COLLEGE WAY (SR538) WIDENING

MOUNT VERNON, WA

FEDERAL AID NO. STPUS-0538(010)

VICINITY MAP

PROJECT LOCATED IN SECTION 18, TOWNSHIP 34N, RANGE 4E, W.M.

SHEET SERIES INDEX

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30% PLANS

DESIGNED BY
DRAWN BY
CHECKED BY

R&E Reichhardt & Ebe ENGINEERING INC
P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687
813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713

NO.	DATE	DESCRIPTION	BY

CITY OF MOUNT VERNON
1024 CLEVELAND AVE.
MOUNT VERNON, WA 98273

COLLEGE WAY (SR538) WIDENING

COVER

DWG 15038 COVER
JOB# 15038
SCALE H: N/A V: N/A
DATE 9/14/2016
SHEET 1 of 16

ABBREVIATIONS

ø	= DIAMETER	EVLS	= END VERTICAL CURVE STATION	MOD	= MODIFIED	S	= SOUTH
AC	= ASBESTOS CEMENT	EX, EXIST	= EXISTING	MON	= MONUMENT	SCH	= SCHEDULE
AD	= ALGEBRAIC DIFFERENCE	IR	= EXISTING IRRIGATION	MPOC	= MID-POINT ON CURVE	SD	= STORM DRAIN
ASPH	= ASPHALT	F&C	= FRAME AND COVER	MTR	= METER	SDCB	= STORM DRAIN CATCH BASIN
BLDG	= BUILDING	F&G	= FRAME AND GRATE	MW	= MONITORING WELL	SDMH	= STORM DRAIN MANHOLE
BVCE	= BEGIN VERTICAL CURVE ELEVATION	FF	= FINISHED FLOOR	N	= NORTH	SE	= SOUTHEAST
BVCE	= BEGIN VERTICAL CURVE STATION	FG	= FINISHED GRADE	NE	= NORTHEAST	SN	= EXISTING SIGN
C&G	= CURB & GUTTER	FL	= FLOW LINE	NW	= NORTHWEST	SP	= STANDARD PLAN
CATV	= CABLE TELEVISION	FT	= FEET	OC	= ON CENTER	SSMH	= SANITARY SEWER MANHOLE
CDF	= CONTROLLED DENSITY FILL	FT/FT	= FEET PER FOOT	PVMNT	= PAVEMENT	STA	= STATION
℄	= CLASS, CENTERLINE	GALV	= GALVANIZED	PC	= POINT OF CURVATURE	STD	= STANDARD
CMP	= CORRUGATED METAL PIPE	GRVL	= GRAVEL	PCC	= POINT OF COMPOUND CURVATURE, PORTLAND CEMENT CONCRETE	SW	= SOUTHWEST
CMU	= CONCRETE MASONRY UNIT	GV	= GATE VALVE			TEL	= TELEPHONE
COMP	= COMPACTED	HDPE	= HIGH DENSITY POLYETHYLENE	PED	= PEDESTAL	TL	= TRAFFIC LOOP
CON	= CONIFER	HMA	= HOT MIX ASPHALT	POC	= POINT ON CURVE	TYP	= TYPICAL
CONC	= CONCRETE	HP	= HIGH POINT	POSS	= POSSIBLE	UP	= