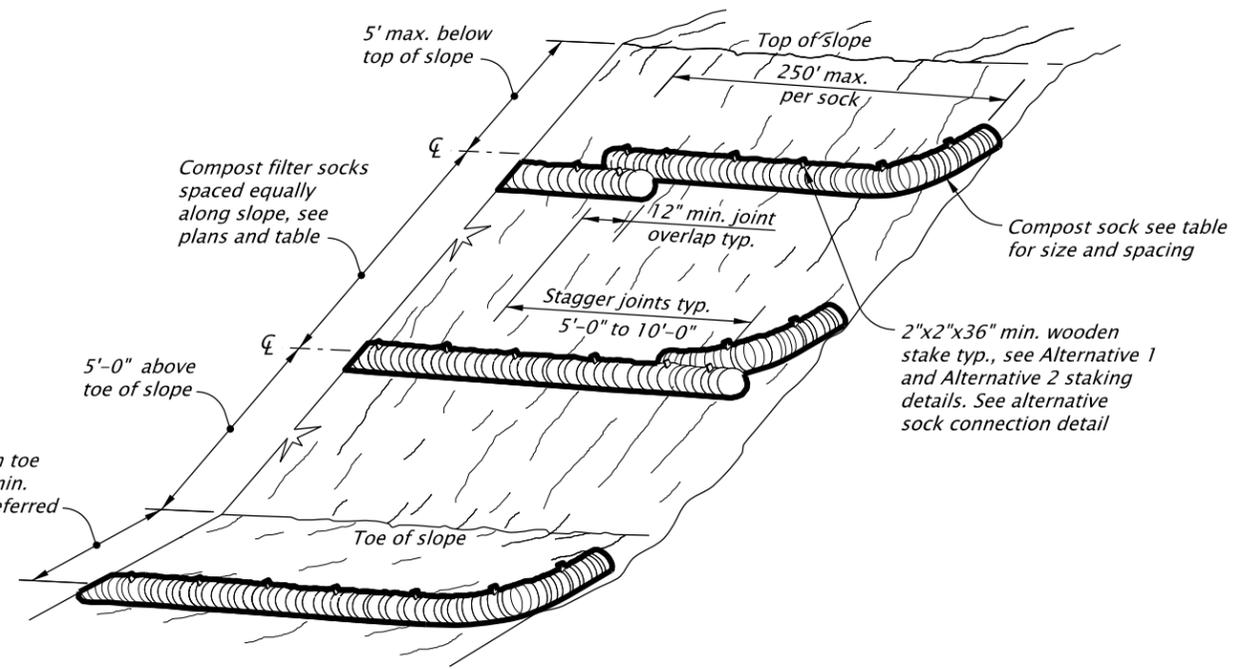


SECTION A-A

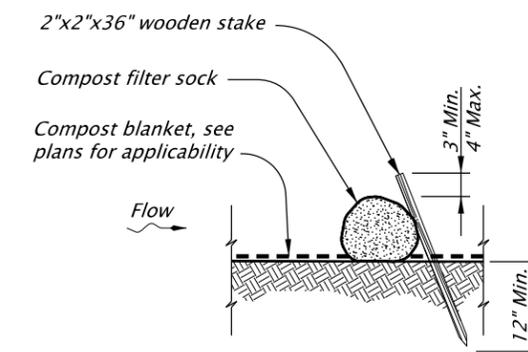
NOTE:  
Fully biodegradable compost sock mesh is recommended for permanent installations. Where compost socks must be moved or removed, synthetic sock mesh should be used.

COMPOST FILTER SOCK DIAMETER AND SPACING BASED ON SLOPE		
SLOPE	SPACING (ft)	DIAMETER (in)
<1:50	250	8
1:50 - 1:10	125	12
1:10 - 1:5	100	12
1:5 - 1:2	50	18
>1:2	25	18

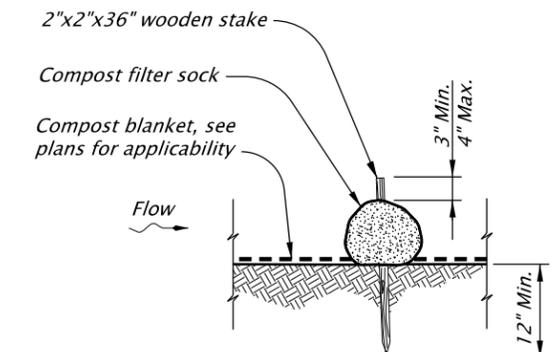
COMPOST FILTER SOCK  
NOT TO SCALE



SLOPE APPLICATION - PERSPECTIVE VIEW



ALTERNATIVE 1 (Staking)



ALTERNATIVE 2 (Staking)

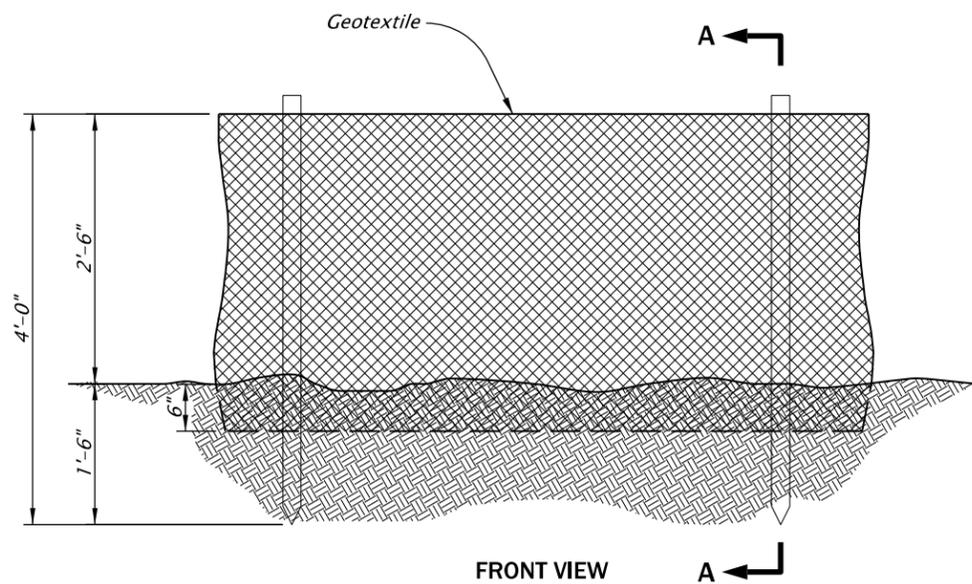
CALC. BOOK NO. N/A	SDR DATE January, 2021
<p>The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.</p>	NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications
	<b>OREGON STANDARD DRAWINGS</b>
	<b>SEDIMENT BARRIER TYPE 8</b>
DATE Jan 2021	REVISION DESCRIPTION Removed Calc book numbers

Effective Date: December 1, 2022 - May 31, 2023

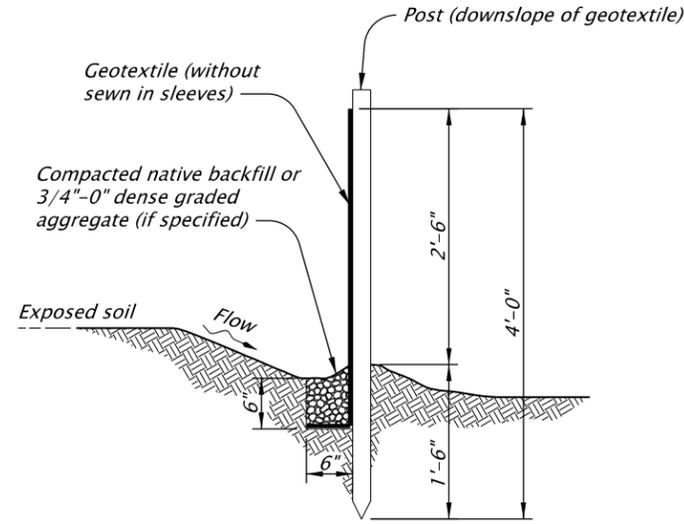
RD1032

RD1032

rd1040.dgn 01-20-2021



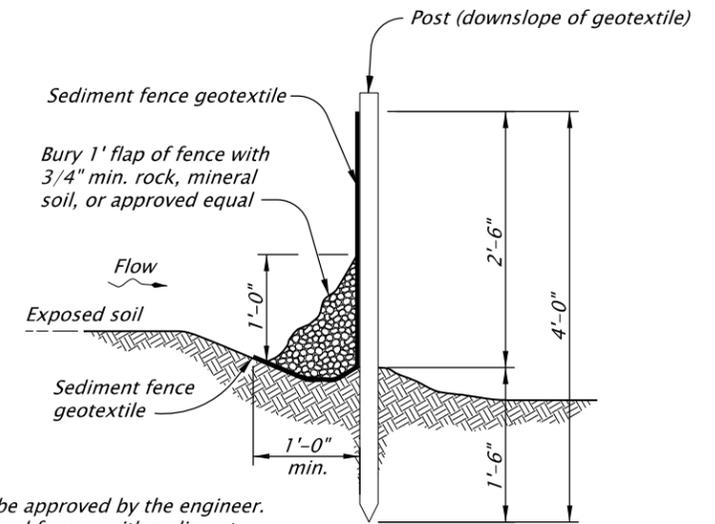
FRONT VIEW



SECTION A-A

**SEDIMENT FENCE AND GEOTEXTILE BURY DETAIL - TYPE 1**

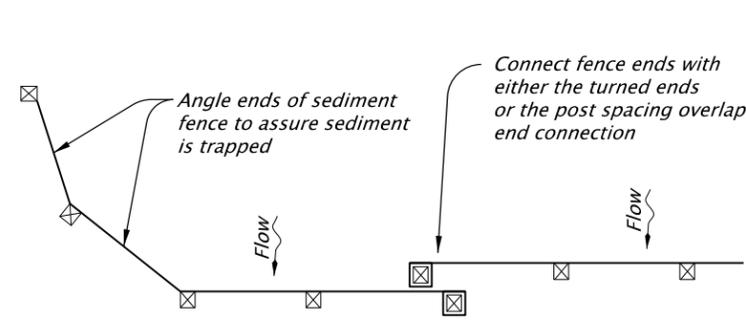
NOT TO SCALE



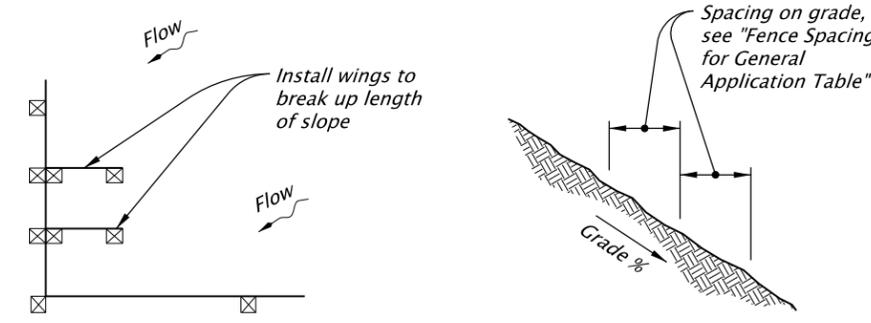
**ALTERNATE SEDIMENT FENCE WITHOUT TRENCHING - TYPE 2**

NOT TO SCALE

- NOTES:
1. Use must be approved by the engineer.
  2. Not approved for use with sediment fencing with sewn-in post sleeves.



PLAN VIEW



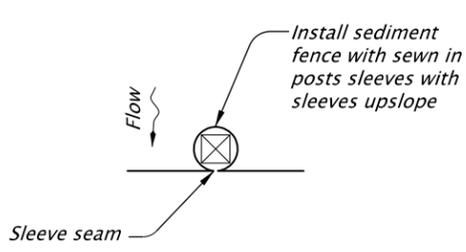
TERMINATION AT CORNER OR PROPERTY LINE

GENERAL NOTES:

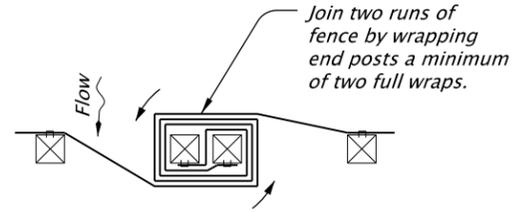
1. Use 2"x2" wood fence posts.
2. Posts to be installed on downhill side of sediment fence geotextile. Position posts to prevent separation from geotextile.
3. Compact filter fabric trench backfill and soil on uphill side of fence.
4. Locate fence no closer than three feet to the toe of a slope.
5. Wing spacing shall comply with "Fence Spacing for General Application Table".

FENCE SPACING FOR GENERAL APPLICATION TABLE	
INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS	
GRADE	MAXIMUM SPACING ON GRADE
Grade < 10%	300'
10% ≤ Grade < 15%	150'
15% ≤ Grade < 20%	100'
20% ≤ Grade < 30%	50'
30% ≤ Grade	25'

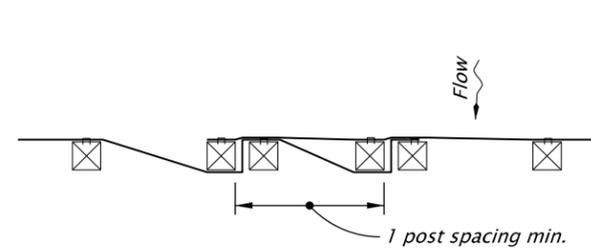
POST SPACING TABLE	
6'	Sediment Fence with Geotextile elongation less than 50%
4'	Sediment Fence with Geotextile elongation 50% or more



GEOTEXTILE WITH POST SLEEVES



TURNED ENDS CONNECTION



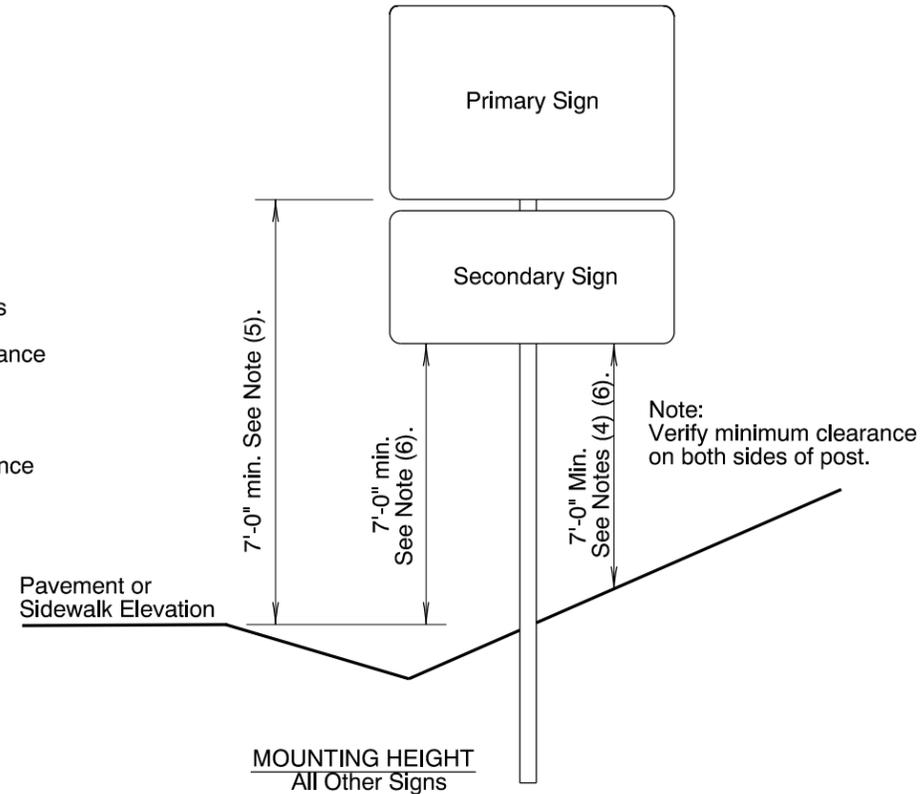
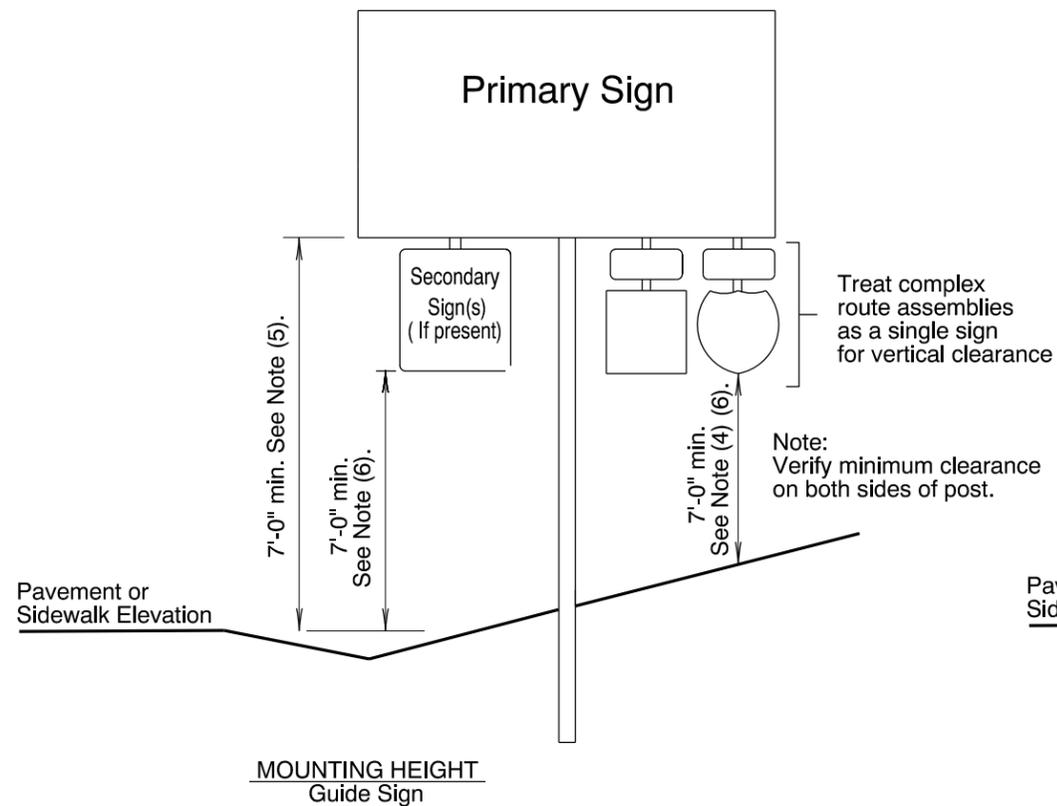
POST SPACING OVERLAP CONNECTION

**GEOTEXTILE END CONNECTIONS**

NOT TO SCALE

CALC. BOOK NO. <u>    N/A    </u>	SDR DATE <u>    January, 2021    </u>
<p>The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.</p>	NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications
	<b>OREGON STANDARD DRAWINGS</b>
	<b>SEDIMENT FENCE</b>
	2021
DATE	REVISION DESCRIPTION
Jan 2021	Removed Calc book numbers

RD1040

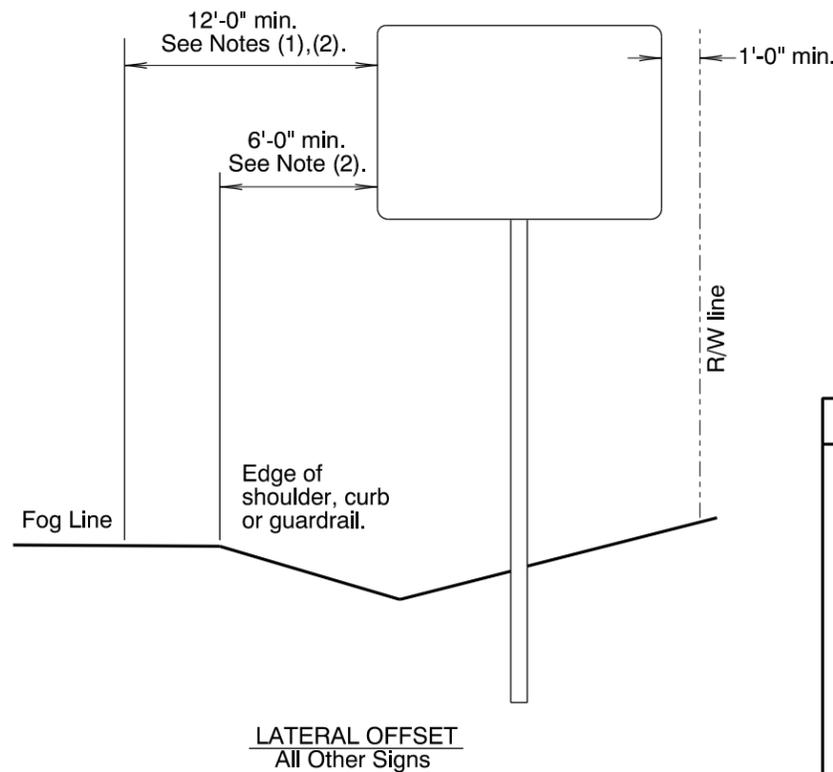
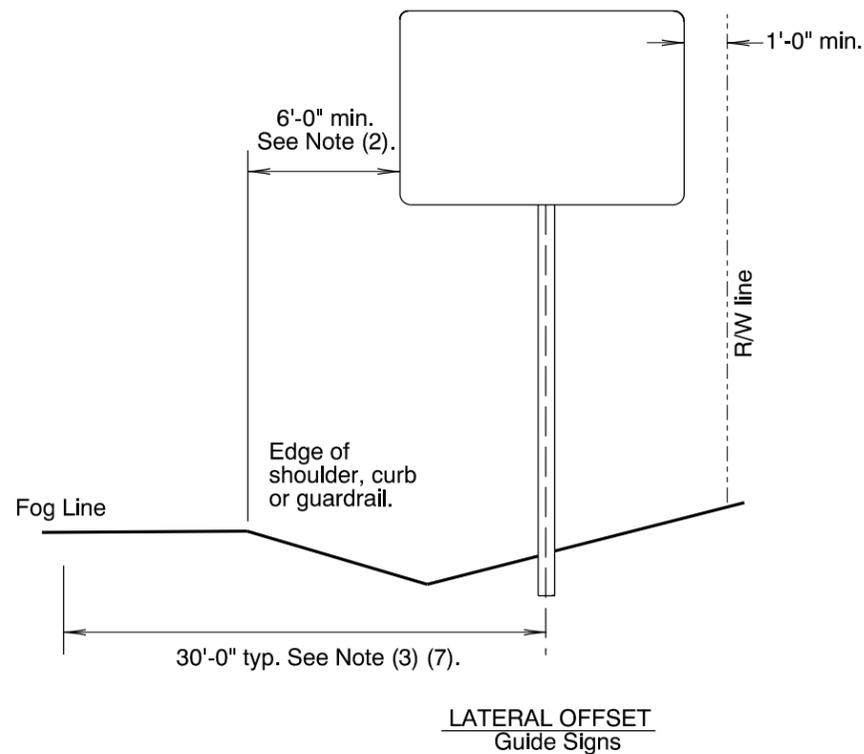


General Installation Notes:

- a. Signing details shown on this sheet are intended to convey "typical" conditions only. Individual locations may require installation different from those shown. For guidance regarding unique installations or exceptions call the Project Sign Designer or Region Traffic Section.
- b. Locate breakaway supports away from ditches to avoid problems with erosion, corrosion, debris, maintenance and breakaway performance. See Dwg. No. TM635 for more information.
- c. For wood post support details see Dwg. No. TM670.
- d. For perforated steelsquare tube support details see Dwg. No. TM681.
- e. For triangular base breakaway support details see Dwg. No. TM602.
- f. For multi-post breakaway support details see Dwg. No. TM600.
- g. Mounting heights should not be more than 3 inches more than the minimum heights shown, where practical.
- h. 2" vertical spacing between all signs.

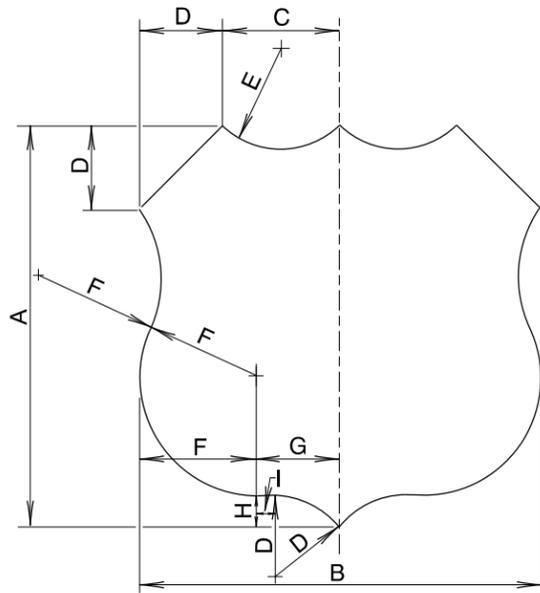
Notes:

- 1). 6' minimum if behind barrier.
- 2). 2' minimum if restricted R/W.
- 3). 20' for ramp terminals.
- 4). 8' minimum if bicycle path underneath.
- 5). 8' minimum if secondary signs attached.
- 6). 5' minimum if outside clearzone, in rural areas and no pedestrians underneath.
- 7). For multi-post installations measure distance from post closest to roadway.



CALC. BOOK NO. <u>N/A</u>		SDR DATE <u>01/07/2022</u>	
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications			
<p><i>The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.</i></p>		<b>OREGON STANDARD DRAWINGS</b>	
		<b>SIGN INSTALLATION DETAILS</b>	
		2021	
DATE	REVISION	DESCRIPTION	
1/07/22		Edited elevation text in Mounting Height details	

U.S. ROUTE MARKERS



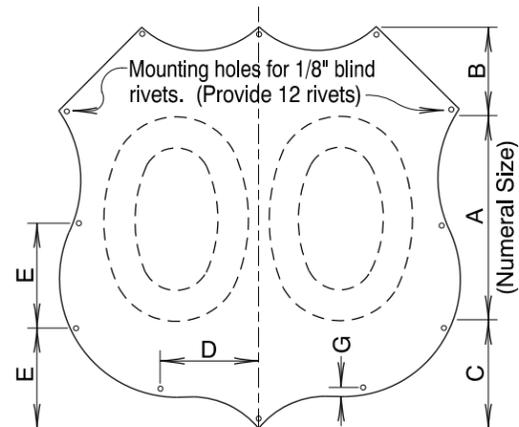
BASIC U.S. ROUTE DESIGN

SIZE	A	B	C	D	E	F	G	H	I
18	18	18	5 1/4	3 3/4	3 3/4	5 1/4	3 3/4	1 1/2	3/4
18	18	22 1/2	7 1/2	3 3/4	6 3/4	5 1/4	6	1 1/2	2 3/4

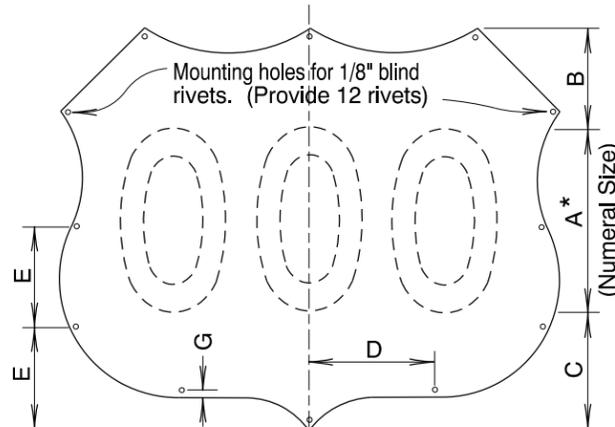
NOTE: Use sheet aluminum overlay with rivet holes for mounting on extruded aluminum panel signs.

2- OR 3-DIGIT U.S. ROUTE MARKERS

SHIELD SIZE		NO. OF DIGITS	A*	B	C	D	E	G
HEIGHT	WIDTH							
18	18	2	9" D	4 1/8	4 7/8	4 1/2	4 1/2	3/8
18	22 1/2	3**	9" D	4 1/8	4 7/8	5 5/8	4 1/2	3/8



For 2 Digit U.S. Routes



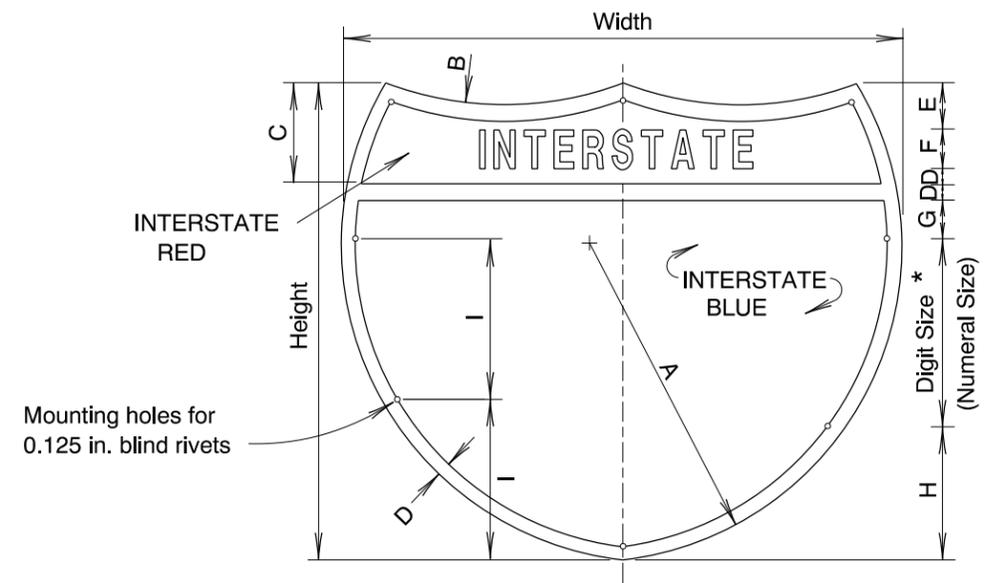
For 3 Digit U.S. Routes

Notes: The Federal Highway Administration's standard rounded capital letter alphabets and letter spacing shall be used. The series for the numeral and the size and series for the letter suffix of the route number shall be as shown hereon. The letter shall be placed beside the numerals.

US Route Markers shall have non-reflectORIZED black letters, symbols and borders on a white ASTM Type III or Type IV retroreflective sheeting background. Use white ASTM Type IX or XI retroreflective sheeting background for overhead installations.

The Interstate Route Marker shall have white ASTM Type III or Type IV retroreflective sheeting overlaid with Standard Interstate red and blue transparent past background with white ASTM Type III or Type IV retroreflective sheeting letters and symbols. Use white Type IX or XI sheeting background and white Type IX or XI letters and symbols for overhead installations.

INTERSTATE ROUTE MARKERS



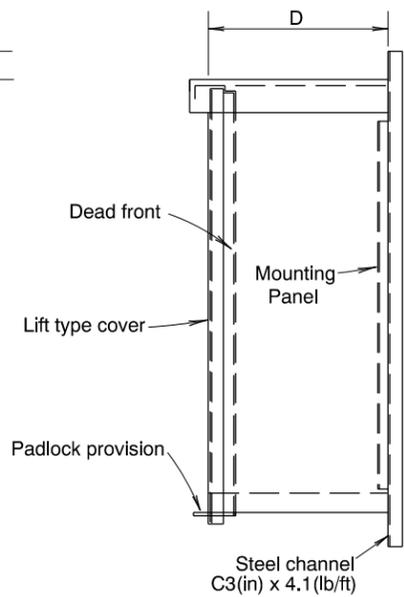
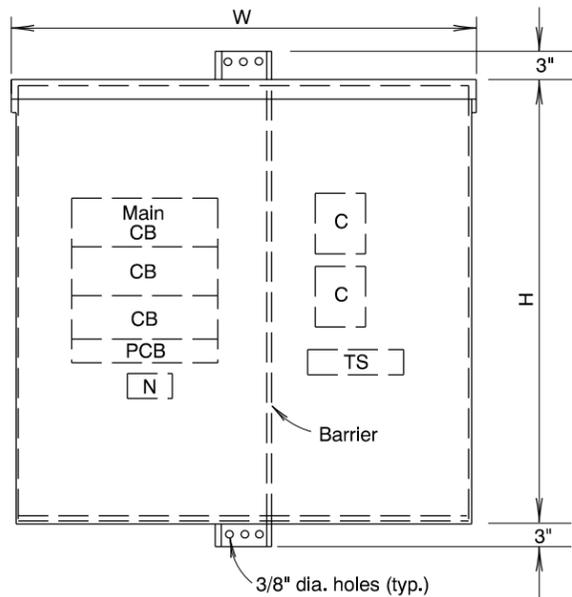
INTERSTATE ROUTE MARKERS

Shield Size	Digit Size *	No. of Digits	Height	Width	A	B	C	D	E	F	G	H	I
18	9" D	1, 2	18	18	11 1/4	11 1/4	3 3/4	3/8	1 1/2	1 7/8C	3/4	4 1/8	6
	9" D	3**	18	22 1/2	12 3/4	18	3 3/4	3/8	1 1/2	1 7/8C	3/4	4 1/8	6

\* In a few cases numerals cannot be accommodated within the space available. For these situations, the Standard Series "D" numeral may be reduced to Series "C", or as a second choice to the next smaller height commonly available. Where the numerals are reduced in height the reduction shall be divided equally and added to the dimensions "B" & "C".

\*\* If at least 2 of the 3 digits are "1", then use shield size corresponding to a 2 digit number.

CALC. BOOK NO. N/A	SDR DATE 1/07/2022								
<p>The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.</p>	NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications								
	<p><b>OREGON STANDARD DRAWINGS</b></p> <p><b>SIGNING DETAILS</b></p> <p><b>US &amp; INTERSTATE ROUTE SHIELDS</b></p>								
	<p>2021</p>								
	<table border="1"> <thead> <tr> <th>DATE</th> <th>REVISION</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>6/30/21</td> <td></td> <td>Replaced references to "silver-white" text with "white."</td> </tr> <tr> <td>1/07/22</td> <td></td> <td>Replaced a reference to "silver-white" text with "white."</td> </tr> </tbody> </table>	DATE	REVISION	DESCRIPTION	6/30/21		Replaced references to "silver-white" text with "white."	1/07/22	
DATE	REVISION	DESCRIPTION							
6/30/21		Replaced references to "silver-white" text with "white."							
1/07/22		Replaced a reference to "silver-white" text with "white."							



**GENERAL NOTES**

- Type "A" cabinet has a top hinged lift cover with provision to hold cover in open position.
- Type "B" cabinet has cover hinged on left or right side with catch and handle.
- All enclosures shown on this drwg. shall bear a U. L. label reading: "CUTOOUT BOX" (Raintight)
- Cabinets formed from 10 Gage thick sheet metal. Hot dip galvanized after fabrication or 12 gage type 304 or 306 stainless steel.
- Dimensions are based on the following frame sizes:
  - "TEB" for 240 v. rating
  - "TED" for 277, 480 and 600 v. rating
- All internal wiring, except field wires, shall be done by a U.L. listed facility.
- Deadfronts may be fabricated from code thickness galvanized sheet metal or type 304 or 316 stainless steel.
- For galvanized sheet metal deadfronts:
  - Cut edges shall be treated with zinc-rich paint.
  - They shall be primed with vinyl wash primer and finished with exterior polyurethane enamel.
  - The color shall be Medium Gray that matches Federal Standard 595C color # 26270.
- Install copper buss bars for main and branch circuits.
- Provide 2 (min.) locator studs near top for dead fronts, and handle (finger) on dead front near bottom.

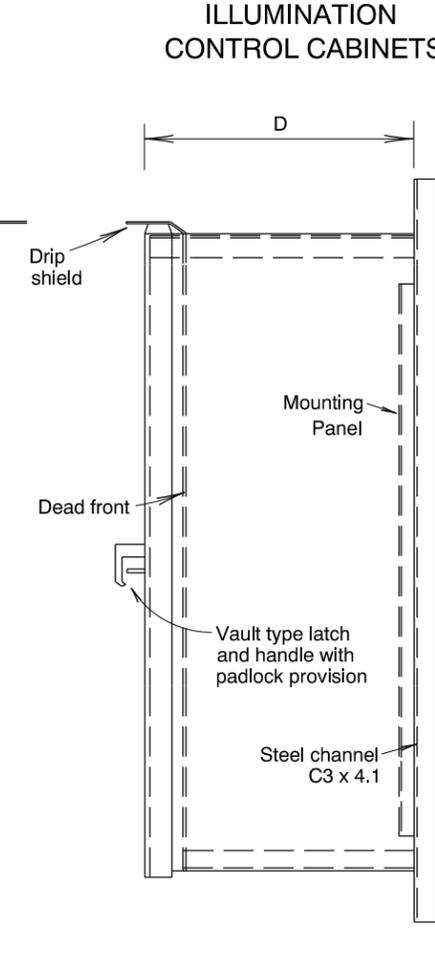
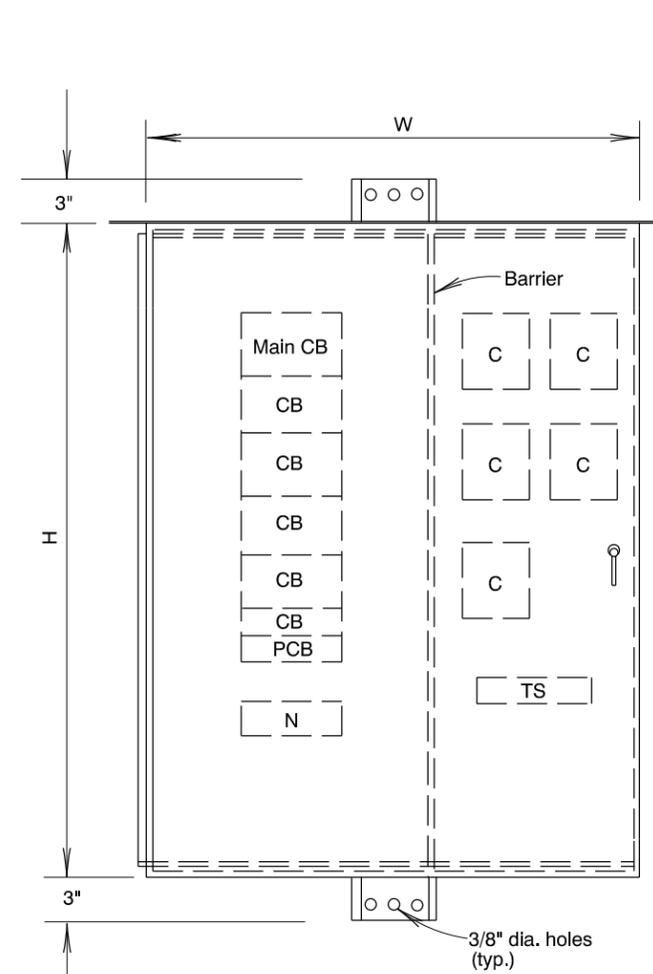
CB = Circuit Breaker  
 C = Contactor  
 N = Neutral Block (copper)  
 TS = Test Switch  
 PCB = Photocell Circuit Breaker

2P or 3 P CB	1P CB	Cont.	Neut.	Test S.W.	W	H	D
2	1	1	1	1	20"	16"	8"
3	1	2	1	1	20"	20"	8"
4	1	3	1	1	20"	24"	8"

- Type "A" cabinet
- Can accommodate 1 to 3 contactors (30 amp max.)

Make cabinet depth 10" when 60 or 100 amp contactor is specified.

**CABINET NO. 1**  
No Scale

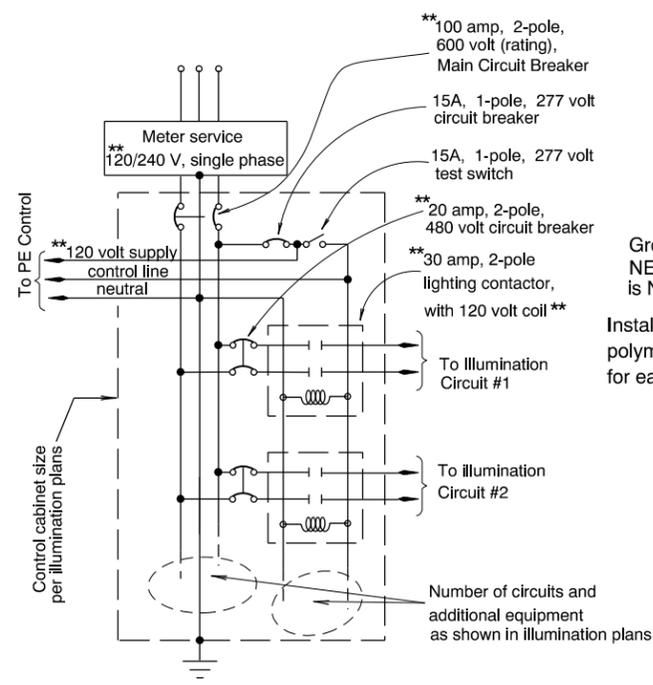


- Type "B" cabinet
- Can accommodate 4 to 6 contactors (30 amp max.)

Make cabinet depth 10" when 60 or 100 amp contactor is specified.

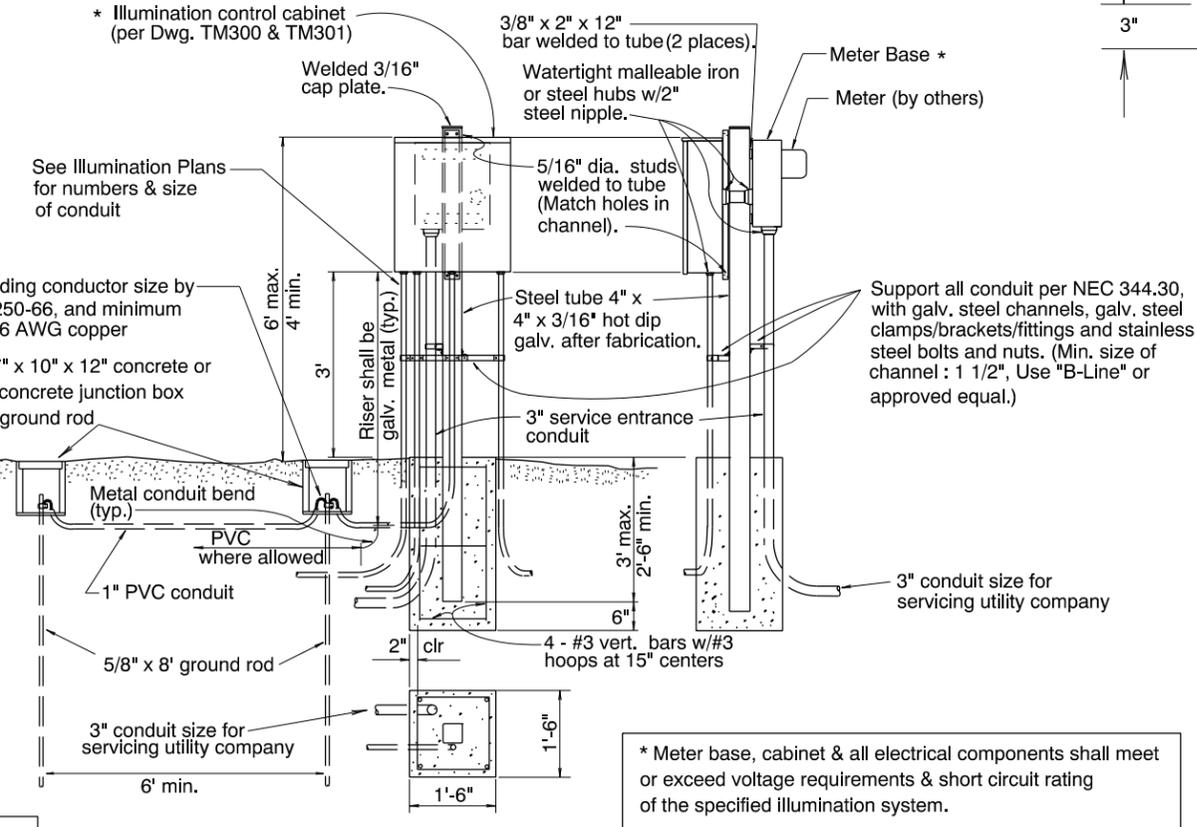
2P or 3 P CB	1P CB	Cont.	Neut.	Test S.W.	W	H	D
5	1	4	1	1	24"	28"	8"
6	1	5	1	1	24"	32"	8"
7	1	6	1	1	24"	36"	8"

**CABINET NO. 2**  
No Scale



**WIRING DIAGRAM**  
**SERVICE & CONTROL CABINETS**

\*\* Electrical service voltage, equipment voltage and rating, breaker sizes are per illumination plans. Specific wiring diagram for each cabinet shall be shown in illumination plans and checked by Engineer.



**POST MOUNT ILLUMINATION CABINET**  
No Scale

\* Meter base, cabinet & all electrical components shall meet or exceed voltage requirements & short circuit rating of the specified illumination system.

CALC. BOOK NO. N/A	SDR DATE JUN. 16, 2020
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS</b>	
<b>ILLUMINATION CONTROL CABINETS</b>	
2021	
DATE	REVISION DESCRIPTION

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

TM 300

Type Of Conduit	Minimum Cover From Top of Finished Surface (Use Permit Depth If Greater Than These)	
	Roadway & Shoulders	Other Areas
Metallic	24"	18"
Non-Metallic	30"	18"

Note:  
1.) Additional Cover Depth May Be Necessary Near Foundations And Junction Boxes To Accommodate The Minimum Radius ("R") Of The Conduit Elbow. See "Conduit Elbow", "Conduit Installation In Foundations" And "Conduit Installation In Junction Boxes" Details For More Information.

### MINIMUM COVER FROM FINISHED SURFACE

Cables/Wires (Or Pull Line In Conduit For Future Use Only)

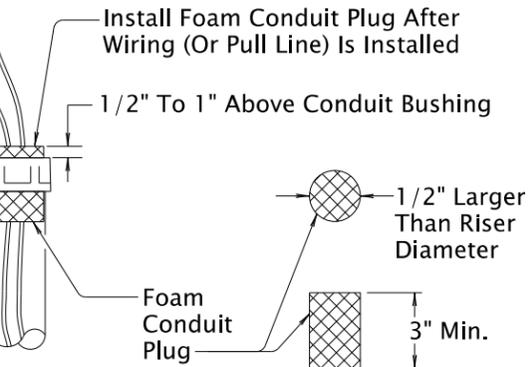
Install Push-On PVC End Bell Conduit Bushings Before Installing Wire

PVC Riser (In Junction Boxes) Or Fiberglass Riser (In Foundations)

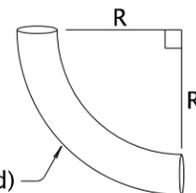
Notes:

- 1.) Ream Conduit Ends To Remove Rough Edges And Burrs
- 2.) Temporarily Plug Or Cap Conduit Ends At All Times To Keep Debris Out

### CONDUIT ENDS AND BUSHINGS



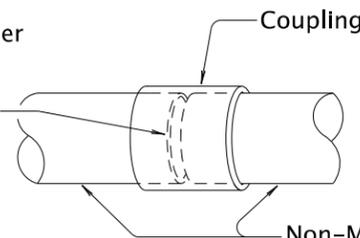
Standard Factory Fiberglass Bend (No Crimping, Flattening, Field Manipulation, Or Cutting In The Field)



Conduit Diameter	R (min.)
1 1/2"	10"
2"	12"
2 1/2"	15"
3"	18"

### CONDUIT ELBOWS

Make Cuts Square And True So Conduit Ends Fit Together For Thier Full Circumference. Use Solvent Weld To Connect Conduit As Per Manufacturer's Recommendation.



Notes:

- 1.) Slip Joints, Running Threads Or Reducing Couplings Not Allowed. Use The Same Size Conduit For The Entire Length, Outlet To Outlet.

### CONDUIT COUPLINGS

Top Of Trench, Bottom Of Subgrade, Surrounding Ground, Or Upper Limit Of Excavation

Selected Granular Or Selected General (Native) Material. Compact Material In Layers Not Greater Than 6" According To 00405.46(C)(2).

Sand Blanket (May Be Omitted When Using Rigid Metallic Conduit)

### UNSURFACED AREAS (new roadway prior to paving, shoulders, under sidewalk, landscaped areas, etc.)

6" Min. Or Match Existing Surface Thickness, Whichever Is Greater

When Excavating, Cut Sharp And Well Defined Pavement Edges With An Approved Pavement Cutting Saw 2" Minimum Depth Along The Boundaries Of The Area To Be Removed

Match Existing Surface Material: PCC Or ACP Compact Material According To 00744, 00745, 00755, And 00756, As Applicable. Finish To A Smooth Riding Surface.

### EXISTING PAVED AREAS

Trenching & Backfill Notes:

1. Excavate According To 00960.40. In Areas To Be Paved Or Landscaped, Place All Conduit Before Paving Or Landscaping.
2. Hold Trench Width To A Practical Minimum
3. Do Not Backfill Trenches Until Inspected By The Engineer
4. Furnish Backfill Materials According To 00960.10

### CONDUIT OPEN TRENCH EXCAVATION & BACKFILL

Center Underground Marking Tape Over Conduit For The Entire Length Of The Conduit Run

6" (Nominal)

Top Of Finished Surface

Minimum Cover (See Minimum Cover Table)

Conduit

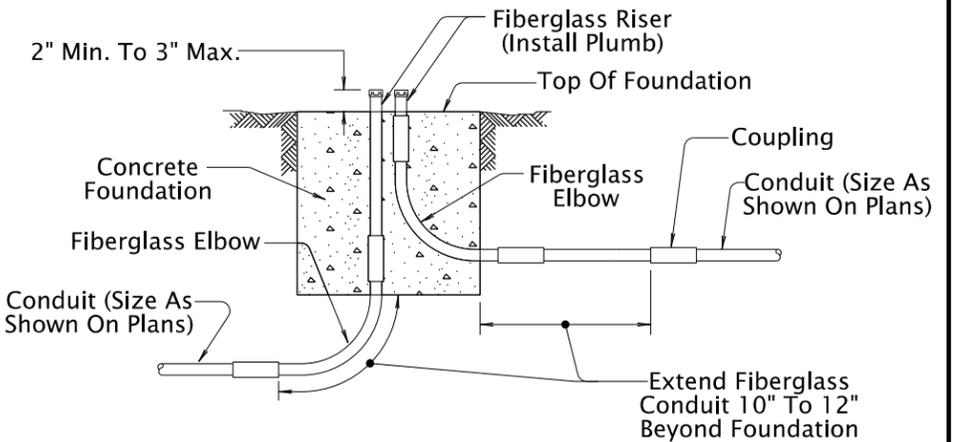
2" Bedding

2" Cover

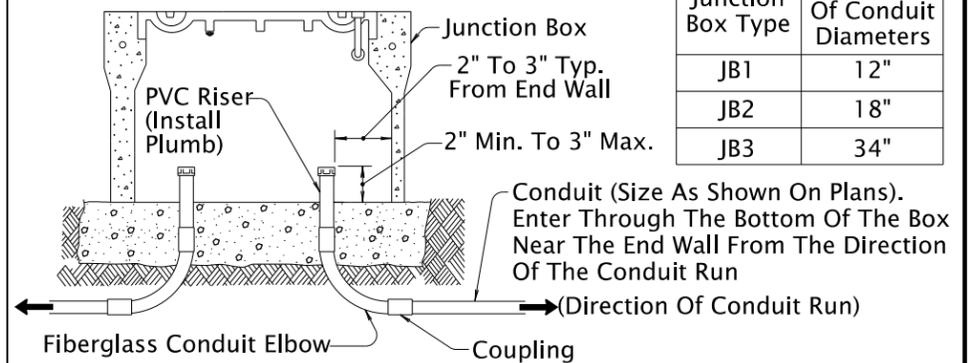
Top Of Existing Surface

CLSM

Conduit



### CONDUIT INSTALLATIONS IN FOUNDATIONS (Applicable for Pole, Pedestal, Post, Service Cabinet and Controller Cabinet Foundations)



Junction Box Type	Max. Sum Of Conduit Diameters
JB1	12"
JB2	18"
JB3	34"

### CONDUIT INSTALLATION IN JUNCTION BOXES

General Notes:

1. Install Non-Metallic Conduit Unless Otherwise Shown. Conduit Runs Shall Be Continuous Between Any Pole, Junction Box, Or Cabinet.
2. Install Conduit By Open Trench Method, Horizontal Directional Drilling, Or As Shown
3. Conduit Runs Shown On Plans Are For Bidding Purposes Only. Locations May Be Changed To Avoid Obstructions.
4. Larger Conduit Than Specified May Be Used At The Option And Cost Of The Contractor If Max. Sum Of Conduit Diameters In Junction Box Is Not Exceeded.

CALC. BOOK NO. \_ N/A \_ \_ \_ \_ \_

SDR REPORT DATE 4-Jan-2021 \_ \_ \_ \_ \_

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

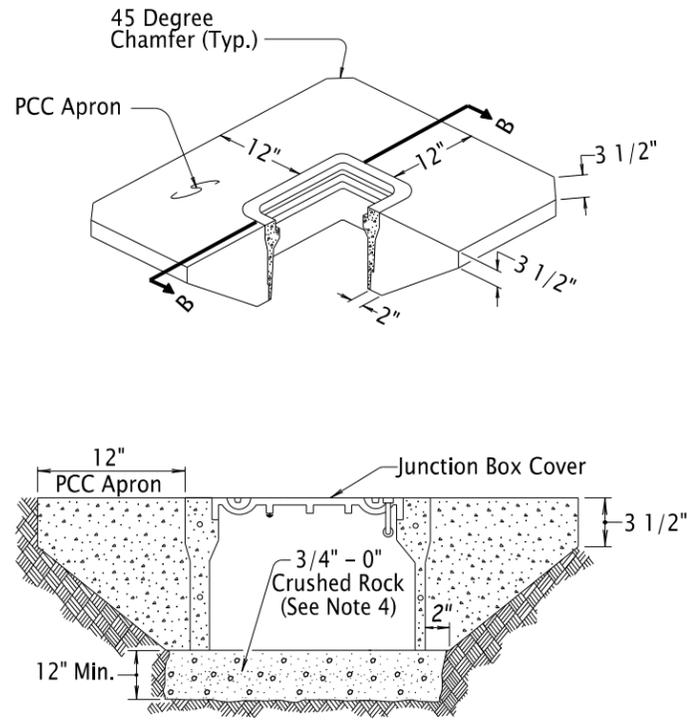
### OREGON STANDARD DRAWINGS

### TRENCHING & CONDUIT INSTALLATION

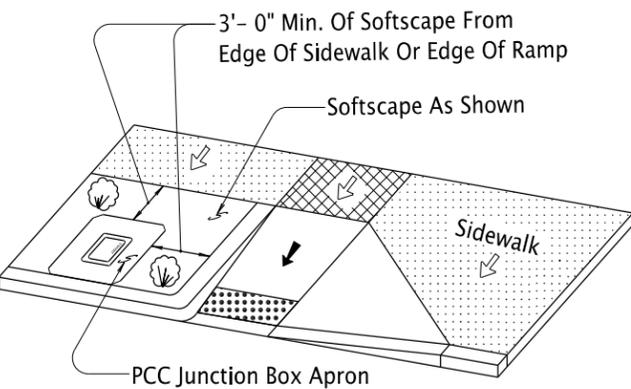
2021

DATE	REVISION DESCRIPTION
01/21	Added Note 1 To "Minimum Cover From Finished Surface" Detail

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.



**SECTION B-B**

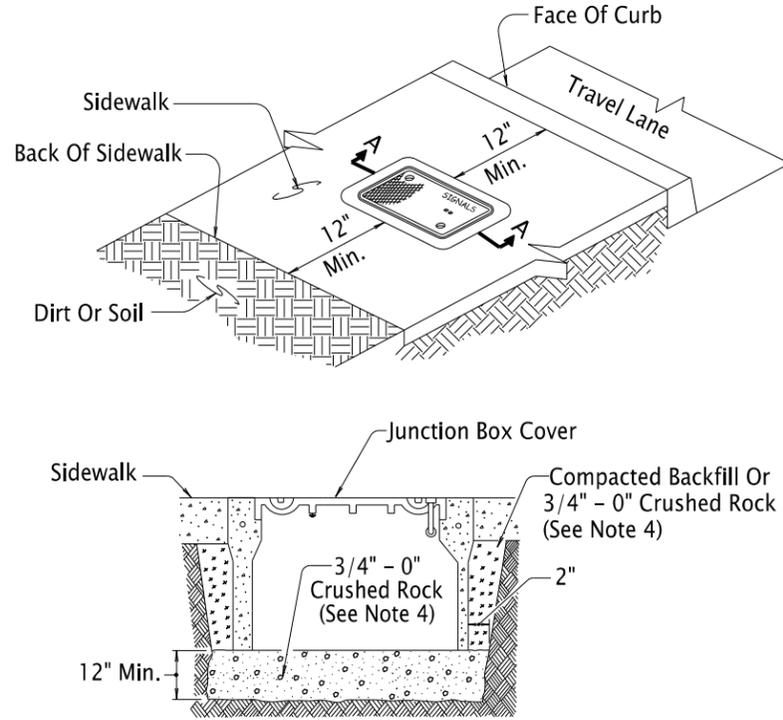


**JUNCTION BOX INSTALLATION IN UNSURFACED AREA**

(This Detail Only Applicable for Junction Boxes Located In Incidental Travel Areas; Gravel Shoulders, Behind Guardrail, Etc. Do Not Install In Travel Lanes, Paved Shoulders, Or Other Areas Exposed To Traffic.)

**GENERAL NOTES:**

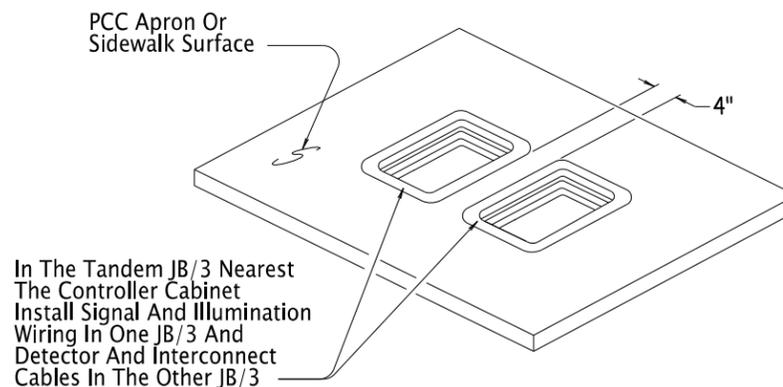
1. Install Top of Junction Box And Hand Hole Flush With The Sidewalk, Surrounding Grade, Or Top Of Curb. For Hand Holes Installed In The Roadway Or Shoulder, Leave The Top Of The Hand Hole 1/2" Below The Pavement Surface.
2. Install Junction Boxes And Hand Holes At The Approximate Locations Shown, Or If Not Shown, No More Than 300 Feet Apart For Junction Boxes And No More Than 1000 Feet Apart For Hand Holes.
3. More Junction Boxes And Hand Holes Than Specified May Be Installed To Facilitate The Work At The Option And Cost Of The Contractor
4. Use Materials According To 00640.10 and 00640.16. Use Compaction Equipment Suitable For Area And Compact Each Six Inch Layer With Sufficient Coverages To Produce A Firm Unyielding Surface. Do Not Install Conductors Until Surface Has Been Constructed.



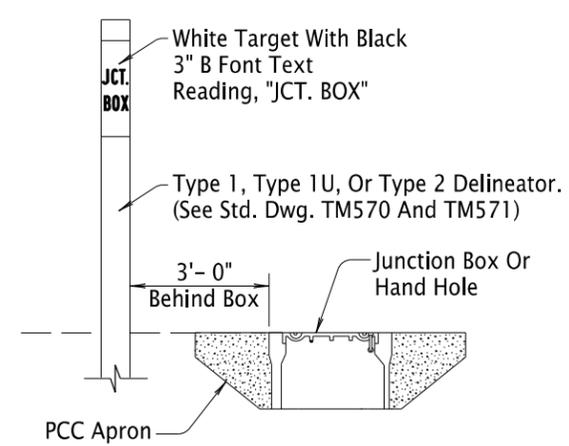
**SECTION A-A**

**JUNCTION BOX INSTALLATION IN PCC SIDEWALK**

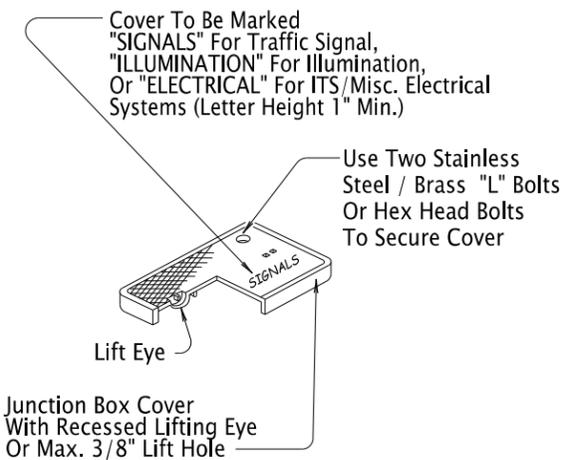
(This Detail Only Applicable for Junction Boxes Located In Flat Areas Of Sidewalks. Do Not Install In Slopes Of Ramps Or Driveways)



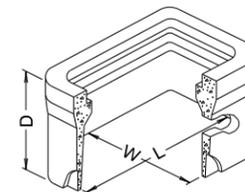
**TANDEM JB/3A JUNCTION BOX DETAILS**



**DELINEATION OF JUNCTION BOX & HAND HOLE IN UNSURFACED AREA**



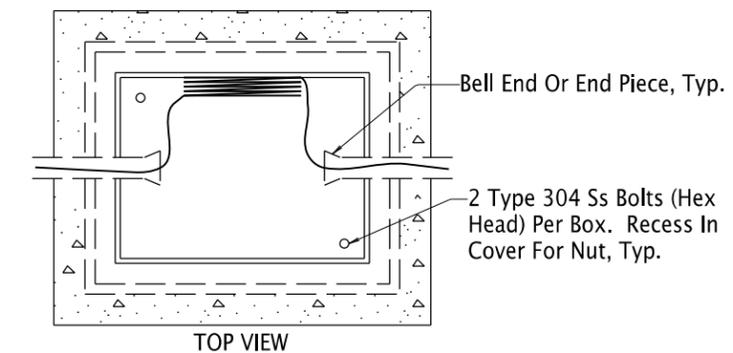
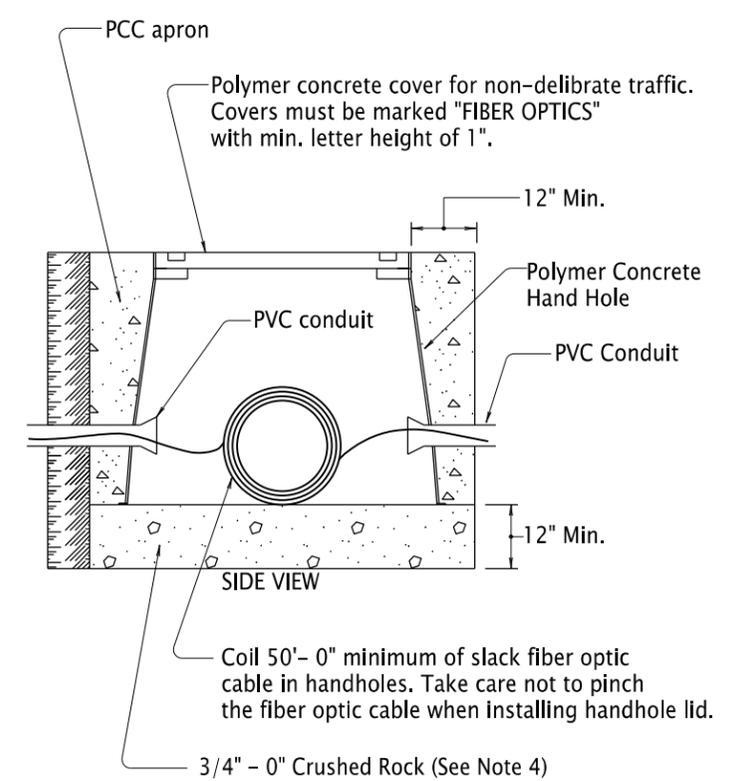
**JUNCTION BOX COVER DETAILS**



Type*	L	W	D
JB1	17"	10"	12"
JB2	22"	12"	12"
JB3	30"	17"	12"
HH-1	24"	30"	24"
HH-2	30"	48"	24"
HH-3	30"	48"	36"

\*Junction Box Or Handhole Type As Shown On Plans

**DIMENSION TABLE**



**FIBER OPTIC CABLE HAND HOLE INSTALLATION**

CALC. BOOK NO. \_ N/A \_ \_ \_ \_ \_ SDR REPORT DATE \_ 8-Jul-2022 \_ \_ \_ \_ \_

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

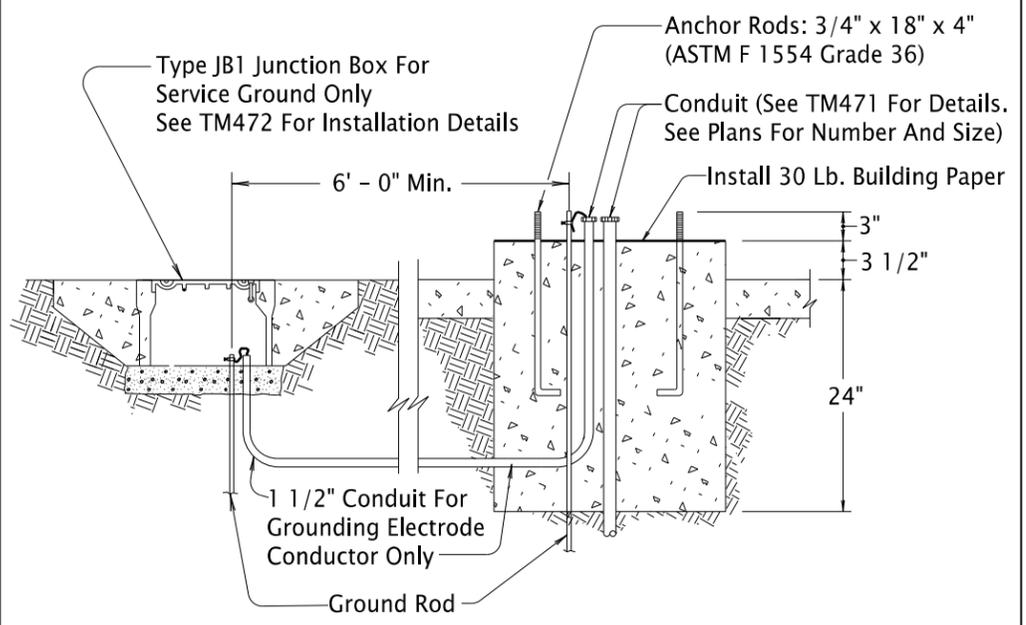
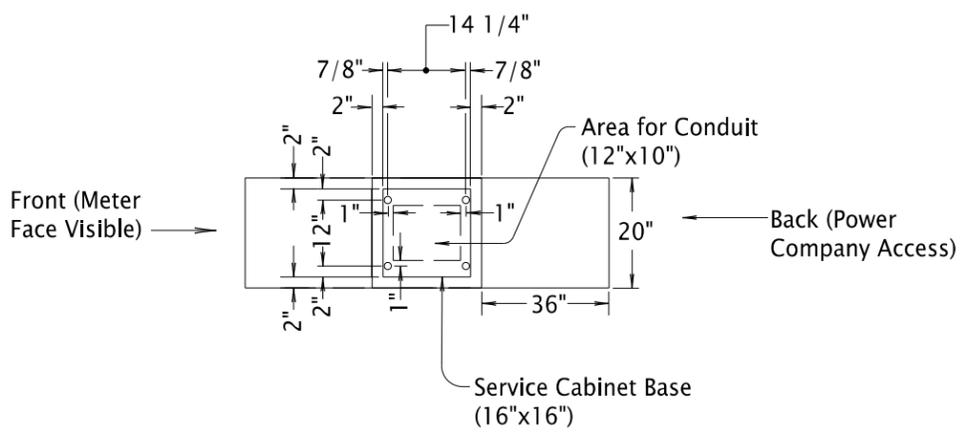
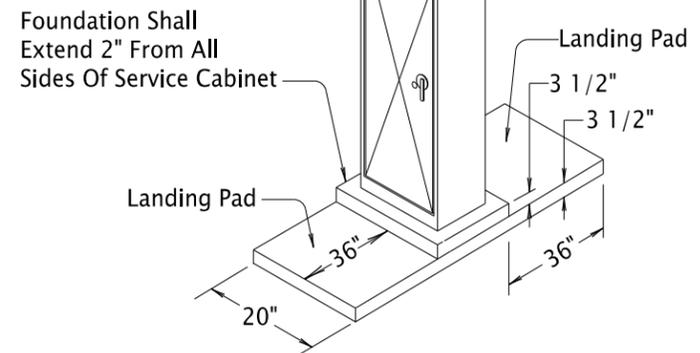
**OREGON STANDARD DRAWINGS**

**JUNCTION BOXES/ HAND HOLES**

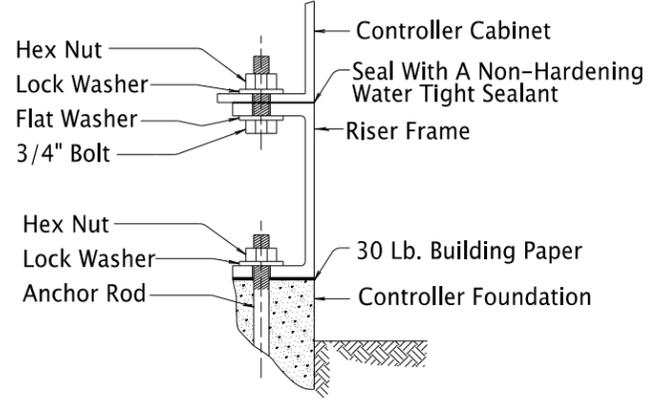
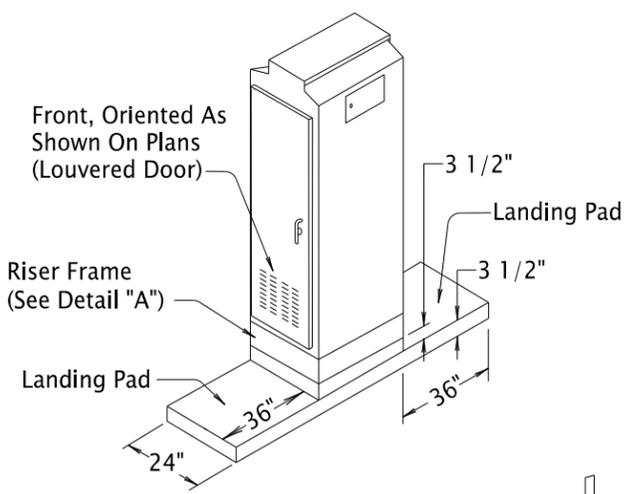
2021

DATE	REVISION DESCRIPTION
7/22	Added new marking (ILLUMINATION & ELECTRICAL) for JB cover

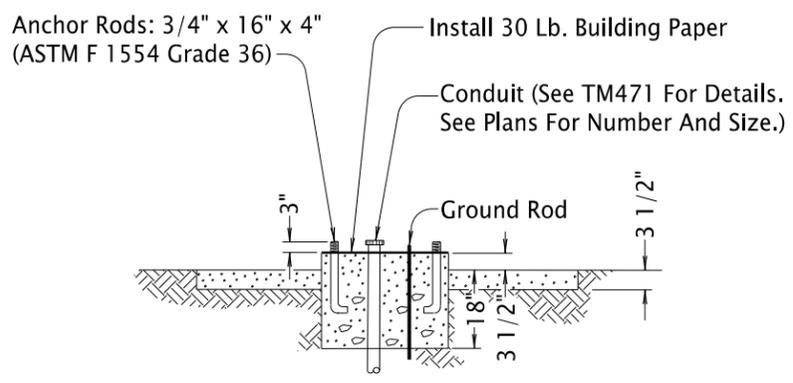
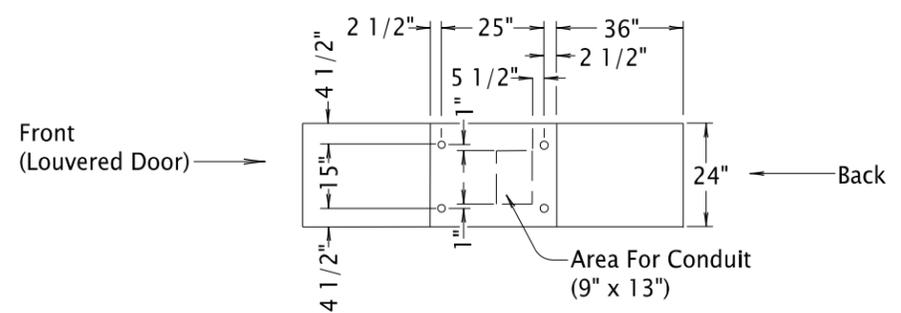
*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*



**BASE MOUNTED SERVICE CABINET FOUNDATION**

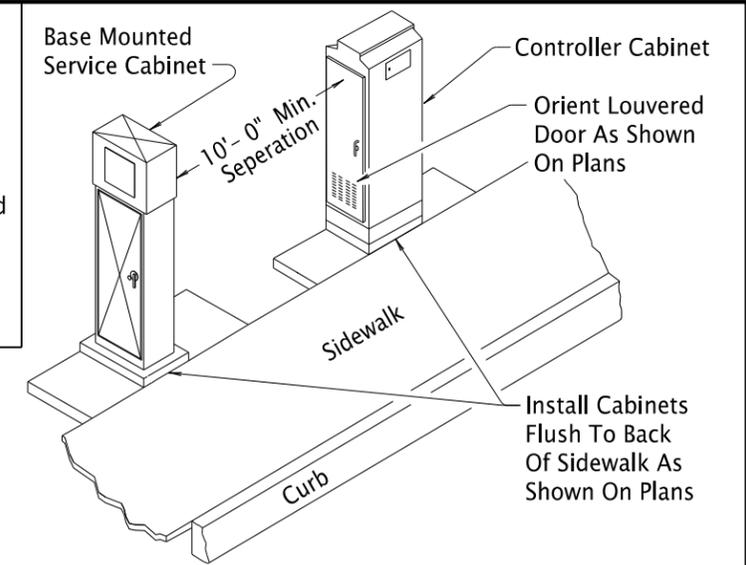


**DETAIL "A" RISER FRAME CONNECTION**

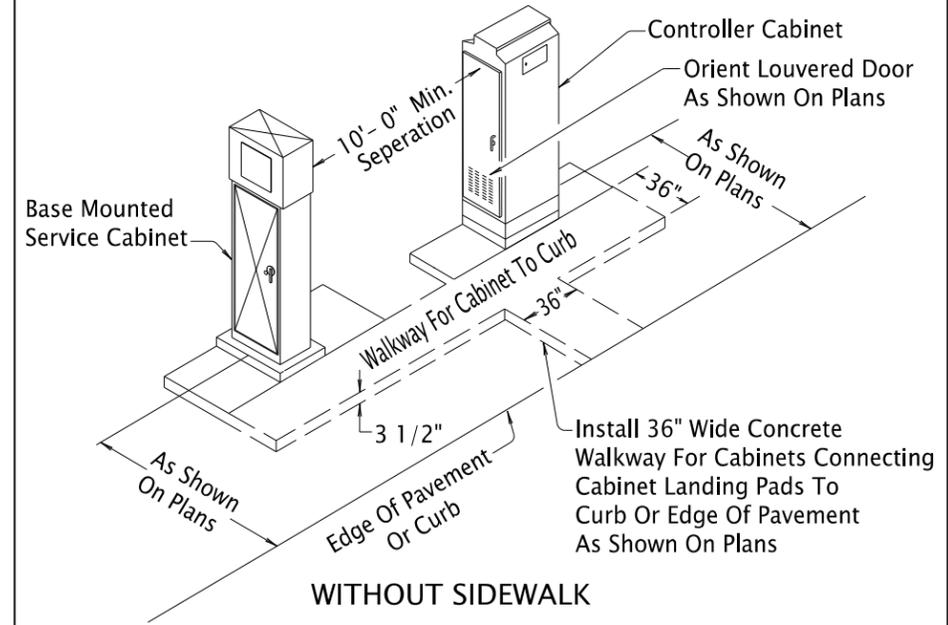


**CONTROLLER CABINET FOUNDATION DETAILS**  
(Model 332S, 332, 334, And 340 Cabinets)

- General Notes:
1. All Screws, Bolts, Nuts And Washers Shall Be Galvanized Steel Unless Noted Otherwise.
  2. Bolts And Screws Shall Have Square Or Hex Heads. Allen Fasteners Not Allowed.
  3. Type 304 Or 316 Stainless Steel Or Galvanized Steel May Be Used For Mounting Cabinet To Riser Frame.
  4. Provide A 3/4" Chamfer On All Exposed Concrete Edges.



**WITH SIDEWALK**



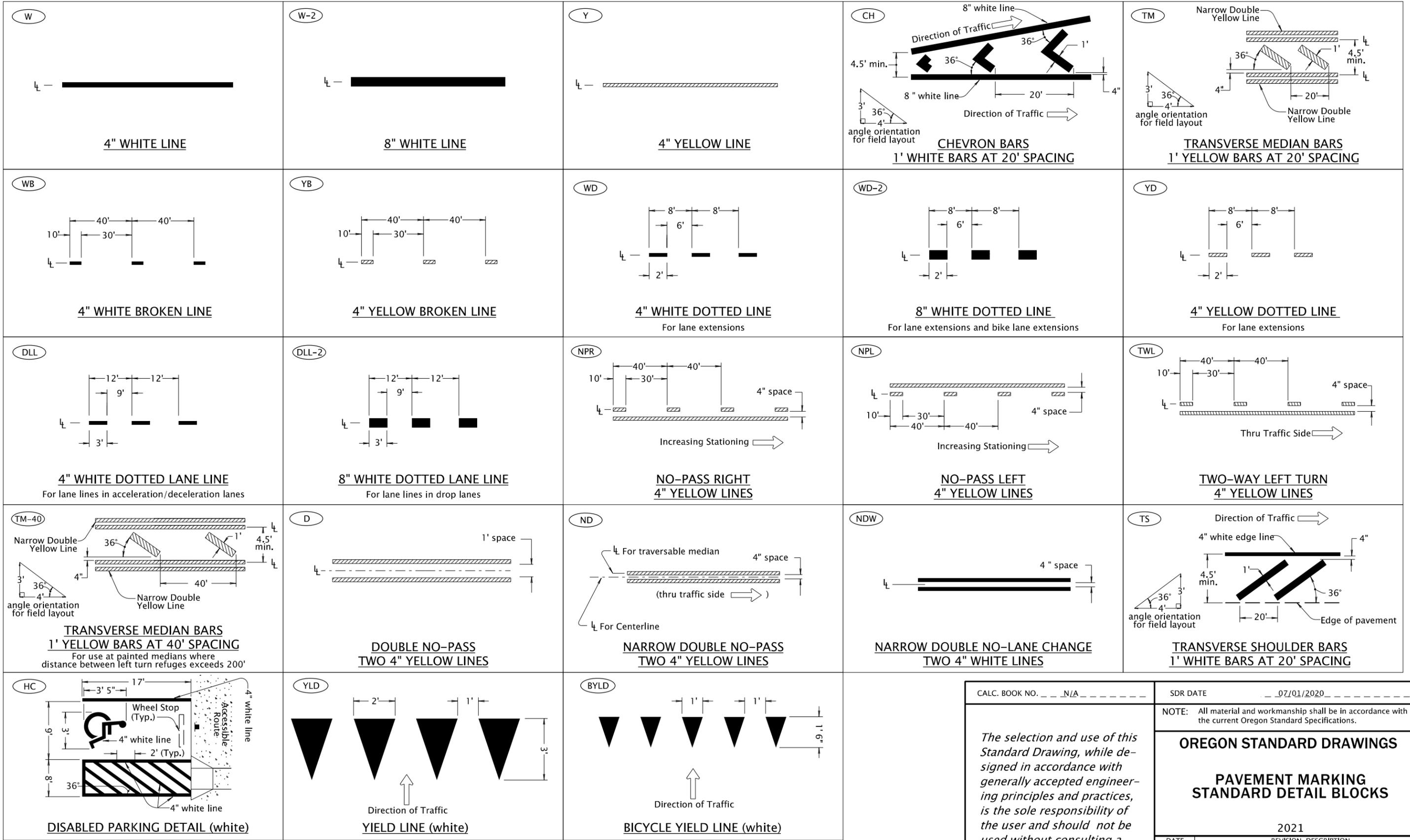
**WITHOUT SIDEWALK**

**CABINET FOUNDATION LOCATIONS**

Note: Verify Base Mounted Service Cabinet Location And Meter Placement Is Acceptable To Local Power Company

CALC. BOOK NO. N/A	SDR REPORT DATE 4-Jan-2021
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS</b>	
<b>CONTROLLER CABINET &amp; SERVICE CABINET FOUNDATION DETAILS</b>	
2021	
DATE	REVISION DESCRIPTION
01/21	Updated All Anchor Rod Details

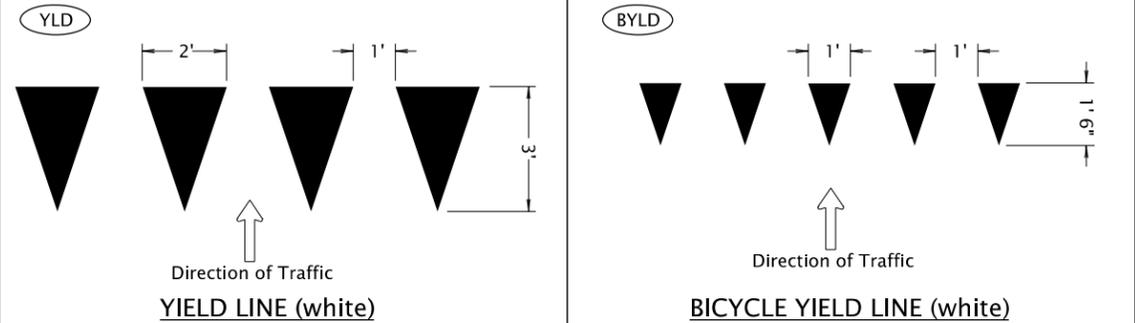
*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*



← Direction Of Traffic, Increasing Stationing Or Thru Traffic Side

⊥ Lane line dimensions are shown on the striping plans

**LEGEND**



CALC. BOOK NO. \_\_\_ N/A \_\_\_

SDR DATE \_\_\_ 07/01/2020 \_\_\_

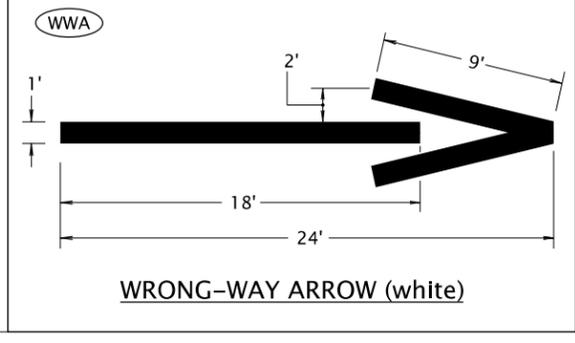
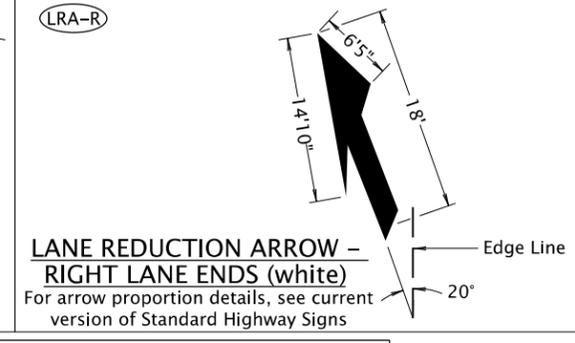
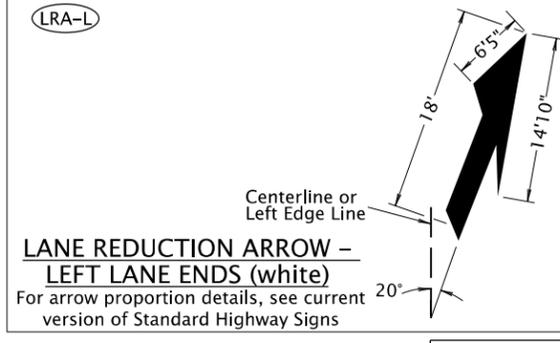
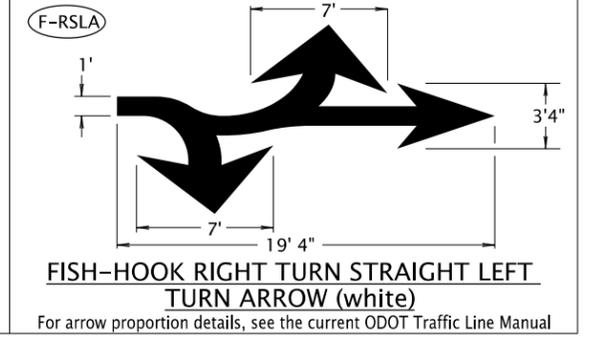
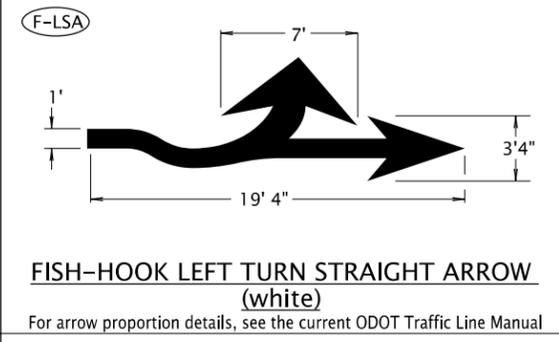
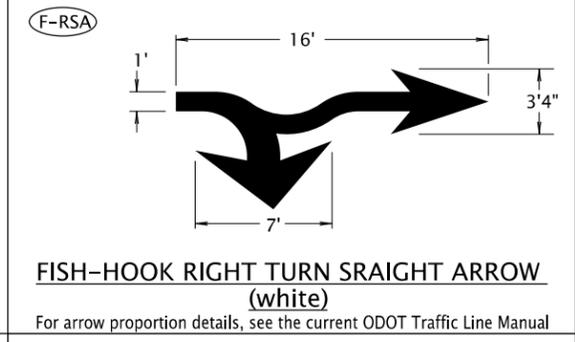
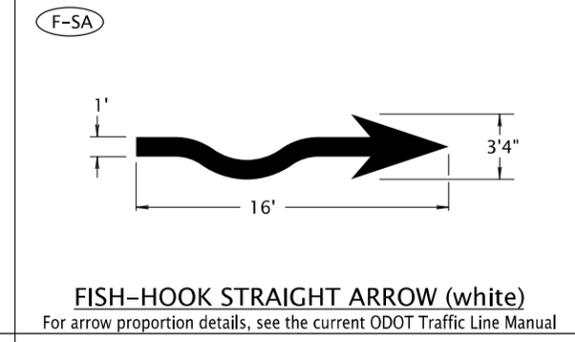
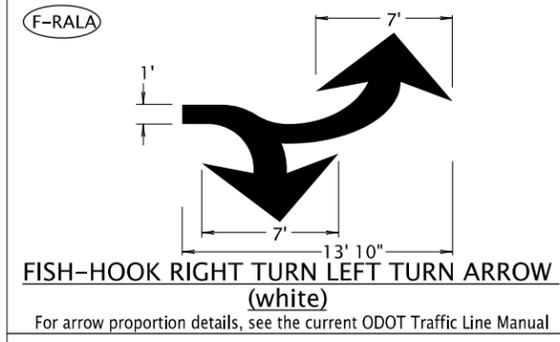
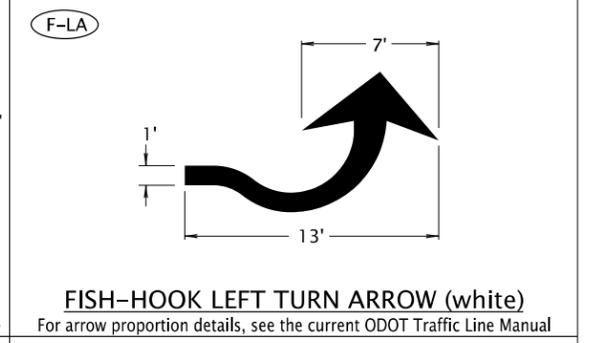
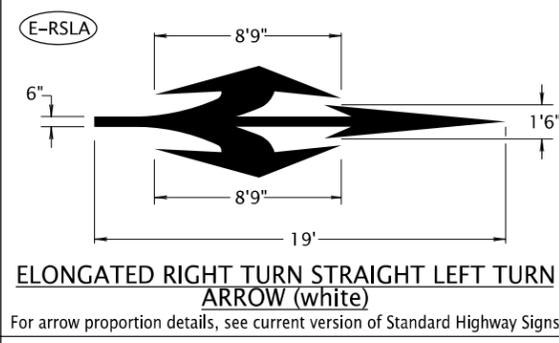
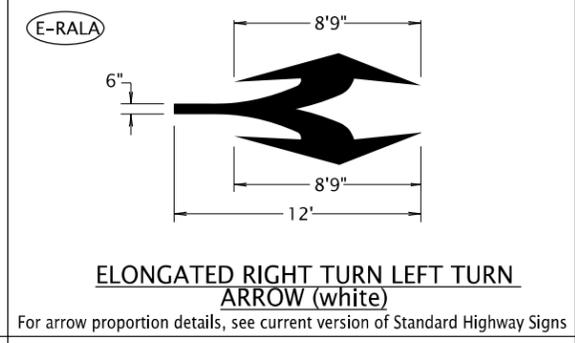
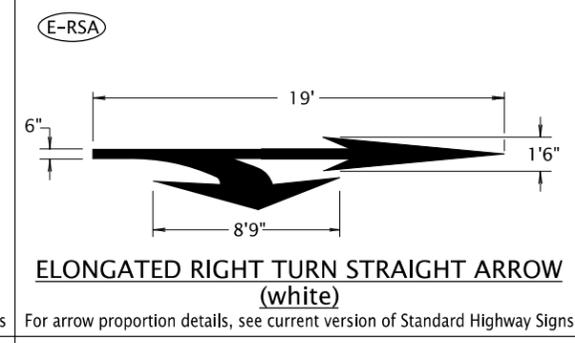
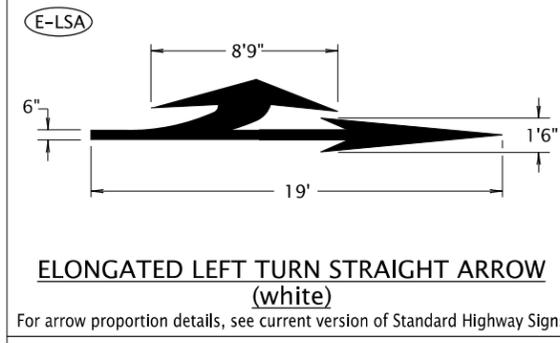
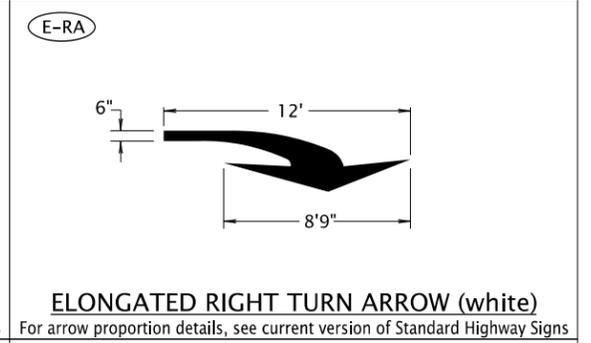
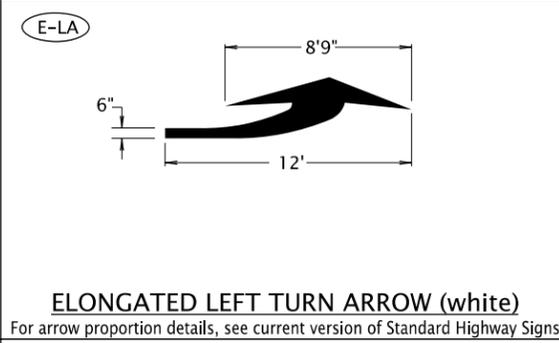
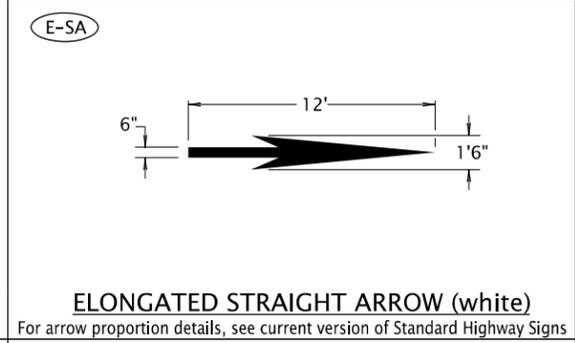
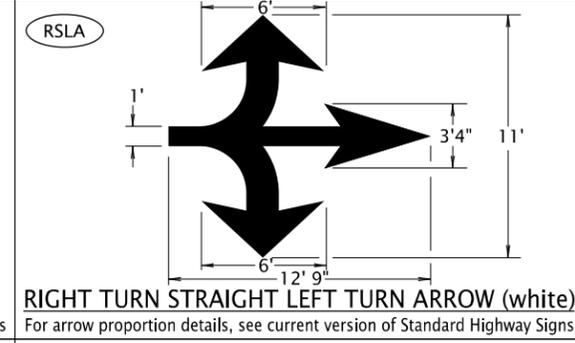
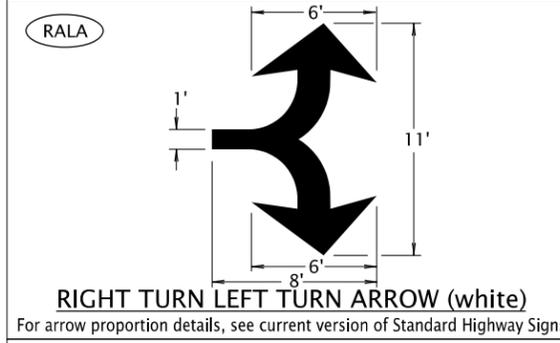
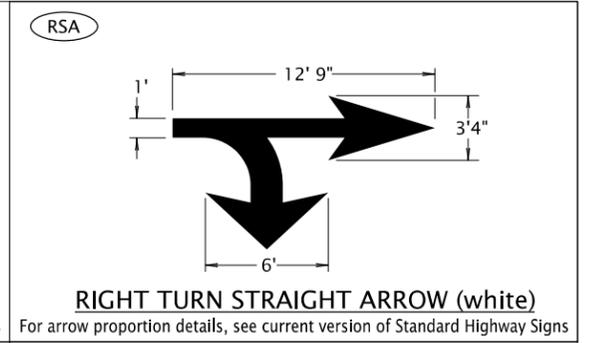
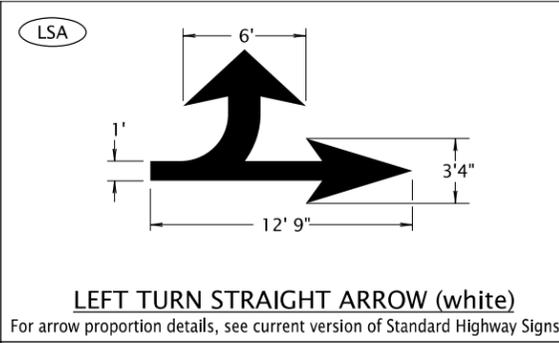
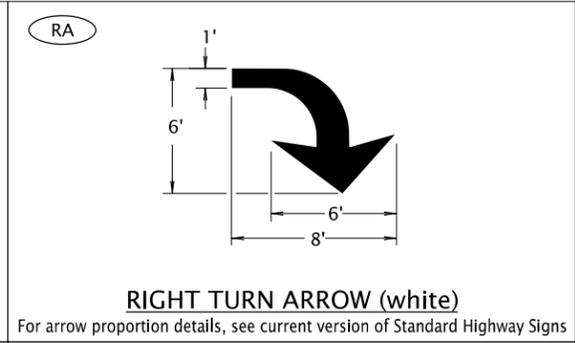
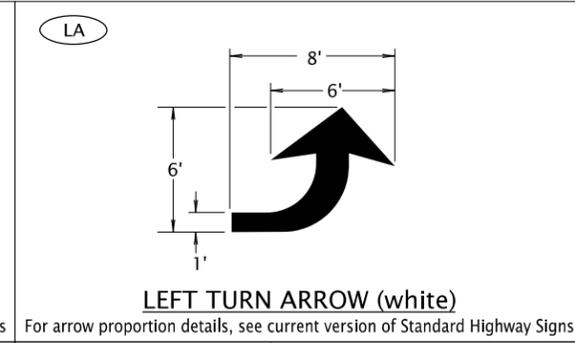
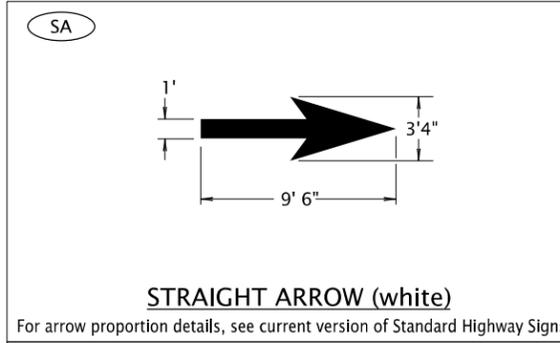
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications.

**OREGON STANDARD DRAWINGS**  
**PAVEMENT MARKING**  
**STANDARD DETAIL BLOCKS**

2021

DATE	REVISION DESCRIPTION
07/2020	Changed Min. widths for CH, TM, TM-40, and TS

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*



CALC. BOOK NO. \_\_\_ N/A \_\_\_

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

SDR DATE		___01/03/2022___	
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications.			
<b>OREGON STANDARD DRAWINGS</b>			
<b>PAVEMENT MARKING STANDARD DETAIL BLOCKS</b>			
2021			
DATE	REVISION DESCRIPTION		
07/2020	Some Detail Blocks moved to new Std. Drawing TM504		
01/2022	Fish-hook Arrows added, LRA split into LRA-L and LRA-R		
01/2022	Corrected bubble callout of LRA-L and typo in LRA-R		

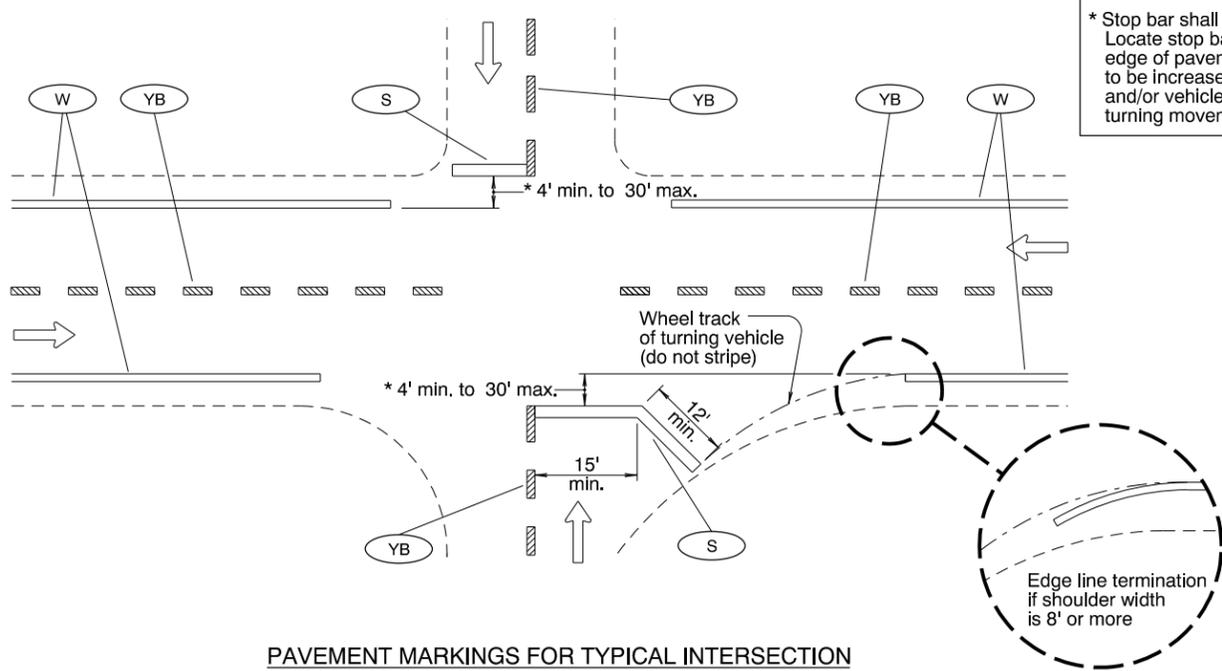
**General Note:**

- Center pavement markings within the lane width.
- Arrow and letter dimensions nominal, excluding WWA.

TM501

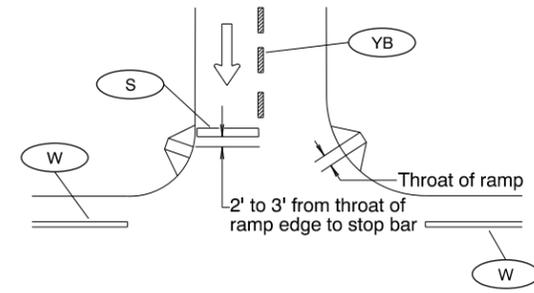


TM530.dgn 7-06-2022

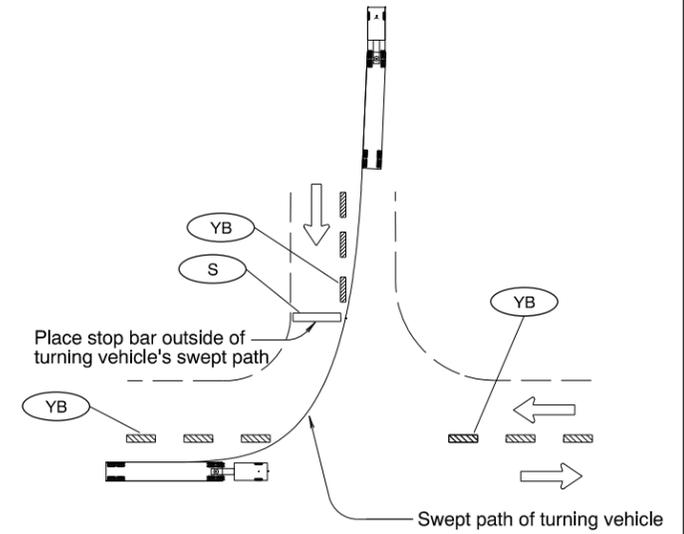


PAVEMENT MARKINGS FOR TYPICAL INTERSECTION

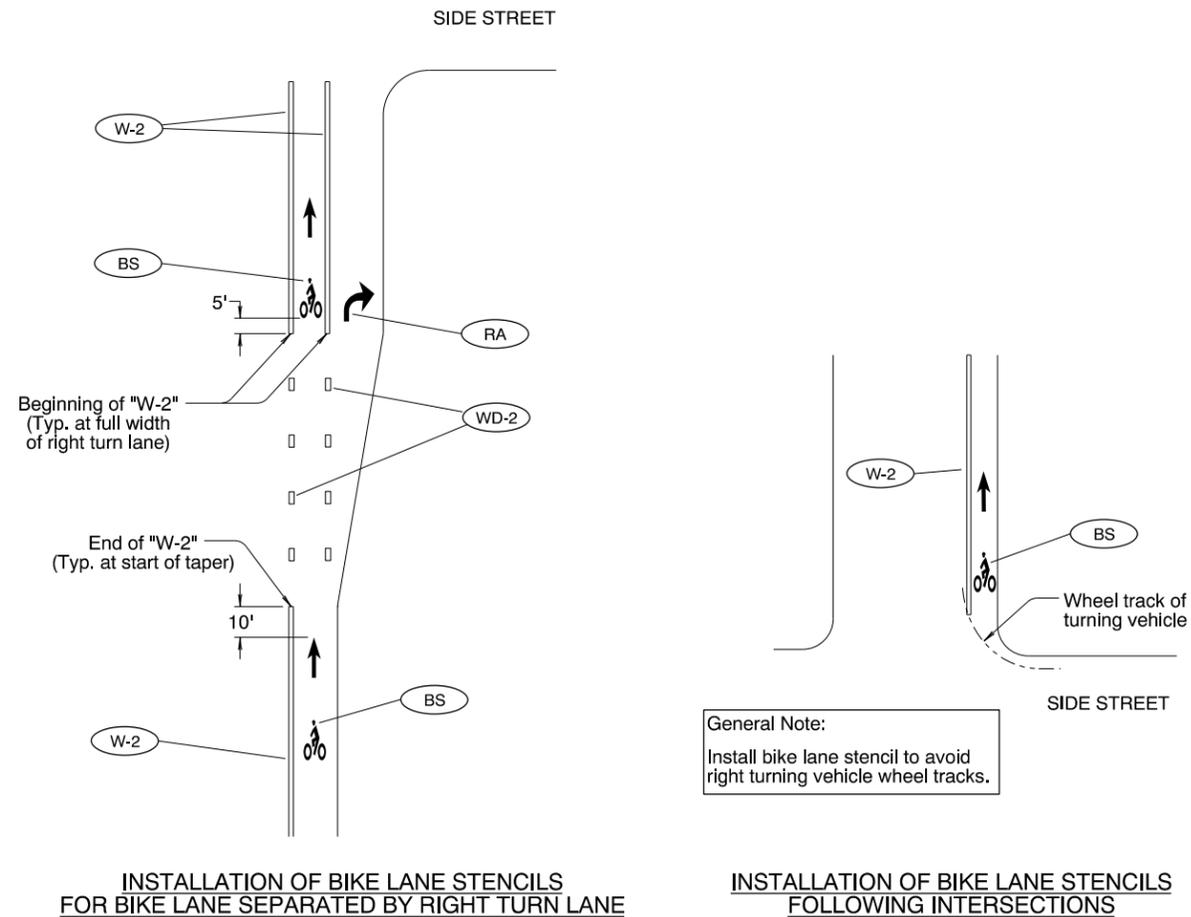
\* Stop bar shall be placed as near as possible to the intersecting traveled way. Locate stop bar 4' min. to 30' max. in advance of the extended fog line, edge of pavement, or curb face. Minimum stop bar distance may need to be increased, depending on location of pedestrian ramps (see Detail "A") and/or vehicle turn radii (see Detail "B"). Field verify sight distance and truck turning movements.



Detail "A"  
STOP BAR PLACEMENT WITH RESPECT TO PEDESTRIAN RAMP

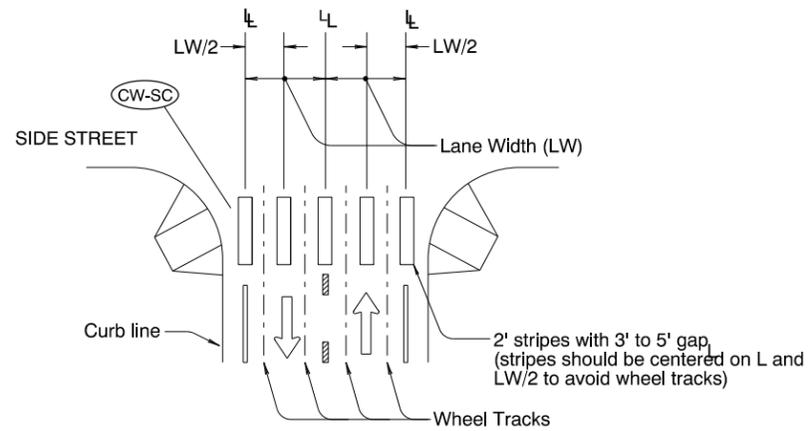


Detail "B"  
STOP BAR PLACEMENT WITH RESPECT TO TURN RADII



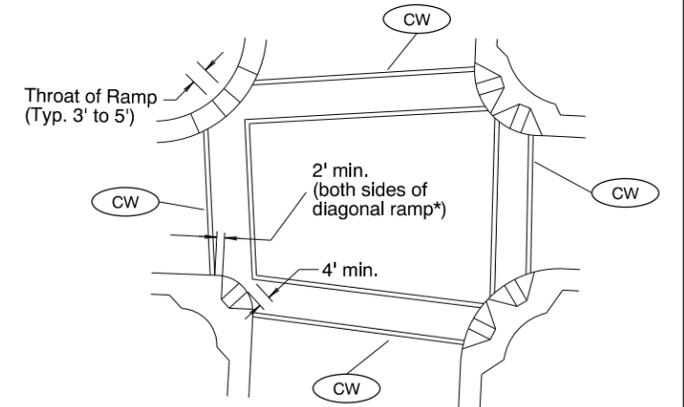
INSTALLATION OF BIKE LANE STENCILS FOR BIKE LANE SEPARATED BY RIGHT TURN LANE

INSTALLATION OF BIKE LANE STENCILS FOLLOWING INTERSECTIONS



STAGGERED CONTINENTAL LAYOUT

General Note:  
1. Install crosswalk bars such that the throat of the ADA ramp is entirely within crosswalk markings, or 5' back of extended fog line, edge of pavement, or curb face.



STANDARD CROSSWALK BARS AT INTERSECTION

\* = Refer to Std Dwg RD916

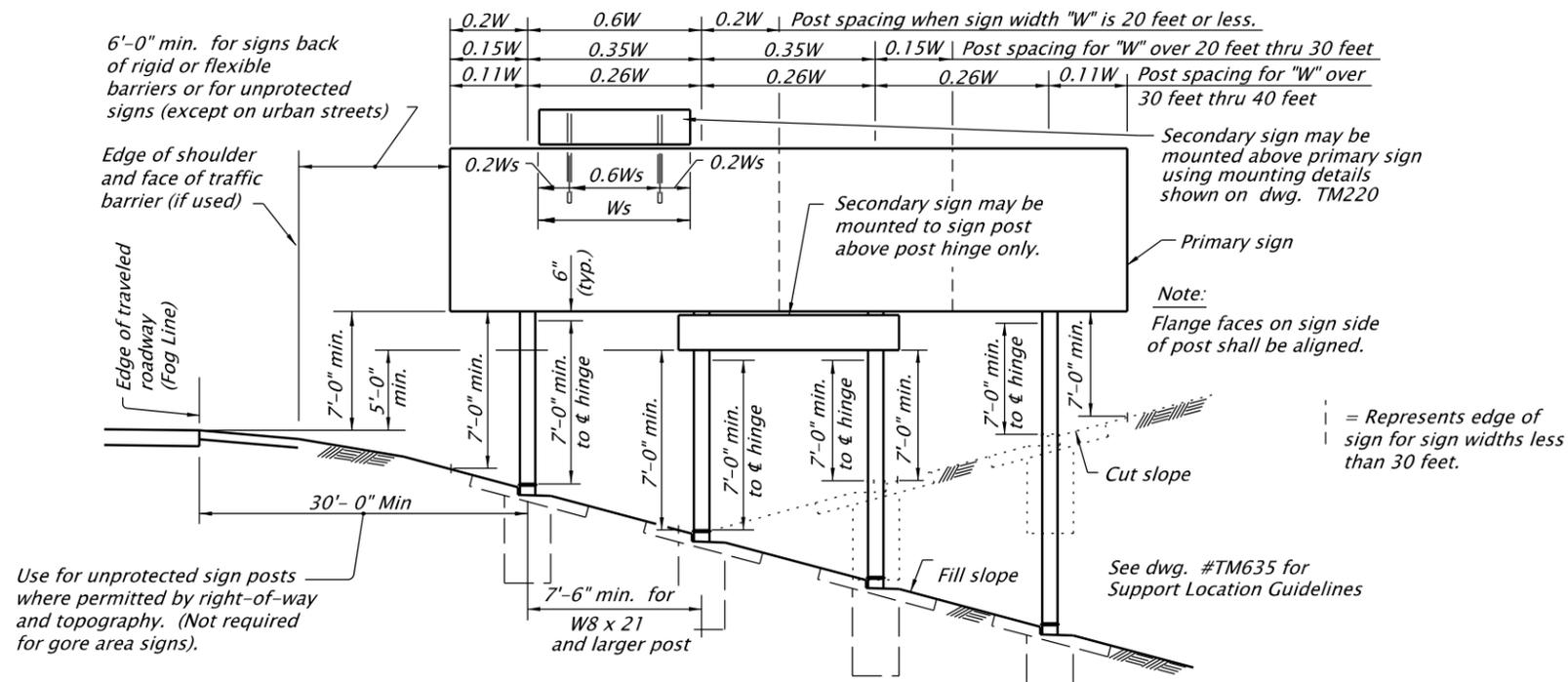
To be accompanied by Standard Dwg. Nos. TM500 thru TM504

CALC. BOOK NO. N/A	SDR DATE July 06, 2022
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS INTERSECTION PAVEMENT MARKINGS (CROSSWALK, STOP BAR &amp; BIKE LANE STENCIL)</b>	
2021	
DATE	REVISION DESCRIPTION
7/06/22	Added Roadway Standard Drawing reference to detail for clarity

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

**LEGEND**  
← Direction of Travel  
L - Lane line dimensions are shown on the striping plans

TM530



TYPICAL SIGN INSTALLATION  
No Scale

GENERAL NOTES:

1. Sign supports are designed in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals 1994. Use a wind velocity with a 25-year mean recurrence interval.
2. All concrete shall be Commercial Grade Concrete ( $f_c = 3000$  psi).
3. All reinforcing steel shall conform to AASHTO Specification M31 (ASTM A615), Grade 60 or A706.
4. The following splice lengths shall be used unless otherwise shown:

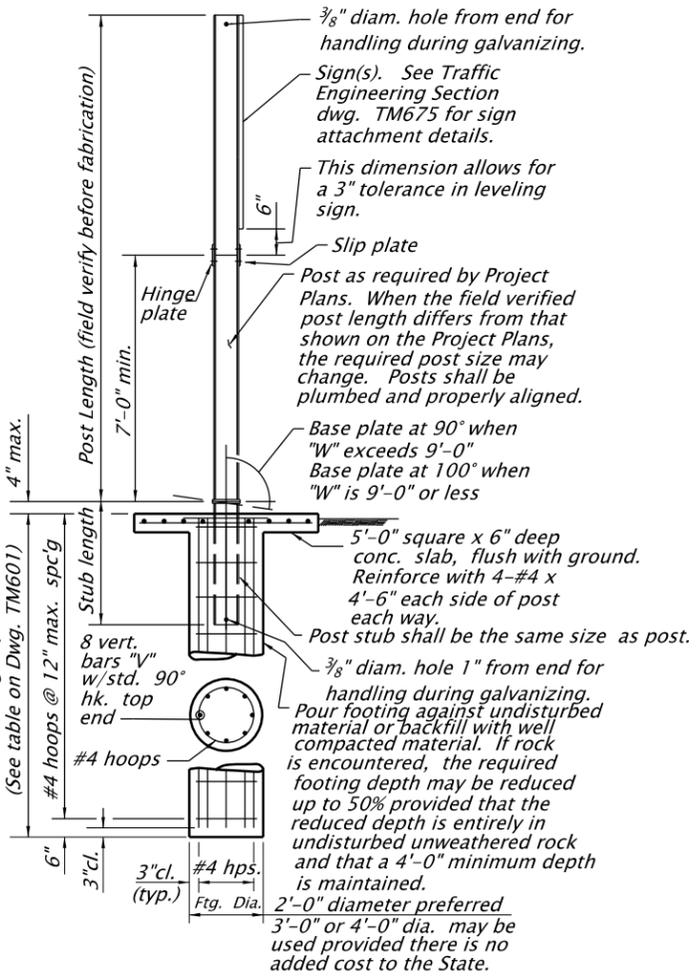
Bar Size	3	4	5	6	7	8	9	10	11
Splice Length	Uncoated 1'-0"	1'-4"	1'-8"	2'-0"	2'-8"	3'-6"	4'-4"	5'-7"	6'-9"
5. All structural steel shall conform to ASTM Specification A572, Grade 50 unless shown otherwise.
6. Shims shall be fabricated from brass shim stock conforming to ASTM B36.
7. All bolts shall be high strength bolts conforming to ASTM Specification A325 (AASHTO M164). Nuts for high strength bolts shall be well lubricated heavy hexagon nuts conforming to ASTM Specification A563, (AASHTO M291), Grade DH. Compressible direct tension indicator washers shall conform to ASTM Specification F959. Hardened steel washers shall conform to ASTM Specification F436 (AASHTO M293).
8. Steel sheet for keepers shall conform to ASTM Specification A653.
9. Hinge and base plate holes shall be sub-drilled and reamed to size. Hinge and base plate slots shall be saw cut or machine guided flame cut.
10. Direct tension indicator washers shall be mechanically galvanized to ASTM B695.
11. Keeper plate shall be galvanized in accordance with ASTM A653, Coating G165.
12. All other steel including fasteners shall be hot-dip galvanized after fabrication. Remove galvanizing runs and beads on all slip surfaces. Nuts for high strength bolts may be retapped after galvanizing.
13. The use of a post larger than required by design is not permitted.
14. Tightening of base plate bolts shall be done with a state inspector present.
15. See TM601 for additional details.

BASE PLATE BOLTING PROCEDURE:

1. Assemble post to stub as shown in Base Assembly Detail.
2. Shim as required to plumb post. ( $\pm \frac{1}{16}$  / vert. 12") (2 shims maximum per bolt)
3. Tighten bolts in a systematic order to the "T1" torque prescribed in the Base Plate Data Table.
4. Loosen and retighten bolts to the "T2" torque prescribed in the Base Plate Data Table. Use the same order as the initial tightening and DO NOT OVER TIGHTEN!
5. Burr threads at junction with nut using a center punch.

HINGE AND SLIP PLATE BOLTING PROCEDURE:

1. Shop assemble post sections as shown. (D.T.I. bumps toward bolt head)
2. Tighten each nut in a systematic order until the gap between the bolt head and direct tension indicator washer is in the 0.005" to 0.010" range.
3. Further tighten each nut in the same order until a nil gap between the bolt head and indicator washer is attained.



BREAKAWAY SIGN POST  
No Scale

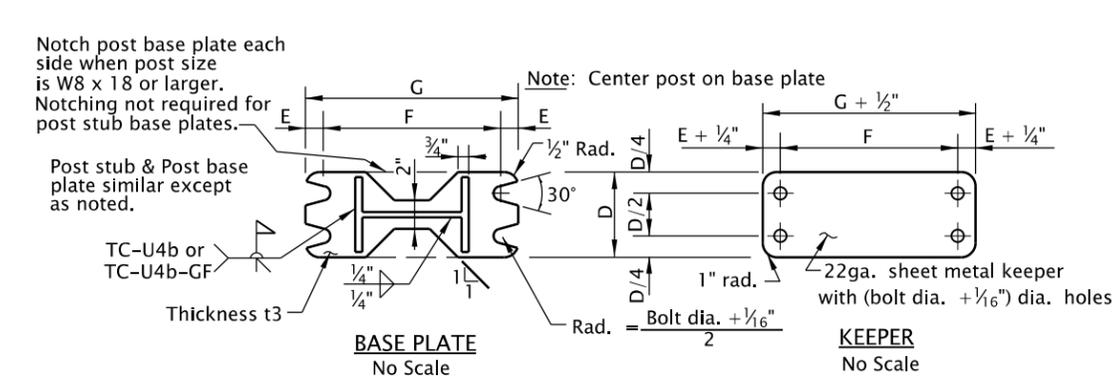
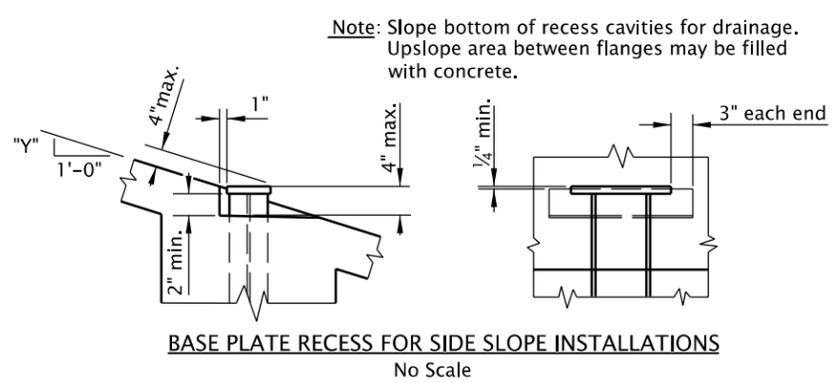
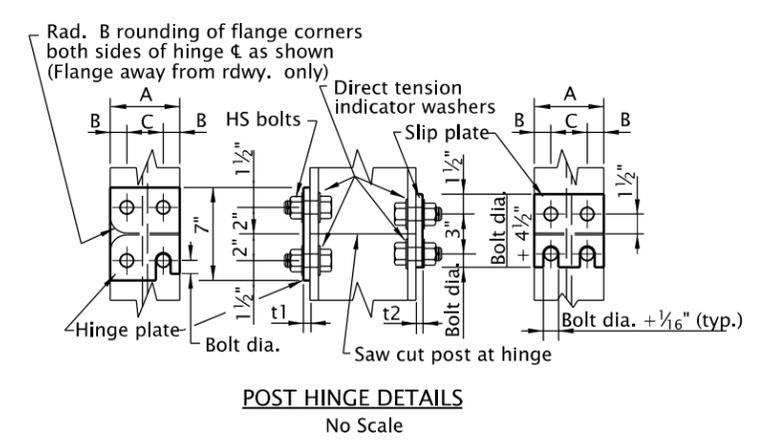
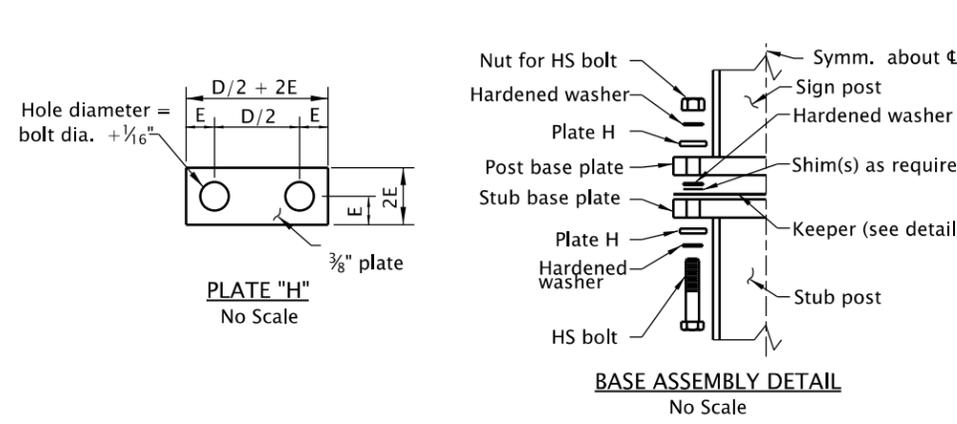
Accompanied by dwgs. TM220, TM601, TM635, TM675

CALC. BOOK NO. 1493	SDR DATE 09-JAN-2015
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS</b>	
<b>MULTI-POST BREAKAWAY SIGN SUPPORTS NOTES</b>	
2021	
DATE	REVISION DESCRIPTION

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

Post & Stub	Hinge Data								Base Plate Data								Footing Data		Min. Footing Depth			Max. Footing Slope		
	Depth & Mass/ft	Hinge $t_1$	Slip $t_2$	A	B	C	Hinge Bolts		Base $t_3$	D	E	F	G	Bolt				Stub Length	V bars	2'-0" dia.	3'-0" dia.	4'-0" dia.	Rise per ft. "Y"	Grade
							Dia.	Length						dia.	"T1" Torque	"T2" Torque	Length							
W6 x 9	3/8"	3/8"	4"	7/8"	2 1/4"	3/4"	2"	1"	4 1/4"	3/4"	8 1/2"	10"	5/8"	150 ft.-lb.	50 ft.-lb.	4 1/4"	2'-0"	#4	4'-9"	—	—	12"	1V:1.00H	
W6 x 12	3/8"	3/8"	4"	7/8"	2 1/4"	3/4"	2"	1"	4 1/2"	3/4"	8 1/2"	10"	5/8"	150 ft.-lb.	50 ft.-lb.	4 1/4"	2'-4"	#5	5'-6"	—	—	11 1/4"	1V:1.07H	
W6 x 15	3/8"	1/2"	6"	1 1/4"	3 1/2"	7/8"	2 1/2"	1"	6 1/4"	7/8"	8 1/2"	10 1/4"	3/4"	280 ft.-lb.	70 ft.-lb.	4 1/2"	2'-8"	#6	6'-6"	—	—	7 1/4"	1V:1.66H	
W8 x 18	1/2"	1/2"	5 1/4"	1 1/4"	2 3/4"	7/8"	2 1/2"	1 3/8"	5 1/2"	7/8"	11 3/4"	1'-1 1/2"	3/4"	280 ft.-lb.	70 ft.-lb.	5"	3'-0"	#7	8'-0"	6'-6"	—	8 1/2"	1V:1.41H	
W8 x 21	1/2"	5/8"	5 1/4"	1 1/4"	2 3/4"	1"	2 3/4"	1 3/8"	6"	1"	11 3/4"	1'-3 1/4"	7/8"	450 ft.-lb.	80 ft.-lb.	5 1/4"	3'-4"	#8	8'-9"	7'-0"	—	7 1/2"	1V:1.60H	
W10 x 22	1/2"	5/8"	5 3/4"	1 1/2"	2 3/4"	1"	2 3/4"	1 3/8"	6"	1"	1'-1 1/2"	1'-3 1/2"	7/8"	450 ft.-lb.	80 ft.-lb.	5 1/4"	3'-8"	#8	10'-3"	7'-9"	6'-6"	7 1/2"	1V:1.60H	
W10 x 26	1/2"	5/8"	5 3/4"	1 1/2"	2 3/4"	1 1/8"	3"	1 3/8"	7"	1 1/8"	1'-1 1/2"	1'-3 3/4"	1"	680 ft.-lb.	90 ft.-lb.	5 1/2"	4'-0"	#9	11'-0"	8'-9"	7'-3"	6 3/8"	1V:1.88H	
W12 x 26	1/2"	5/8"	6 1/2"	1 1/2"	3 1/2"	1 1/8"	3"	1 1/2"	7"	1 1/8"	1'-3 1/2"	1'-5 3/4"	1"	680 ft.-lb.	90 ft.-lb.	5 3/4"	4'-4"	#10	12'-3"	9'-6"	8'-0"	6 3/8"	1V:1.88H	
W12 x 30	1/2"	5/8"	6 1/2"	1 1/2"	3 1/2"	1 1/4"	3"	1 1/2"	8"	1 1/4"	1'-3 1/2"	1'-6"	1 1/8"	840 ft.-lb.	100 ft.-lb.	5 3/4"	4'-8"	#11	13'-3"	10'-6"	8'-9"	5 3/8"	1V:2.23H	
W14 x 30	1/2"	5/8"	6 3/4"	1 1/2"	3 3/4"	1 1/4"	3"	1 1/2"	8"	1 1/4"	1'-5 1/2"	1'-8"	1 1/8"	840 ft.-lb.	100 ft.-lb.	5 3/4"	5'-0"	#11	13'-9"	10'-9"	9'-0"	5 1/2"	1V:2.18H	

Notes:  
 1. See TM635 for placement of signs.  
 2. See TM600 for Additional details and bolting procedures.



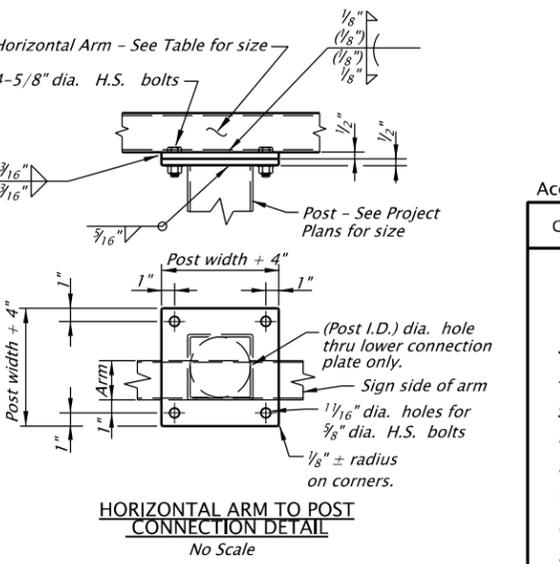
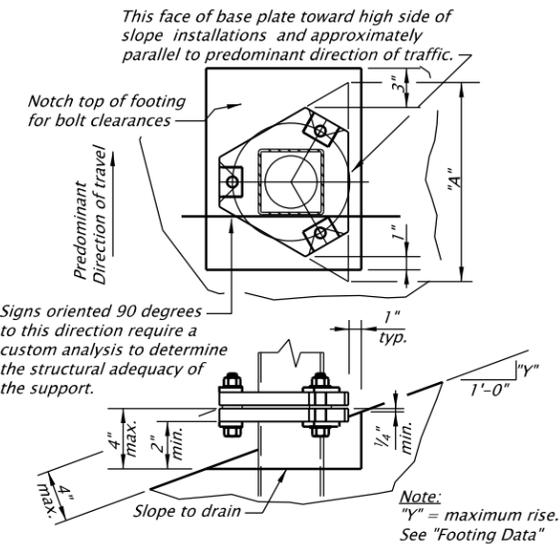
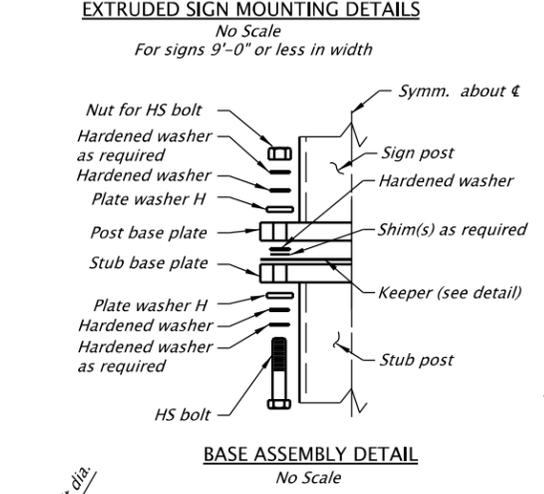
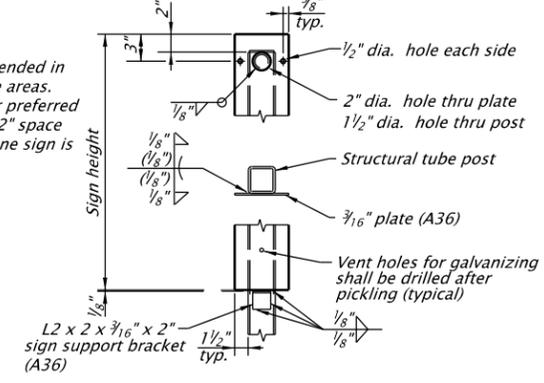
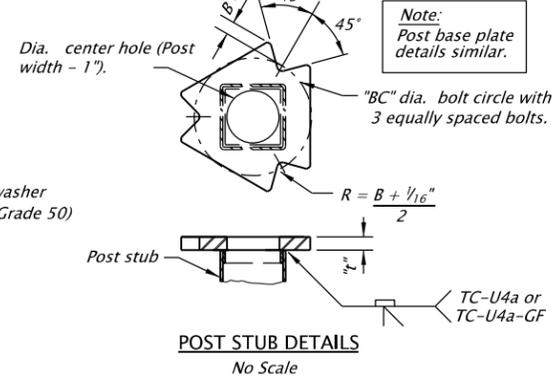
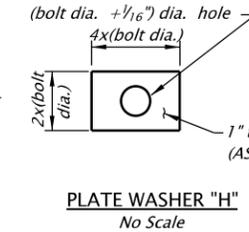
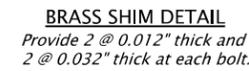
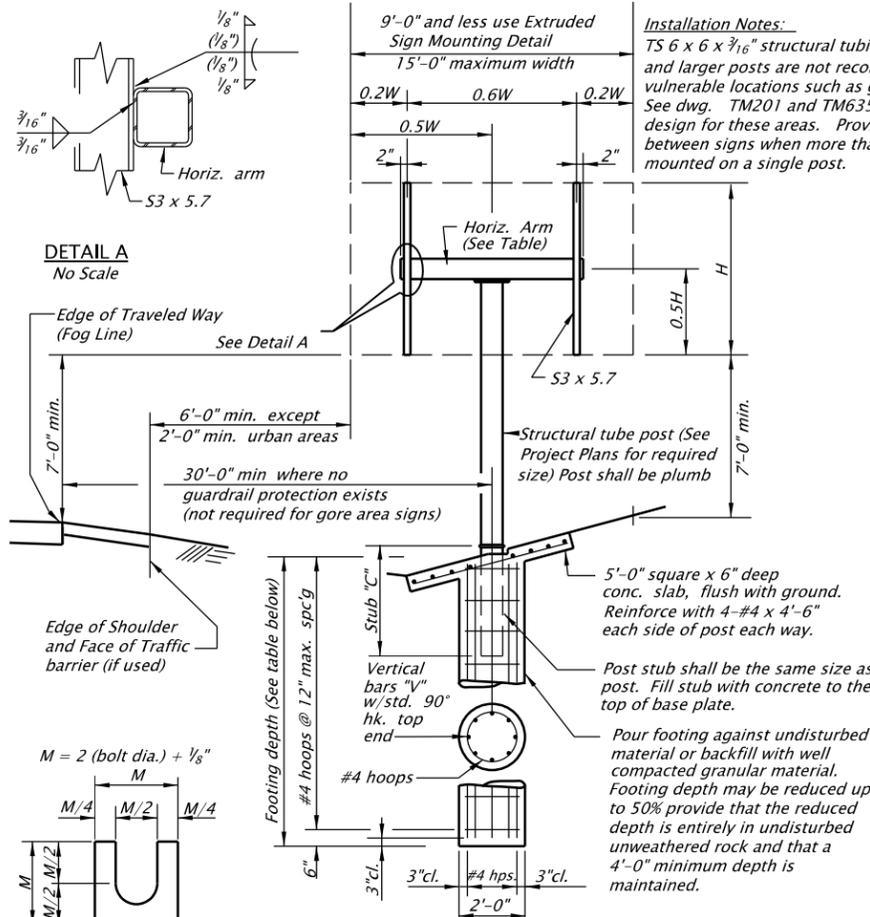
Accompanied by dwgs. TM220, TM600, TM635, TM675

CALC. BOOK NO. <u>1493</u>	SDR DATE <u>06-JAN-2017</u>
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS</b>	
<b>MULTI-POST BREAKAWAY SIGN SUPPORT DETAILS</b>	
2021	
DATE	REVISION DESCRIPTION

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

tm602.dgn 10-JUL-2020

TM602



- GENERAL NOTES:**
- Sign supports are designed in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals 1994. Use a wind velocity with a 10-year mean recurrence interval.
  - All concrete shall be Commercial Grade Concrete (f'c = 3000 psi)
  - All reinforcing steel shall conform to AASHTO Specification M31, Grade 60, or ASTM A706.
  - The following splice lengths shall be used unless otherwise shown:
 

Bar Size	#4	#5
Splice Length (mm)	1'-1"	1'-5"
  - Structural steel shall conform to AASHTO M223 (ASTM A572) Grade 50, unless shown otherwise.
  - Structural tubing shall conform to ASTM Specification A500, Grade B, or A501.
  - Shims shall be fabricated from brass shim stock conforming to ASTM B36.
  - All bolts shall be high strength bolts conforming to to ASTM Specification A325 (AASHTO M164). Nuts for high strength bolts shall be well lubricated heavy hexagon nuts conforming to ASTM Specification A563, (AASHTO M291), Grade DH. Hardened steel washers shall conform to ASTM Specification F436 (AASHTO M293).
  - Steel sheet for keepers shall conform to ASTM Specification A653.
  - Base plate holes shall be sub-drilled and reamed to size. Base plate slot shall be saw cut or machine guided flame cut.
  - Keeper sheet metal shall be galvanized in accordance with ASTM A653, Coating G165. All other steel including fasteners shall be hot-dip galvanized after fabrication. Remove galvanizing runs and beads on all slip surfaces. Nuts for high strength bolts may be retapped after galvanizing.
  - The use of post larger than required by design will not be permitted.
  - See Dwg. TM675 for sign and sign mounting details.

- BASE PLATE BOLTING PRODEDURE:**
- Assemble post to stub as shown in Base Assembly Detail.
  - Shim as required to plumb post. (± 1/16"/vert. 12") (2 shims maximum per bolt)
  - Tighten bolts in a systematic order to the "T1" ft-lbs torque.
  - Loosen and retighten bolts to the "T2" ft-lbs torque. Use the same order as the initial tightening and DO NOT OVER TIGHTEN!
  - Burr threads at junction with nut using a center punch.

Structural Tubing Post and Post Stub Size	Structural Tubing Horiz. Arm (if req'd)	Slip Base Data							Footing Data					
		Base Plate		Bolt					Post Stub Length	Vert. Reinf. Bars "V"	Footing Depth		Max. Slope Rise per ft. "Y"	
		"A"	"B"	Dia.	Length	Circle "BC"	"T1" ft-lbs torque	"T2" ft-lbs torque			Num. of additional washers	2'-0" Dia.		4'-0" Dia.
TS 3 x 3 x 3/16	TS 3 x 3 x 3/16	3/4"	10"	1/2"	5"	6"	50	30	2	1'-6"	8-#4	3'-0"	—	6.3"
TS 3 1/2 x 3 1/2 x 3/16	TS 3 x 3 x 3/16	3/4"	11 3/8"	5/8"	5"	6 3/4"	150	50	—	1'-9"	8-#4	3'-6"	—	5.5"
TS 4 x 4 x 3/16	TS 3 x 3 x 3/16	1"	1'-0 3/8"	5/8"	5 1/2"	7 1/2"	150	50	—	2'-0"	8-#4	4'-0"	—	5.2"
TS 5 x 5 x 3/16	TS 3 x 3 x 3/16	1"	1'-2 3/8"	3/4"	5 1/2"	9"	280	70	—	2'-3"	8-#4	4'-6"	4'-0"	4.4"
TS 6 x 6 x 3/16	TS 3 x 3 x 3/16	1 1/4"	1'-4 7/8"	3/4"	6 1/2"	10 1/2"	450	75	1	2'-6"	8-#5	5'-0"	4'-0"	3.8"
TS 7 x 7 x 3/16	TS 4 x 4 x 3/16	1 1/4"	1'-6 1/4"	7/8"	6 1/2"	12"	450	75	1	3'-0"	8-#5	6'-0"	4'-6"	3.5"
TS 8 x 8 x 3/16	TS 5 x 5 x 3/16	1 3/8"	1'-8 1/2"	1"	7"	1'-1 1/2"	680	75	1	3'-6"	12-#5	7'-0"	5'-0"	3.1"

Accompanied by dwgs. TM200, TM201, TM635, TM675

CALC. BOOK NO. 1493

SDR DATE 09-JAN-2015

NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

**OREGON STANDARD DRAWINGS**

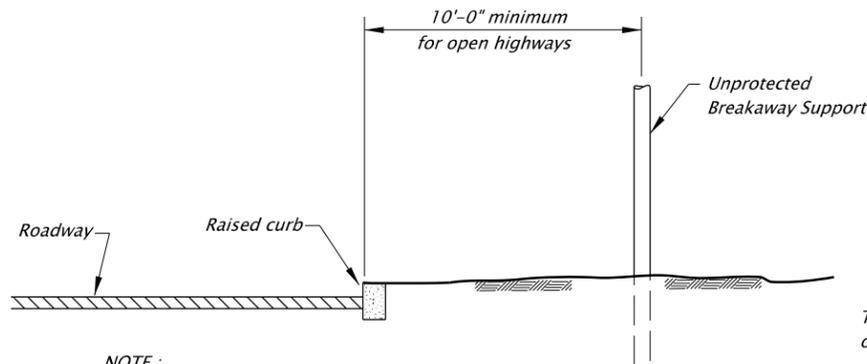
**TRIANGULAR BASE BREAKAWAY MULTI-DIRECTIONAL SLIP BASE DESIGN**

2021

DATE \_\_\_\_\_ REVISION DESCRIPTION \_\_\_\_\_

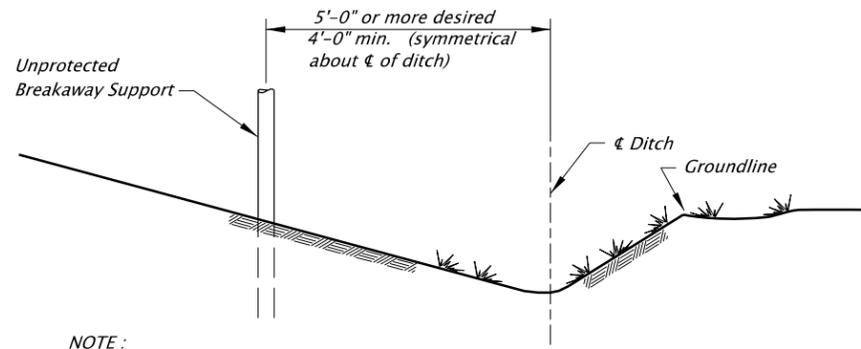
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

tm635.dgn 10-JUL-2020



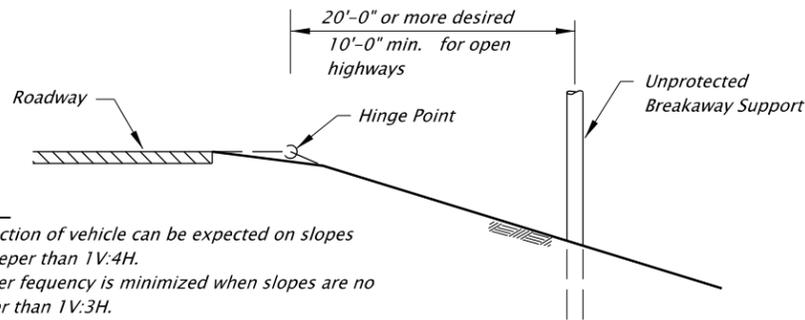
**NOTE:**  
Locate supports far enough behind curb to allow vehicle to stabilize before impacting support.

**BREAKAWAY SUPPORTS BEHIND RAISED CURBS**



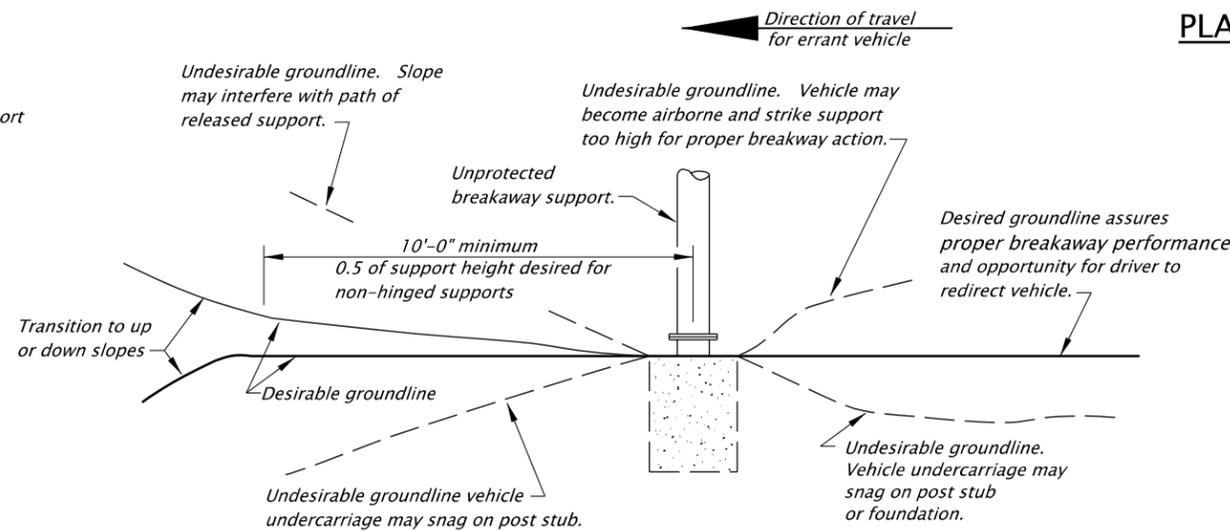
**NOTE:**  
Locate breakaway supports away from ditches to avoid problems with erosion, corrosion, debris, maintenance, and breakaway performance.

**BREAKAWAY SUPPORTS NEAR DITCHES**



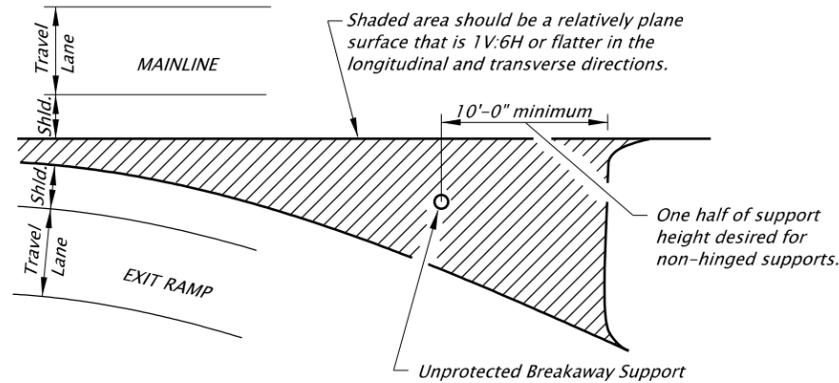
**NOTE:**  
Redirection of vehicle can be expected on slopes no steeper than 1V:4H.  
Rollover frequency is minimized when slopes are no steeper than 1V:3H.  
Locate support beyond hinge point as shown to allow vehicle to stabilize before impact.

**BREAKAWAY SUPPORT ON FILL SLOPE**

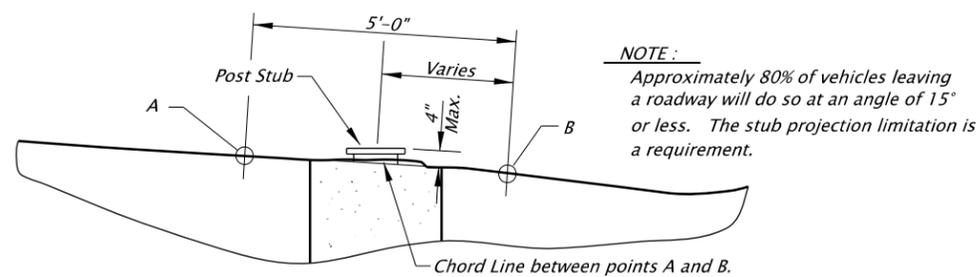


**BREAKAWAY SUPPORT - PARTIAL ELEVATION**

(Along possible paths of errant vehicles)



**GORE AREA BREAKAWAY SUPPORT LOCATION**



**NOTE:**  
Approximately 80% of vehicles leaving a roadway will do so at an angle of 15° or less. The stub projection limitation is a requirement.

**UNPROTECTED BREAKAWAY SUPPORT CLEARANCE DIAGRAM**

Section perpendicular to assumed path of errant vehicle. (Most likely path is a 15° angle from adjacent traffic flow)

**PLACEMENT OF UNPROTECTED BREAKAWAY SUPPORTS:**

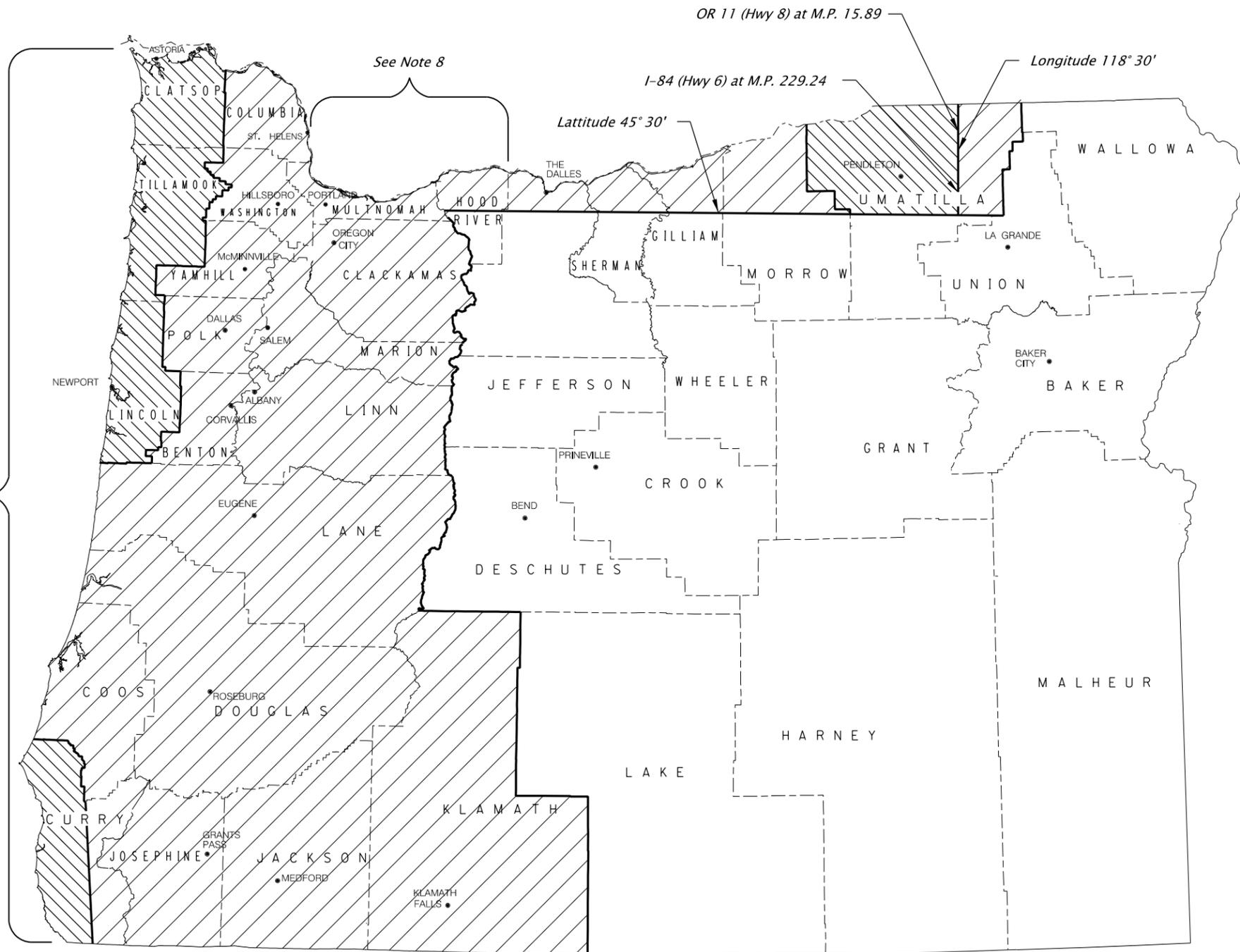
The location of unprotected breakaway supports with respect to the travel lane(s) and the roadside terrain and other geometric conditions over which the vehicle travels before impacting the support will affect the support's breakaway performance. Breakaway supports located in gore areas are particularly vulnerable to vehicle impacts. Breakaway supports located across tee intersections, at the end of lane drop or on the outside of horizontal curves are also likely to be struck. Locating breakaway supports in these areas should be avoided if possible. If the breakaway support must be located in these areas, locate them to produce an impact situation that is as forgiving as possible while assuring adequate recovery space beyond the support(s). Breakaway supports placed up on cut slopes generally result in a safer impact situation than for those placed down on fill slopes. The support placed on a cut slope will be lighter than a support placed on fill slope. The momentum of a vehicle traversing a cut slope will generally be less than that for a vehicle traversing a fill slope. A vehicle going up a cut slope is generally more stable and more easily redirected than a vehicle going down a fill slope. Placement of breakaway supports in or near ditches should be avoided. Breakaway supports should not be located near raised curbs or near the hinge point of the fill slope. Where possible, supports should be located behind established barriers. The guidelines contained herein should be used if possible. However, adjustments to the guidelines may be necessary because of right-of-way and/or other constraints. See TM200 requirements when signs are mounted on unprotected Breakaway Supports.

CALC. BOOK NO. _____		SDR DATE 06-JUL-2015	
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications			
<b>OREGON STANDARD DRAWINGS</b>			
<b>BREAKAWAY SIGN &amp; LUMINAIRE SUPPORTS - SUPPORT LOCATION GUIDELINES</b>			
2021			
DATE	REVISION DESCRIPTION		

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

TM671.dgn 10-JUL-2020

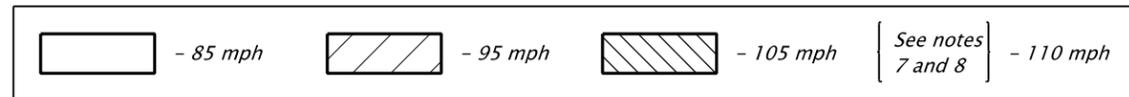
TM671



**NOTES:**

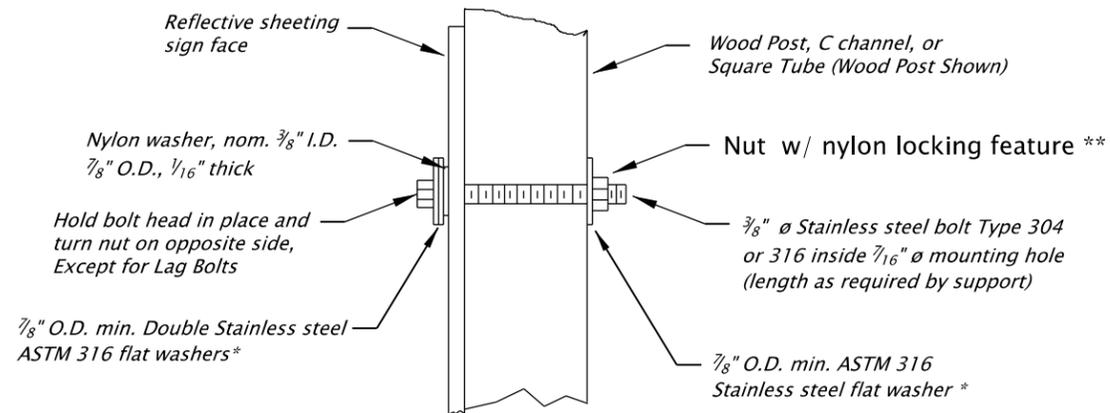
1. The wind velocity map as shown is adapted from AASHTO 2001 4th Edition - "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals", Appendix C, Figure C-3 and Section 3, Figure 3-2. It uses the wind speed map shown in Figure 1609 of the 2007 Oregon Structural Code to account for locations in the State with special wind regions.
2. The wind velocities shown above are 3-Second Gust wind velocities.
3. The Exposure Category is C.
4. The mean recurrence interval is 50-Years.
5. Mountainous terrain, gorges, and ocean promontories are classified as special wind regions and shall be examined for unusual wind conditions.
6. The Interval Height (Kz) is 30 ft.
7. All areas with full exposure to ocean winds shall be designated 110 mph areas.
8. Areas in Multnomah and Hood River counties with full exposure to Columbia River Gorge winds shall be designated 110 mph areas.
9. Localities may have adopted wind speed higher than shown on this map. Those higher wind speed shall be used.

See Note 7



CALC. BOOK NO. _____	SDR DATE <u>06-JAN-2012</u>
<p>The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.</p>	NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications
	<b>OREGON STANDARD DRAWINGS</b>
	<b>3 SECOND GUST WIND SPEED MAP</b>
	2021
DATE	REVISION DESCRIPTION

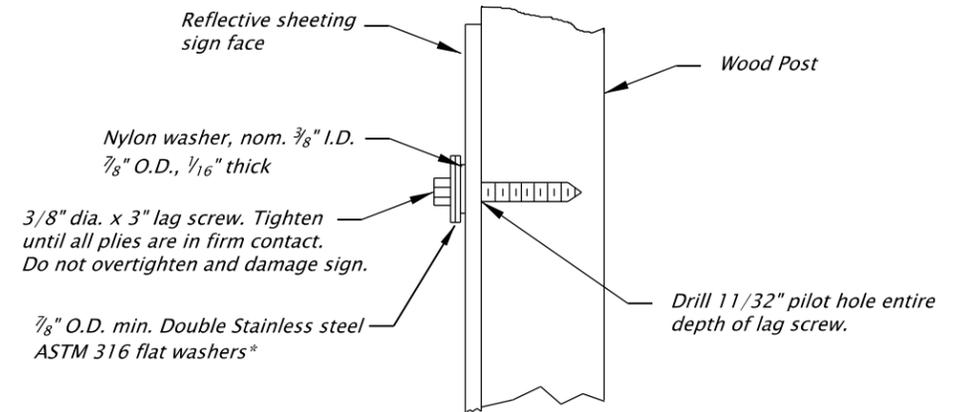
tm676.dgn 10-JUL-2020



Note:  
 1) When signs are placed on opposing sides of post,  $\frac{3}{8}$ " x 3" lag screws can be used instead of through bolt.  
 2) Use nylon and stainless steel washers when signs are placed on both sides of post.  
 3) Burr threads at junction with nut when locknuts are not used.  
 4) Post bolts to extend beyond the tightened nuts within the limits of  $\frac{1}{4}$ " to 1".

\* Stainless steel bonded sealing washer with neoprene layer is an acceptable substitute  
 \*\* Acceptable substitute for nylon locking nuts:  
 ANCO PIN-LOC  
 TRI-LOC® Top Lock Locknut

**SIGN ATTACHMENT DETAIL**



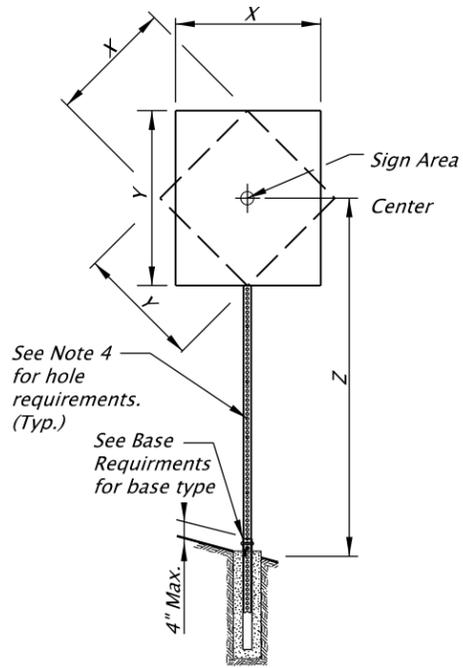
\* Stainless steel bonded sealing washer with neoprene layer is an acceptable substitute

Note: This optional detail is to be used only when specified on a project.

**OPTIONAL WOOD POST LAG SCREW DETAIL**

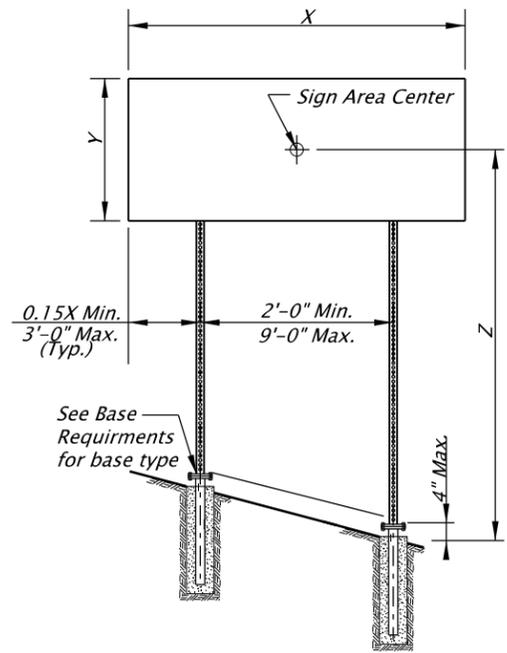
TM676

CALC. BOOK NO. _____		SDR DATE <u>10-JUL-2020</u>	
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications			
<p>The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.</p>		<b>OREGON STANDARD DRAWINGS</b>	
		<b>SIGN ATTACHMENTS</b>	
		2021	
DATE	REVISION	DESCRIPTION	
07/20		Added optional lag screw detail.	



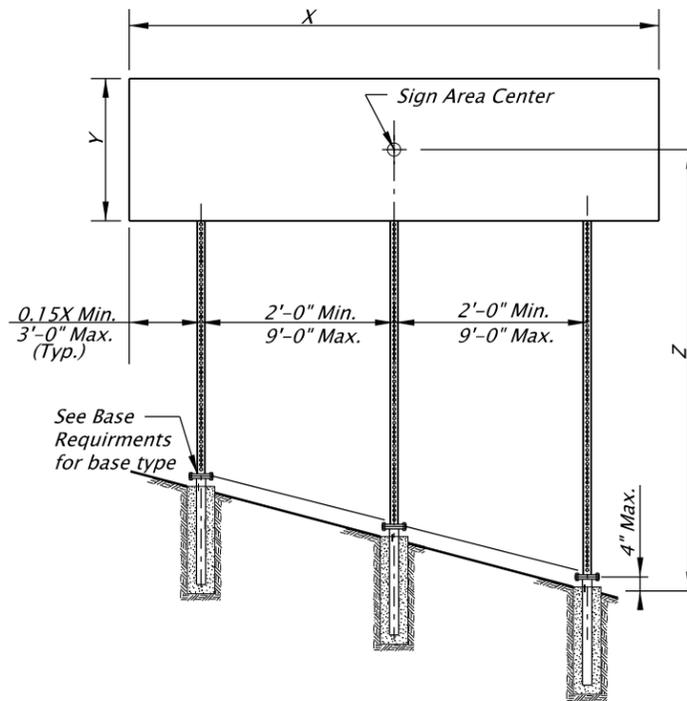
**SINGLE POST ELEVATION**

No scale



**TWO POST ELEVATION**

No scale



**THREE POST ELEVATION**

No scale

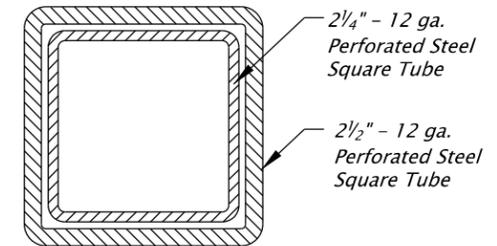
Square Tube Size	<i>(X * Y * Z) in ft<sup>3</sup> - Maximum</i>								
	3 Second Gust Wind Speed (TM671)								
	85 MPH			95 MPH			105 or 110 MPH		
	Number of Posts			Number of Posts			Number of Posts		
2"-12 ga.	79	158	237	63	126	189	57	114	171
2 1/2"-12 ga.	136	272	408	109	218	327	98	196	294
2 1/2"-10 ga.	165	330	495	132	264	396	119	238	357
2 1/4" & 2 1/2"-12 ga.*	231	462	693	185	370	555	167	334	501

**PERMANENT PERFORATED STEEL SQUARE TUBE TABLE**

Square Tube Size	<i>(X * Y * Z) in ft<sup>3</sup> - Maximum</i>								
	3 Second Gust Wind Speed (TM671)								
	85 MPH			95 MPH			105 or 110 MPH		
	Number of Posts			Number of Posts			Number of Posts		
2"-12 ga.	125	250	375	100	200	300	90	180	270
2 1/2"-12 ga.	215	430	645	172	344	516	155	310	465
2 1/2"-10 ga.	261	522	783	209	418	627	189	378	567
2 1/4" & 2 1/2"-12 ga.*	364	728	1092	292	584	876	263	526	789

**TEMPORARY PERFORATED STEEL SQUARE TUBE TABLE**

\* - See 2 1/4" & 2 1/2" - 12 ga. detail.



2 1/4" - 12 ga. PSST to extend entire length inside of the 2 1/2" - 12 ga. PSST.

**2 1/4" & 2 1/2" - 12 GA. DETAIL**

No scale

Square Tube Size	Number of Posts		
	1	2	3
2"-12 ga.	Anchor	Anchor	N/A
2 1/2"-12 ga.	Anchor	Slip	Slip
2 1/2"-10 ga.	Slip	Slip	Slip
2 1/4" & 2 1/2"-12 ga.*	Slip	Slip	Slip

1. Anchor - See Drawing TM687 for PSST anchor foundation details.
2. Slip - See Drawing TM688 for PSST slip base foundation details.
3. N/A - Do not use this option.

**BASE REQUIREMENTS**

**GENERAL NOTES:**

1. Perforated Steel Square Supports are designed in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals 4th Edition, 2001, 2002, 2003, and 2006 interim revisions.
2. The design basic wind speed (3 second gust) shall be according to the wind map shown on TM671.
3. Material grade for base hardware connection shall be according to the manufacturer's recommendation and based on crash testing.
4. Use 7/16" diameter holes at 1" spacing on each of the 4 sides.
5. Steel post shall have a minimum yield stress of 50 ksi.
6. Steel shall be galvanized according to ASTM A653 with coating designation G90.
7. General design parameters are  $K_z = 0.87$ ,  $C_d(\text{sign}) = 1.20$ , and  $G = 1.14$ .
8. Permanent signing uses an  $I_r = 0.71$  for a recurrence interval of 10 years.
9. Temporary signing uses an  $I_r = 0.45$  for a recurrence interval of 1.5 years.
10. The sign width to sign height or sign height to sign width ratio shall not exceed 5.0.
11. For horizontal and vertical clearances of permanent signs refer to TM200 and of temporary signs refer to TM822.
12. Posts protected by barrier or guardrail do not require slip bases.

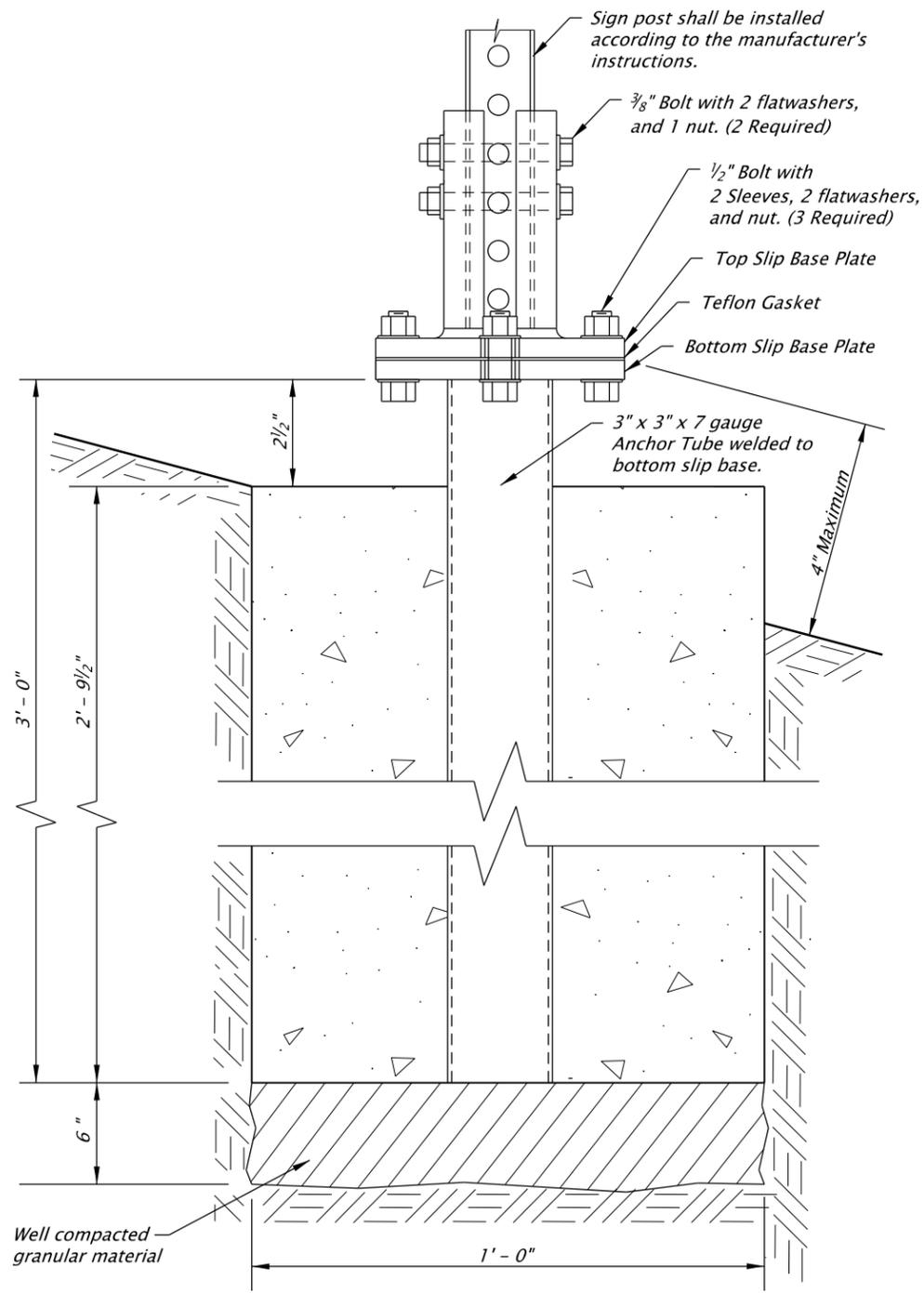
Accompanied by dwgs. TM200, TM671, TM687, TM688, TM689, TM822

CALC. BOOK NO. <u>5752</u>	SDR DATE <u>10-JUL-2017</u>
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS</b>	
<b>PERFORATED STEEL SQUARE TUBE (PSST) SIGN SUPPORT INSTALLATION</b>	
2021	
DATE	REVISION DESCRIPTION

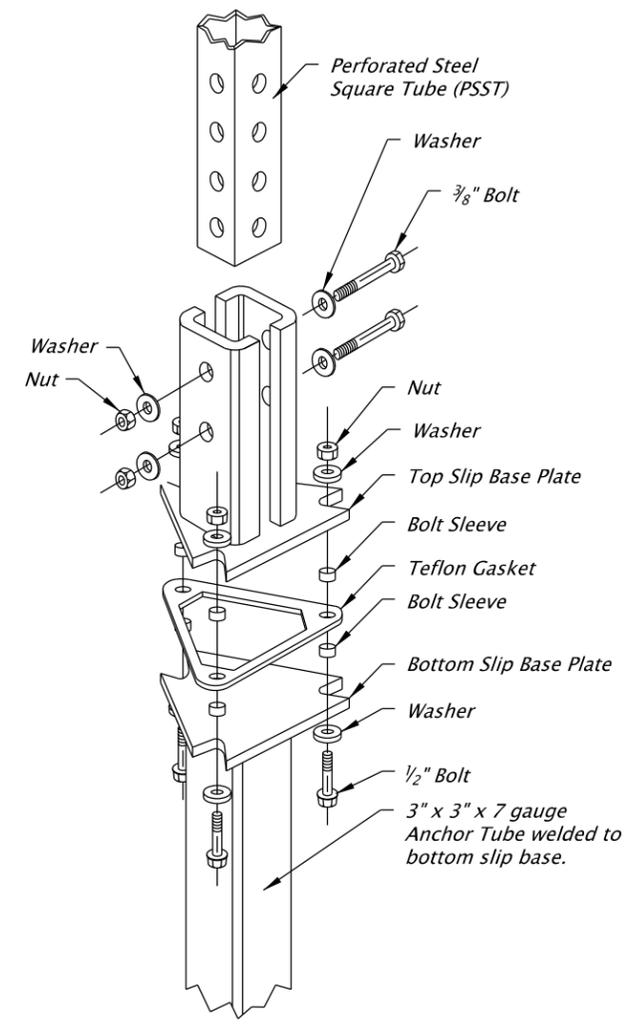
The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.

tm688.dgn 10-JUL-2020

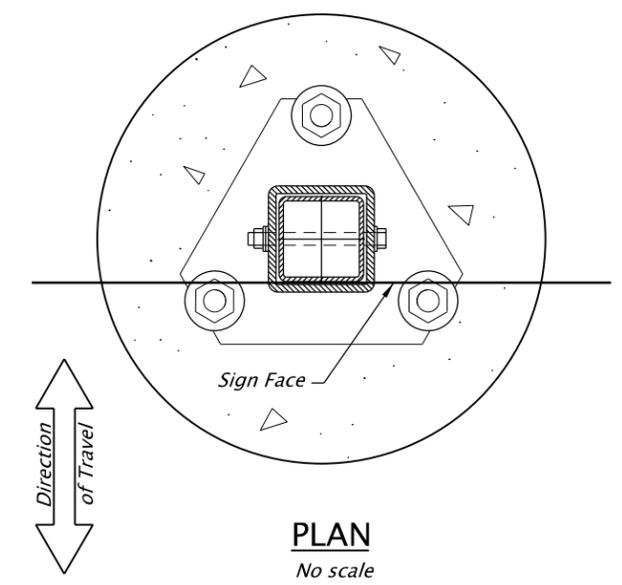
889WL TM688



**SLIP BASE ELEVATION**  
No scale



**SLIP BASE EXPLODED VIEW**  
No scale



**PLAN**  
No scale

**General Notes:**

1. Material grade for base hardware connection shall be according to the manufacturer's recommendation and based on crash testing.
2. Slip base steel shall be hot dipped galvanized or approved equal.
3. Footing concrete shall be Commercial Grade Concrete ( $f_c = 3000$  psi) per Specification 00440. The CGC mixture may be accepted at the site of placement according to 00440.14.
4. Material grade for base hardware connection shall be according to the manufacturer's recommendation and based on crash testing.
5. All slip bases shall be pre-assembled by the manufacturer and shall be installed according to the manufacturer's instructions.
6. Use slip bases listed on the ODOT Qualified products list or submit crash testing data, installation instructions, and unstamped working drawings according to 00150.35.
7. Slip base details shown are not for a specific manufacturer and are only shown to convey general pieces of a slip base system. Specific slip base material will be according to the manufacturer's documentation.

Accompanied by dwgs. TM681, TM687

CALC. BOOK NO. <u>5752</u>	SDR DATE <u>06-JAN-2012</u>
<i>The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.</i>	NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications
	<b>OREGON STANDARD DRAWINGS</b>
	<b>PERFORATED STEEL SQUARE TUBE (PSST) SLIP BASE FOUNDATION</b>
	2021
DATE	REVISION DESCRIPTION

tm800.dgn 01-JUL-2022

00800

TAPER TYPES & FORMULAS	
TAPER	FORMULA
Merging (Lane Closure)	"L"
Shifting	"L"/2 or 1/2"L"
Shoulder Closure	"L"/3 or 1/3"L"
Flagging (See Drg. TM850)	50' - 100'
Downstream (Termination)	Varies (See Drawings)

★ Use Pre-Construction Posted Speed to select the Speed from the Tables below:

TEMPORARY BARRIER FLARE RATE TABLE	
★ SPEED (mph)	MINIMUM FLARE RATE
≤ 30	8:1
35	9:1
40	10:1
45	12:1
50	14:1
55	16:1
60	18:1
65	19:1
70	20:1

MINIMUM LENGTHS TABLE					
"L" VALUE FOR TAPERS (ft)					BUFFER "B" (ft)
★ SPEED (mph)	W = Lane or Shoulder Width being closed or shifted				
	W ≤ 10	W = 12	W = 14	W = 16	
25	105	125	145	165	75
30	150	180	210	240	100
35	205	245	285	325	125
40	265	320	375	430	150
45	450	540	630	720	180
50	500	600	700	800	210
55	550	660	770	880	250
60	600	720	840	960	285
65	650	780	910	1000	325
70	700	840	980	1000	365
FREEWAYS					
55	1000	1000	1000	1000	250
60	1000	1000	1000	1000	285
65	1000	1000	1000	1000	325
70	1000	1000	1000	1000	365

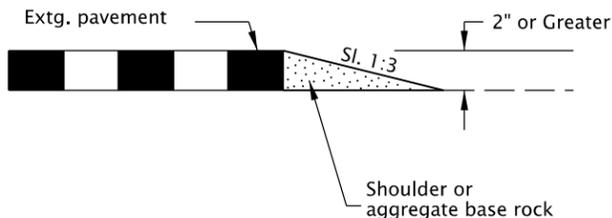
- NOTES:
- For Lane closures where W < 10', use "L" value for W = 10'.
  - For Shoulder closures where W < 10', use "L" value for W = 10' or calculate "L" using formula, for Speeds ≥ 45: L = WS, Speeds < 45: L = S<sup>2</sup>W/60, S = Speed, W=Width

TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE				
★ SPEED (mph)	Sign Spacing (ft)			Max. Channelizing Device Spacing (ft)
	A	B	C	
20 - 30	100	100	100	20
35 - 40	350	350	350	20
45 - 55	500	500	500	40
60 - 70	700	700	700	40
Freeway	1000	1500	2640	40

- NOTES:
- Place traffic control devices on 10 ft. spacing for intersection and access radii.
  - When necessary, sign spacing may be adjusted to fit site conditions. Limit spacing adjustments to 30% of the "A" dimension for all speeds.

NOTES:

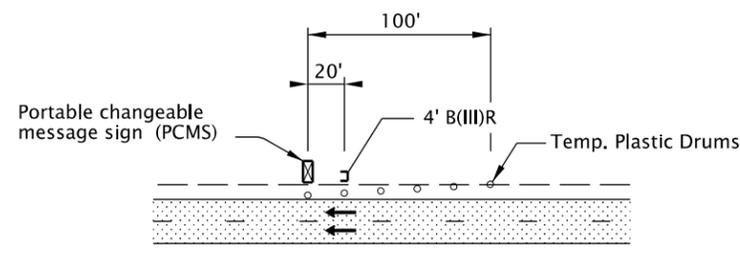
- When paved shoulders adjacent to excavations are less than four feet wide protect longitudinal abrupt edge as shown.
- Use aggregate wedge when abrupt edge is 2 inches or greater.



EXCAVATION ABRUPT EDGE

NOTES:

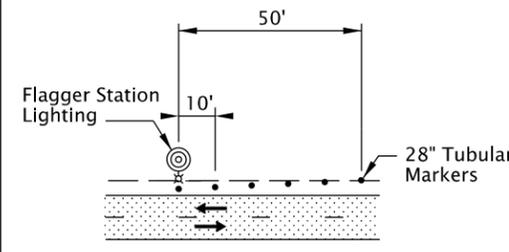
- Install PCMS beyond the outside shoulder, when possible.
- Use the appropriate type of barricade panels for PCMS location. Right shoulder, use Type B(III)R. Left shoulder, use Type B(III)L.
- Use six drums in shoulder taper on 20' spacing. The drums and barricade may be omitted when PCMS is placed behind a roadside barrier.
- Detail as shown is used for trailered and non-crashworthy components of:
  - Portable Traffic Signals
  - Smart Work Zone Systems



PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) INSTALLATION

NOTES:

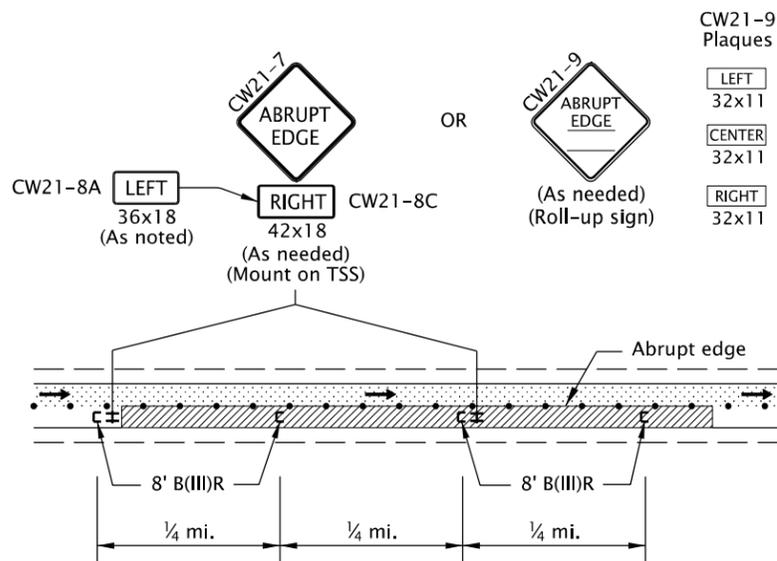
- Install Flagger Station Lighting beyond the outside shoulder, where practical.
- Use six tubular markers in shoulder taper on 10' spacing.
- Place cart / generator / power supply off of the shoulder, as far as practical.



FLAGGER STATION LIGHTING DELINEATION

NOTES:

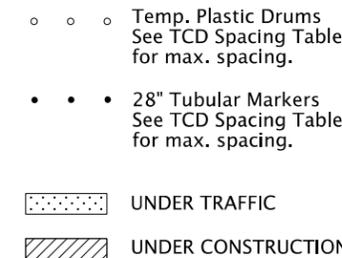
- Abrupt edges may be created by paving, operations, excavations or other roadway work. Use abrupt edge signing for longitudinal abrupt edges of 1 inch or greater.
- If the excavation is located on left side of traffic, replace the 8' B(III)R barricades with 8' B(III)L barricades and replace the "RIGHT" (CW21-8C) riders with "LEFT" (CW21-8A) riders.
- Continue signing and other traffic control devices throughout excavation area at spacings shown.
- If roll-up signs are used, attach the correct (CW21-9) plaques to the sign face using hook and loop fasteners. Place roll-up signs in advance of barricades.



TYPICAL ABRUPT EDGE DELINEATION

GENERAL NOTES FOR ALL TCP DRAWINGS:

- Signs and other Traffic Control Devices (TCD) shown are the minimum required.
- Place a barricade approx. 20' ahead of all sequential arrow boards.
- Arrows shown in roadway are directional arrows to indicate traffic movements.
- All signs are 48" x 48" unless otherwise shown. Use fluorescent orange sheeting for the background of all temporary warning signs.
- All diamond shaped warning signs mounted on barrier sign supports shall be 36" by 36". All other signs mounted on barrier sign supports shall not exceed 12 sq. ft. in total sign area.
- Low speed highways have a pre-construction posted speed of 40 mph or less. High speed highways have a pre-construction posted speed of 45 mph or higher.
- Do not locate sign supports in locations designated for bicycle or pedestrian traffic.
- Combine drawing details to complete temporary traffic control for each work activity.
- Coordinate and control pedestrian movements through a Temporary Accessible Route using Flaggers, Traffic Control Measures, or as directed.
- To be accompanied by Dwg. Nos. TM820 & TM821.



CALC. BOOK NO. \_\_\_ \_ \_ \_ \_ TM09-01 \_\_\_ \_ \_ SDR DATE \_\_\_ \_ \_ \_ \_ 01-JUL-2022 \_\_\_ \_ \_

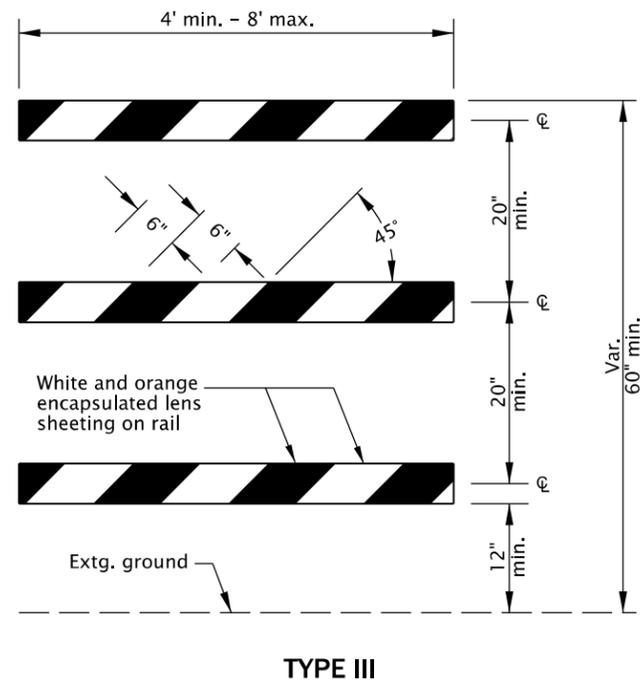
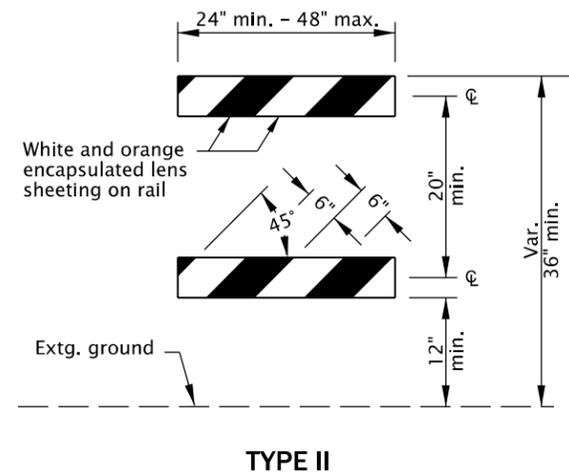
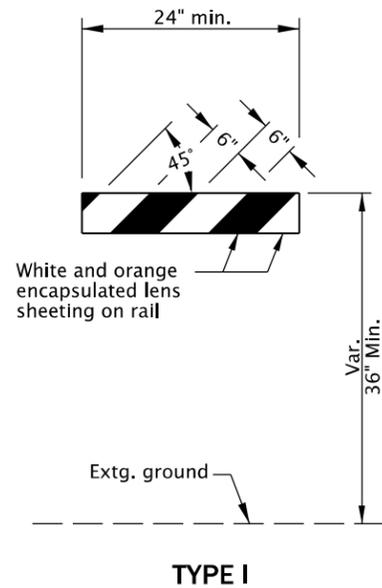
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

**OREGON STANDARD DRAWINGS**  
**TABLES, ABRUPT EDGE AND PCMS DETAILS**

2021

DATE	REVISION DESCRIPTION
07/01/22	Added a note for TPARs.

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*



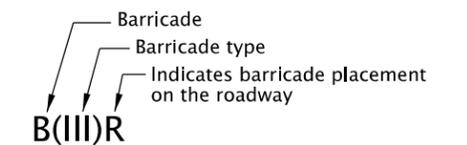
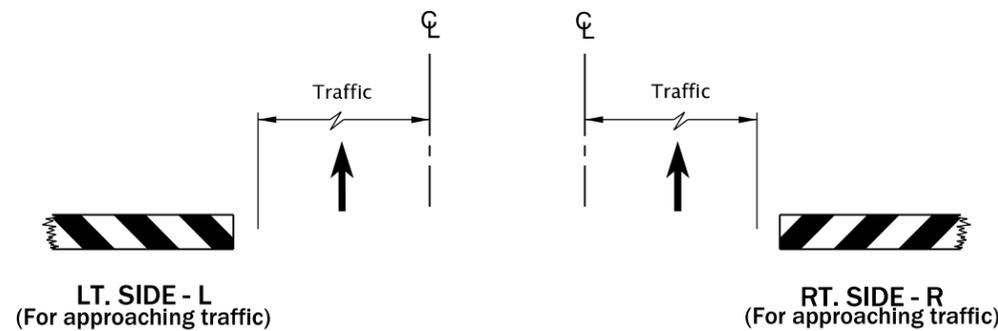
**BARRICADE RAIL LAYOUT**

**GENERAL NOTES FOR ALL DETAILS:**

- Sandbags (approximately 25 lb sack filled with sand) may be placed on lower frame to provide additional ballast.
- Ballast shall not extend above bottom rail or be suspended from barricade.
- For rails less than 36" long, 4" wide stripes shall be used.
- Rails must be 8" min. to 12" max. in height.
- Use barricades from ODOT Qualified Products List (QPL).
- Use 4' Type III barricades where horizontal space is limited.
- Do not block bike lanes or shoulders unless the facility is properly closed and signed.
- Do not place barricades in sidewalks unless sidewalk is closed and a temporary pedestrian accessible route (TPAR) is signed according to the TCP. See Dwg. No. TM844.

**NOTES:**

- Markings for barricade rails shall slope downward at an angle of 45° in the direction traffic is to pass.
- Where a barricade extends entirely across a roadway, it is desirable that the stripes slope downward in the direction toward which traffic must turn in detouring.
- Where both right and left turns are provided for, slope the chevron striping downward in both directions from the center of the barricade.
- For full roadway closures, the C or LR barricade may be used. Extend barricades completely across roadway unless access is required for local road users.



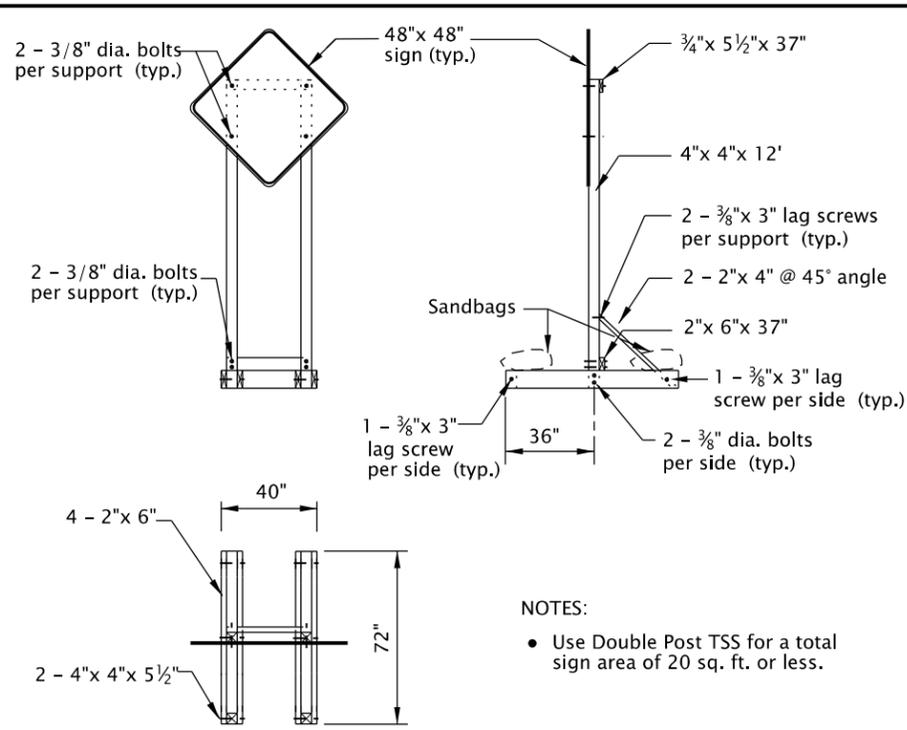
**BARRICADE NOTATION**

CALC. BOOK NO. _____ N/A _____	SDR DATE _____ 01-JUL-2020 _____
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS</b>	
<b>TEMPORARY BARRICADES</b>	
2021	
DATE	REVISION DESCRIPTION

*The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user and should not be used without consulting a Registered Professional Engineer.*

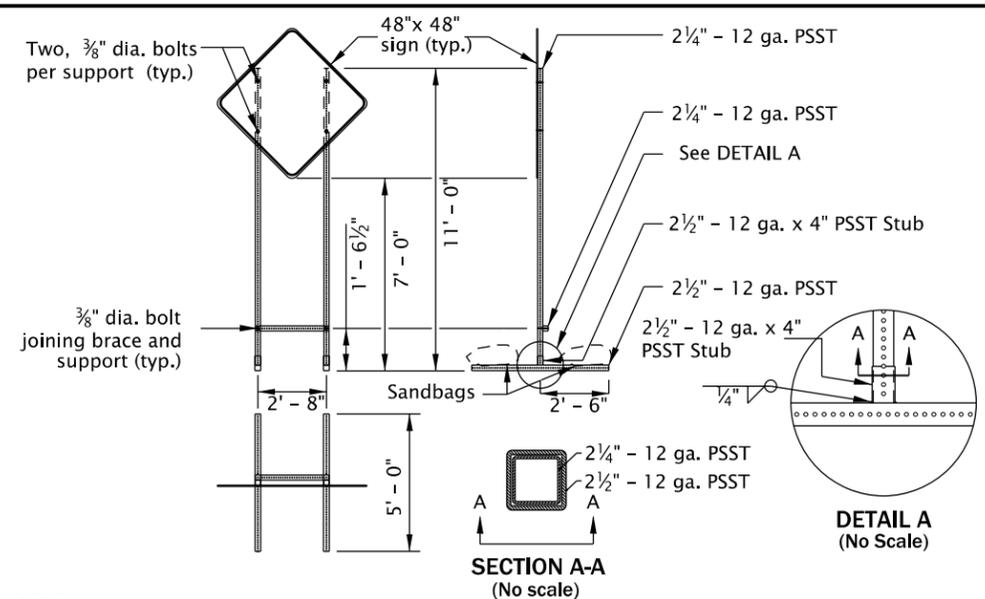
**DIAGRAM FOR BARRICADE PLACEMENT AND SLOPE MARKING**

tm821.dgn 01-JUL-2020



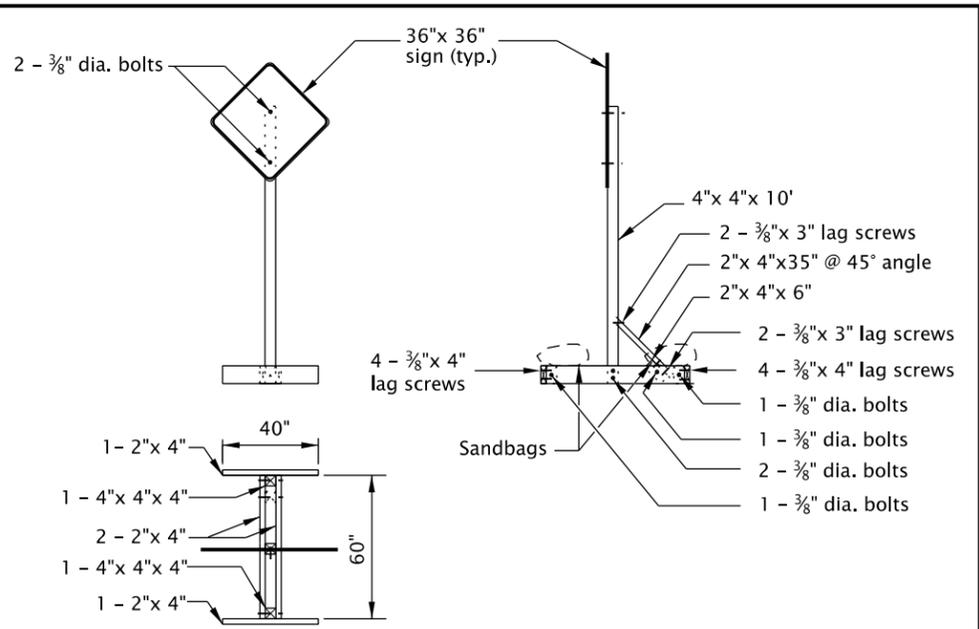
- NOTES:
- Use Double Post TSS for a total sign area of 20 sq. ft. or less.

**DOUBLE POST DETAIL**



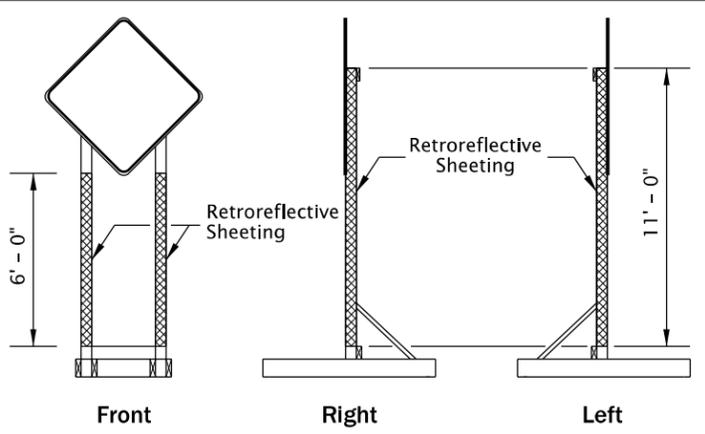
- NOTES:
- Use PSST TSS's for a total sign area of 16 sq. ft. or less.
  - All members shall have a minimum yield stress of 50 ksi.
  - Galvanize steel according to ASTM A653 with coating designation G90. Remove Galvanizing from steel before welding. Repair Galvanizing according to ASTM A780.
  - Use A325 Bolts or equivalent.
  - 2 1/4 - 12 ga. PSST to extend entire length inside of the 2 1/2 - 12 ga. x 4 inch PSST Stub.
  - Do not use bolt to secure 2 1/4 PSST inside of the 2 1/2 - 12 ga. x 4 inch PSST Stub.
  - Weld steel according to American Welding Society (AWS) D.1.1.

**PERFORATED STEEL SQUARE TUBE (PSST) DETAIL**

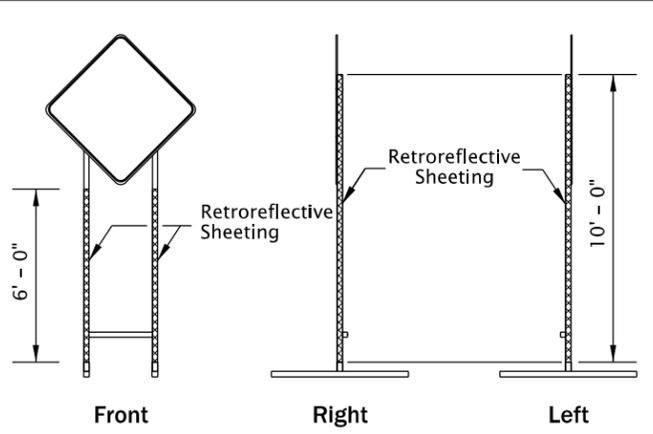


- NOTES:
- Use Single Post TSS for a total sign area of 12 sq. ft. or less.
  - Use Single Post TSS for mounting "Business Access" (CG20-11) signs. Do not mount signs on Type II or III Barricades.

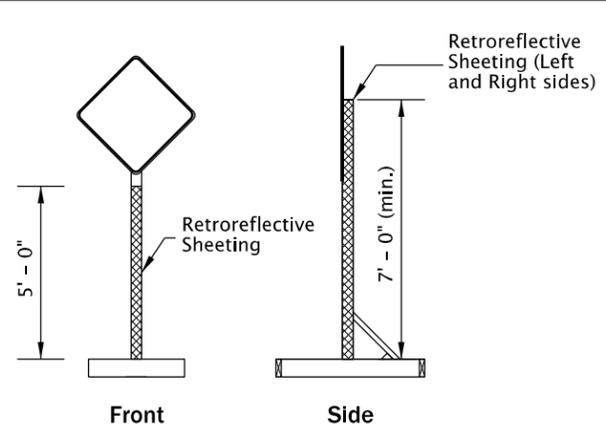
**SINGLE POST DETAIL**



**Double Post**



**Perforated Steel Square Tube (PSST)**



**Single Post**

- TEMPORARY SIGN SUPPORT GENERAL NOTES:
- Do not tip over TSS at any time.
  - Do not locate TSS's in locations that block pedestrian or bicycle traffic.
  - For wooden TSS's, use either Douglas Fir or Hem Fir, which is surfaced four sides (S4S) and free of heart center (FOHC).
  - See "Temporary Sign Placement" detail on TM822 for sign installation heights.
  - Do not place or stack ballast more than 24" above the ground.
  - When sign is inconsistent with current work zone conditions, cover sign; or turn sign 90 degrees away from approaching traffic. Remove TSS from roadway when signing is not needed for more than 3 days.
  - Place a minimum of 50 lbs of sandbags on each of the four TSS supports legs. (25 lb. max per bag) (min. 100 lbs per side of each TSS).
  - See Dwg. No. TM204 for flag board mounting detail.

CALC. BOOK NO. _____ N/A _____	SDR DATE _____ 01-JUL-2020 _____
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS</b>	
<b>TEMPORARY SIGN SUPPORTS</b>	
2021	
DATE	REVISION DESCRIPTION

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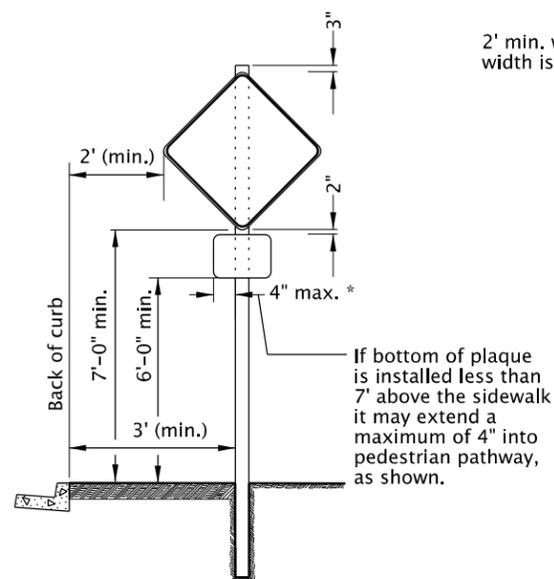
TM821

**SIGN POST REFLECTIVE SHEETING PLACEMENT**

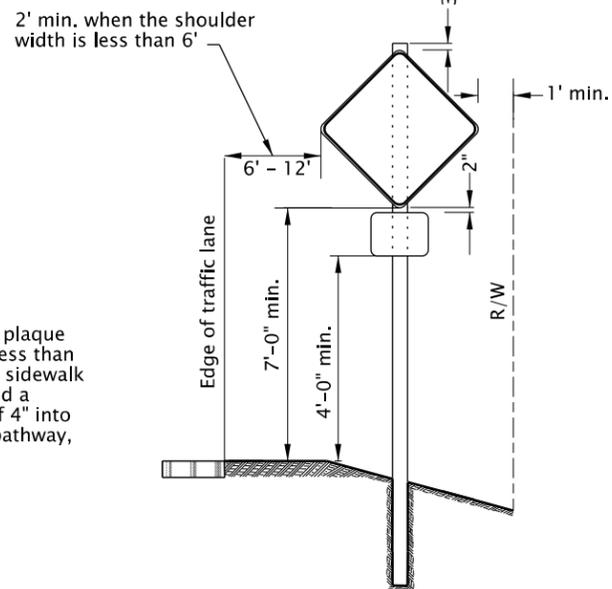
- NOTES:
- Apply fluorescent orange, ANSI Type VIII or IX retroreflective sheeting to TSS posts, as shown, for all temporary signs, except "STOP" and "DO NOT ENTER". For "STOP" and "DO NOT ENTER" signs, used red ANSI Type III or IV retroreflective sheeting on the TSS posts.
  - Apply sign post retroreflectivity to each TSS post facing front; and to the left and right sides of the TSS, as shown. Use 3" wide sheeting for wood post TSS's. Use 2" wide sheeting for PSST TSS's.
  - Sheeting may be applied directly to post material; or applied to a rigid, lightweight substrate, then securely attached to the posts.

NOTES:

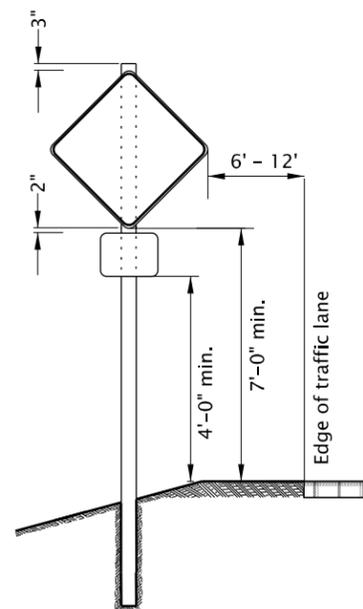
- Do not block bicycle lanes, sidewalks, or TPAR's with sign supports. Maintain minimum widths for these facilities according to TCP Design Manual, MUTCD, ADA, or as directed.
- To be accompanied by Dwg. Nos. TM670, TM671, TM687, TM688 & TM689.



Urban Areas With Curb/Sidewalk

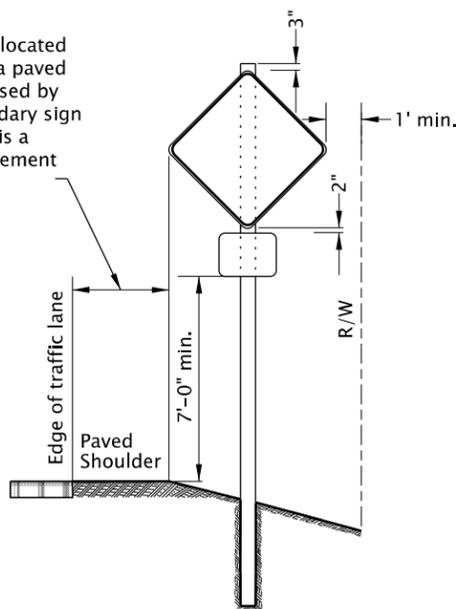


Rural Areas



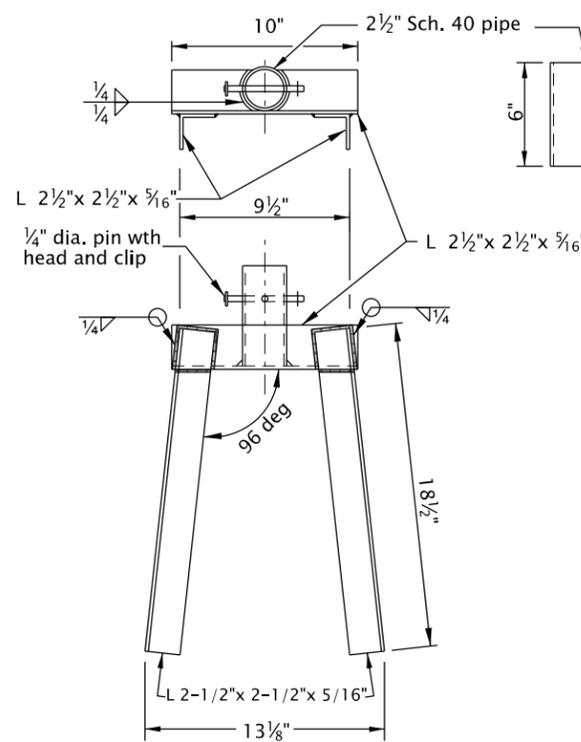
Divided Highway/Freeway Medians  
No Curb/Sidewalk

Where temporary signs are located adjacent to or intrude into a paved shoulder or other surface used by bicycle traffic, install secondary sign (plaque) so bottom of sign is a minimum of 7'-0" above pavement surface, as shown.



Rural or Urban Areas - Curb or No Curb  
Bicycles On Shoulder

TEMPORARY SIGN PLACEMENT



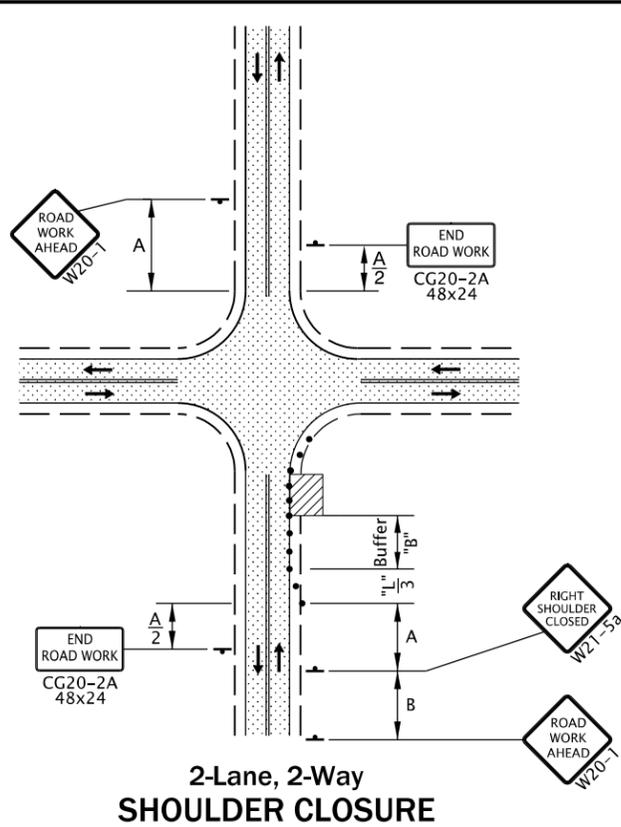
NOTES:

- Drill additional holes so sign can be rotated 90 degrees and pinned when not in use.
- All structural steel shall conform to ASTM A36.
- Support fits both 32" and 42" tall "F" barrier.
- Use for supporting a maximum 12 sq. ft. of total sign area.
- Place support at connection between two concrete barrier sections.
- Weld steel according to American Welding Society (AWS) D.1.1.
- Do not use clipped signs.
- Follow manufacturer recommendation when installing signs on barrier other than concrete.

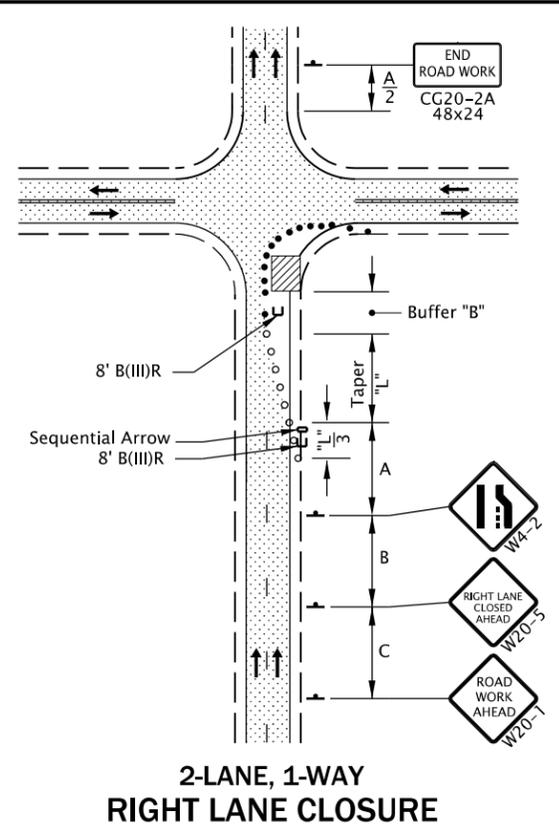
CONCRETE BARRIER SIGN SUPPORT

CALC. BOOK NO. _____ N/A _____	SDR DATE _____ 01-JUL-2020 _____
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications	
<b>OREGON STANDARD DRAWINGS</b>	
<b>TEMPORARY SIGN SUPPORTS</b>	
2021	
DATE	REVISION DESCRIPTION

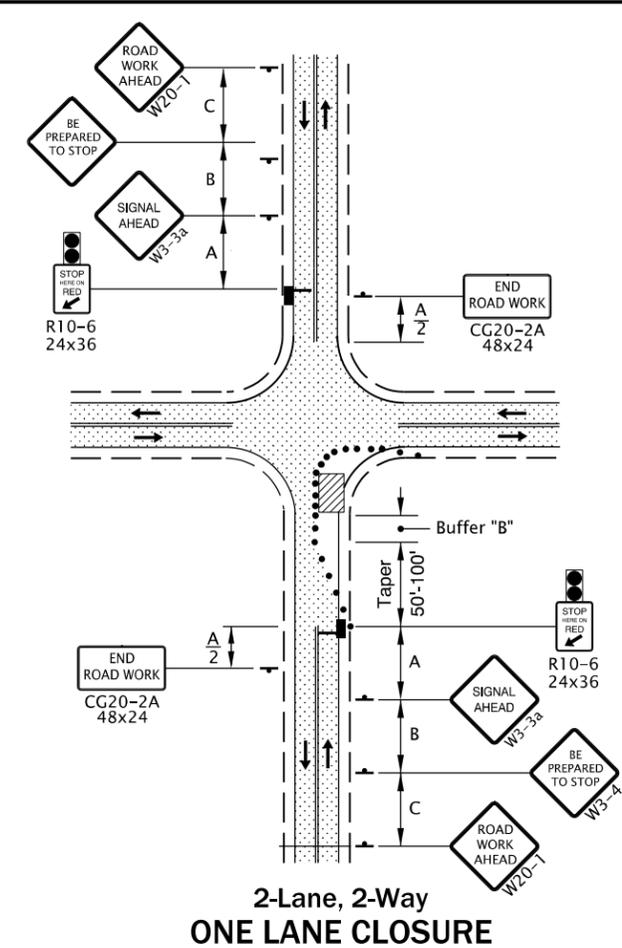
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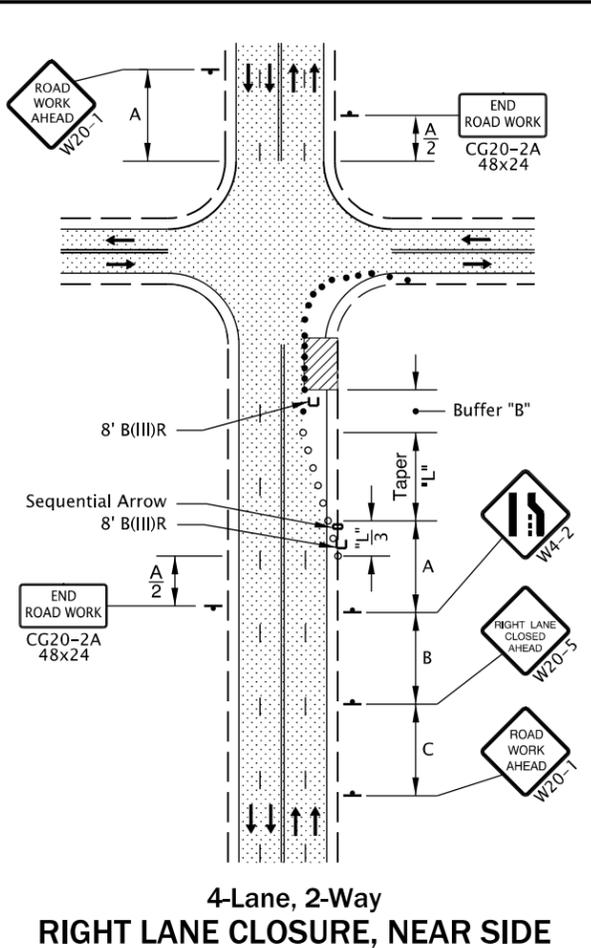
**2-Lane, 2-Way SHOULDER CLOSURE**



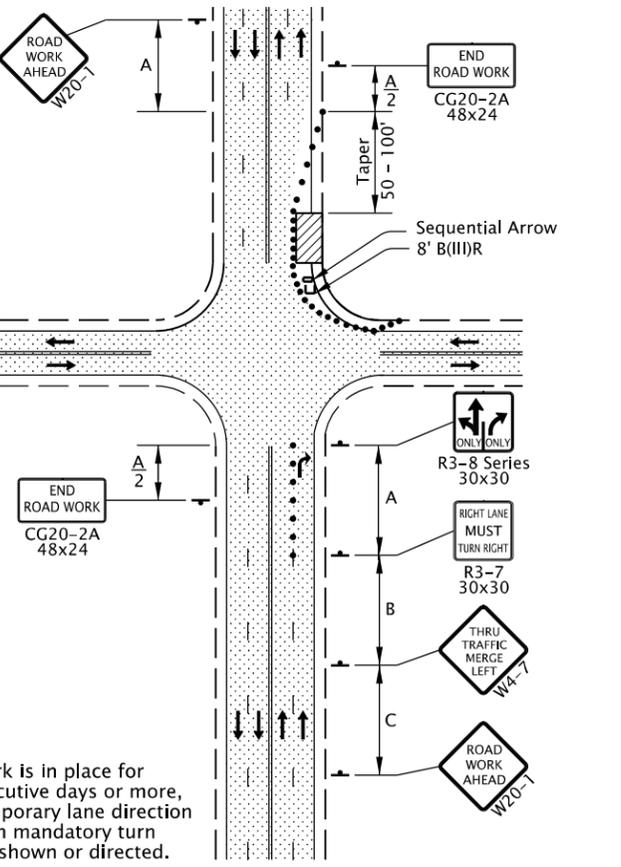
**2-LANE, 1-WAY RIGHT LANE CLOSURE**



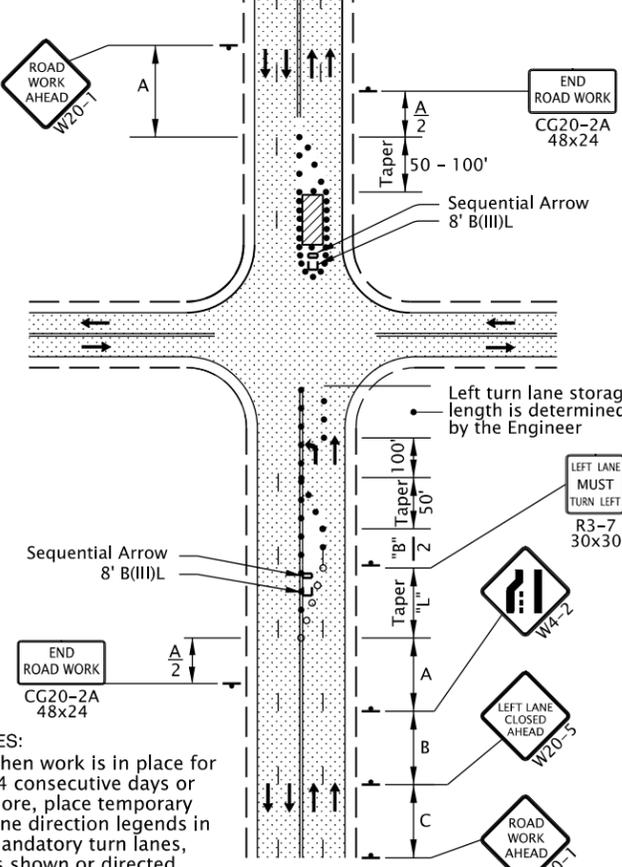
**2-Lane, 2-Way ONE LANE CLOSURE**



**4-Lane, 2-Way RIGHT LANE CLOSURE, NEAR SIDE**



**4-Lane, 2-Way RIGHT LANE CLOSURE, FAR SIDE**



**4-Lane, 2-Way LEFT LANE CLOSURE, FAR SIDE**

**NOTES:**

- When work is in place for 14 consecutive days or more, place temporary lane direction legends in mandatory turn lanes, as shown or directed.

**NOTES:**

- When work is in place for 14 consecutive days or more, place temporary lane direction legends in mandatory turn lanes, as shown or directed.

**GENERAL NOTES FOR ALL DETAILS:**

- Additional Traffic Control Measures (TCM) may be required for all legs of the intersection.
- The "SIGNAL AHEAD" (W3-3a) sign may be substituted with the signal ahead symbol (W3-3) sign.
- To determine Taper Length ("L") and Buffer Length ("B"), use the "MINIMUM LENGTHS TABLE" on Dwg. TM800.
- For left lane or shoulder work, place TCD to close left lane or shoulder. Use "LEFT LANE CLOSED AHEAD" (W20-5) sign, "LEFT LANE ENDS" (W4-2L) symbol sign, or "LEFT SHOULDER CLOSED" (W21-5a) sign, where applicable.
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Dwg. TM800.
- When a through road intersects within the work zone, place a "ROAD WORK AHEAD" (W20-1) sign in advance of the intersection at sign spacing A.
- Tubular markers may be used in lane closure tapers where posted speed is 40 mph or less.
- Where shoulder width is limited, Sequential Arrow may be placed within the lane closure taper.
- Place channelling devices around intersection radii, business accesses and driveways at 10' spacing.
- Install a "BICYCLES ON ROADWAY" (CW11-1) sign in advance of the closure when a bike lane is closed, or when the shoulder is closed and bikes are expected.
- To be accompanied by Dwg. Nos. TM820, TM821 TM840 & TM854.

- Automated Flagging Assistance Device (AFAD)
- 28" Tubular Markers See TCD Spacing Table on TM800 for max. spacing.
- Temp. Plastic Drums See TCD Spacing Table on TM800 for max. spacing.
- UNDER TRAFFIC
- UNDER CONSTRUCTION

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CALC. BOOK NO. \_\_\_\_\_ N/A \_\_\_\_\_

SDR DATE \_\_\_\_\_ 01-JUL-2022 \_\_\_\_\_

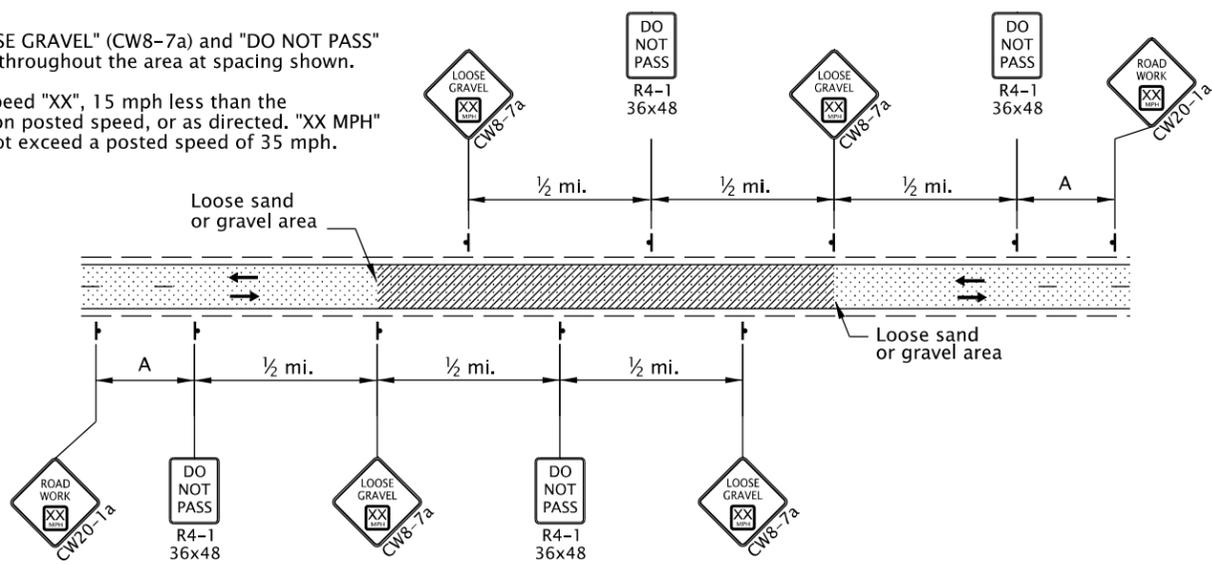
NOTE: All material and workmanship shall be in accordance with the current Oregon Standard Specifications

**OREGON STANDARD DRAWINGS**  
**INTERSECTION WORK ZONE DETAILS**

DATE	REVISION	DESCRIPTION
07/01/22	Added AFADs to the drawing.	

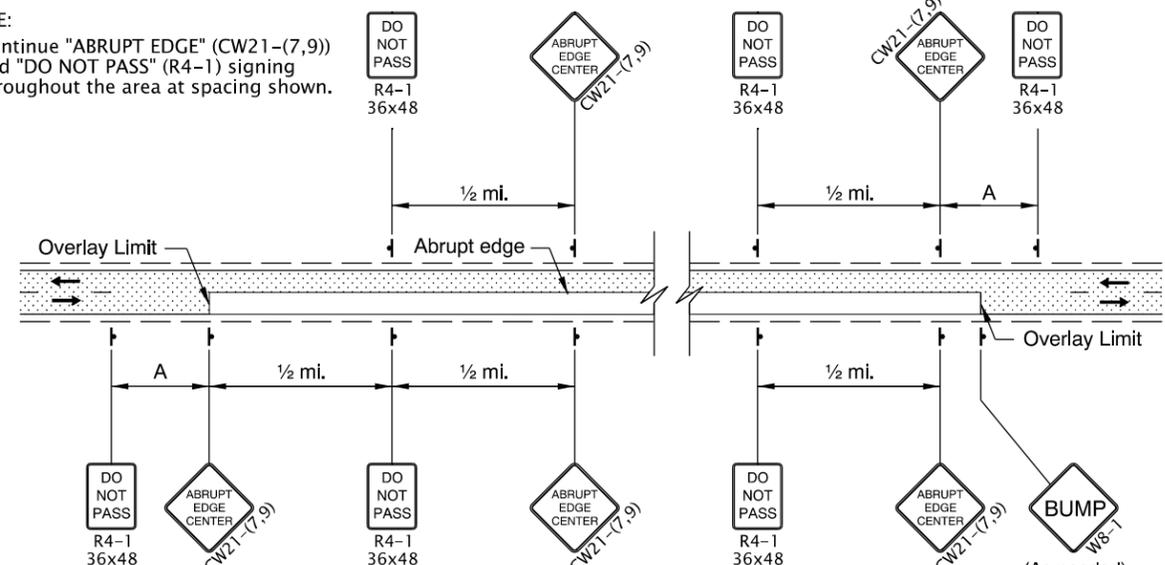
tm850.dgn 01-JUL-2022

- NOTE:
- Continue "LOOSE GRAVEL" (CW8-7a) and "DO NOT PASS" (R4-1) signing throughout the area at spacing shown.
  - Use advisory speed "XX", 15 mph less than the pre-construction posted speed, or as directed. "XX MPH" placard shall not exceed a posted speed of 35 mph.



**2-Lane, 2-Way Roadway  
LOOSE GRAVEL IN ROADWAY SIGNING**

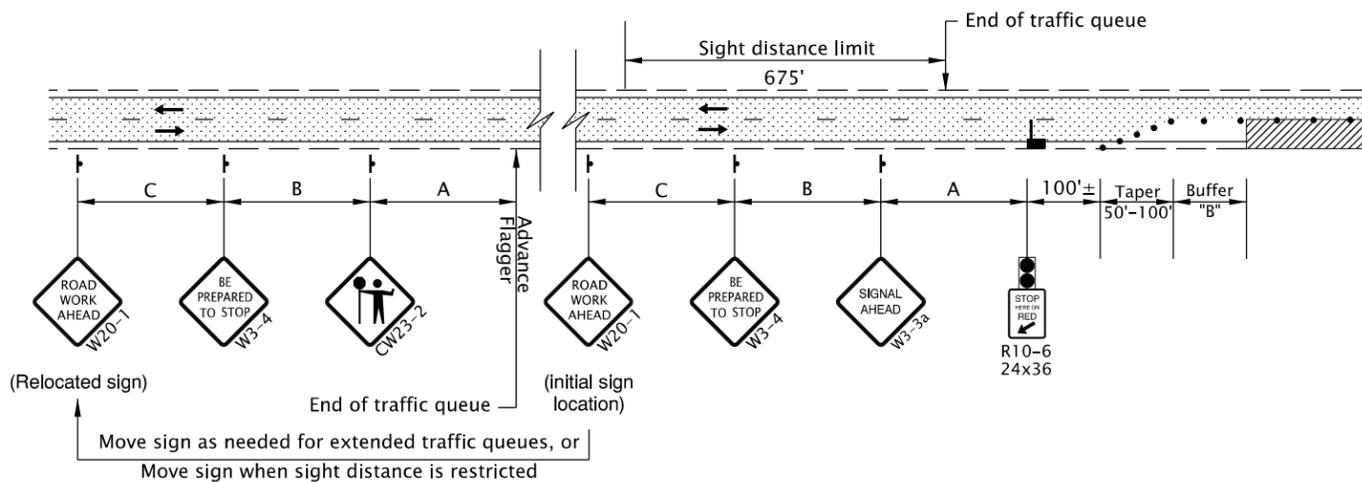
- NOTE:
- Continue "ABRUPT EDGE" (CW21-(7,9)) and "DO NOT PASS" (R4-1) signing throughout the area at spacing shown.



**2-Lane, 2-Way Roadway  
OVERLAY AREA SIGNING**

- NOTES:
- Place Advance Flagger and additional signing when traffic queues extend beyond initial warning signing OR when sight distance is restricted.
  - Relocate initial "ROAD WORK AHEAD" (W20-1) sign in advance of additional "BE PREPARED TO STOP" (W3-4) and Flagger Ahead (CW23-2) signs, as shown.

- Place additional Tubular Markers for Flagger and Advance Flagger Stations according to FLAGGER STATION DELINEATION detail.

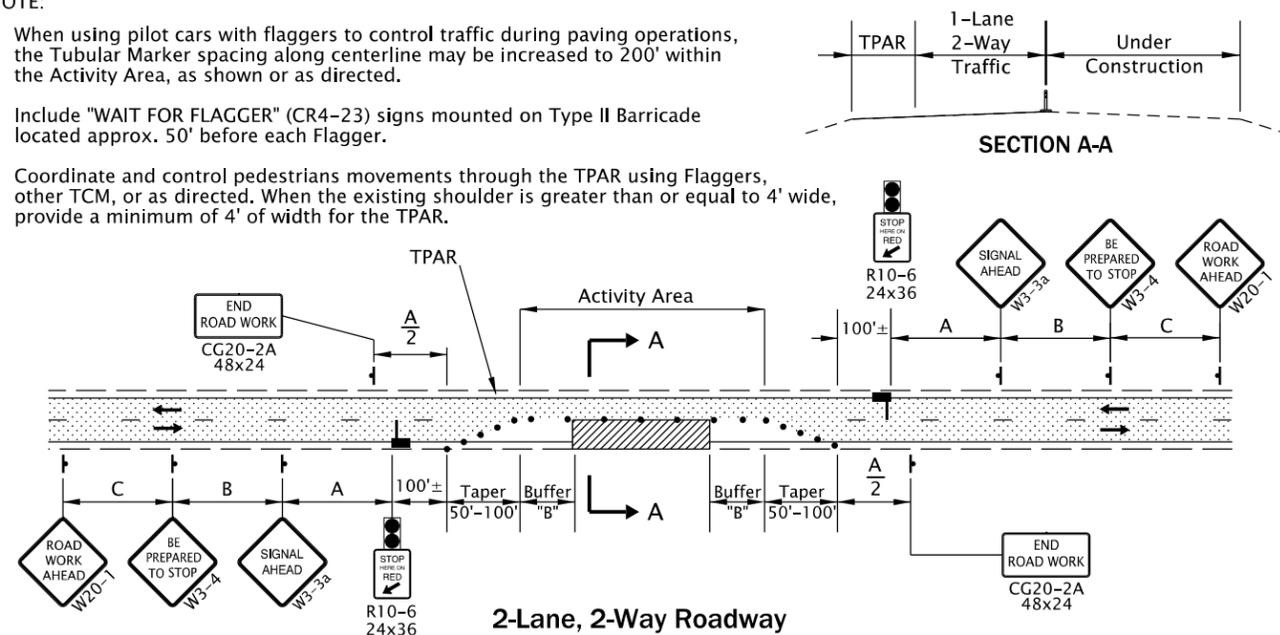


**ADVANCE FLAGGER FOR EXTENDED TRAFFIC QUEUES**

- NOTE:
- When using pilot cars with flaggers to control traffic during paving operations, the Tubular Marker spacing along centerline may be increased to 200' within the Activity Area, as shown or as directed.

- Include "WAIT FOR FLAGGER" (CR4-23) signs mounted on Type II Barricade located approx. 50' before each Flagger.

- Coordinate and control pedestrians movements through the TPAR using Flaggers, other TCM, or as directed. When the existing shoulder is greater than or equal to 4' wide, provide a minimum of 4' of width for the TPAR.



**2-Lane, 2-Way Roadway  
ONE LANE CLOSURE**

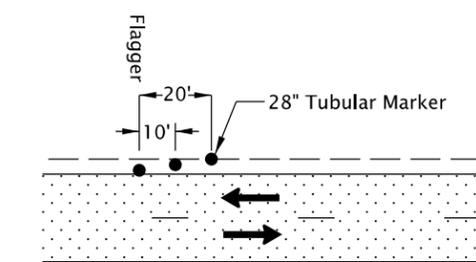
**GENERAL NOTES FOR ALL DETAILS:**

- The "SIGNAL AHEAD" (W3-3a) sign may be substituted with the Signal Ahead (W3-3) symbol sign.
- Cover existing passing zone signing, as directed.
- Install temporary striping as required.
- To determine Taper Length ("L") and Buffer Length ("B"), use the "MINIMUM LENGTHS TABLE" shown on Dwg. No. TM800.
- To determine sign spacing A, B, and C, use "TRAFFIC CONTROL DEVICES (TCD) SPACING TABLE" on Dwg. No. TM800.
- Install a "BICYCLES ON ROADWAY" (CW11-1) sign in advance of the closure when a bike lane is closed, or when the shoulder is closed and bikes are expected.
- At night, flagger stations shall be illuminated according to the FLAGGER STATION LIGHTING DELINEATION detail on Dwg No. TM800.

- To be accompanied by Dwg. Nos. TM820, TM821 & TM854.

- Automated Flagging Assistance Device (AFAD)
  - 28" Tubular Markers on 20' max. spacing for flagger tapers and stations
  - 28" Tubular Markers See TCD Spacing Table on TM800 for max. spacing.
- UNDER TRAFFIC  
 UNDER CONSTRUCTION  
 CONSTRUCTION UNDER TRAFFIC

- NOTE:
- Use a minimum of 3 tubular markers in shoulder taper on 10' spacing for flagger station delineation.



**FLAGGER STATION DELINEATION**

CALC. BOOK NO. \_\_\_\_\_ N/A \_\_\_\_\_ SDR DATE \_\_\_\_\_ 01-JUL-2022 \_\_\_\_\_

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**OREGON STANDARD DRAWINGS**  
**2-LANE, 2-WAY ROADWAYS**

2021

DATE	REVISION	DESCRIPTION
07/01/22	Added AFADs to drawing.	

TM850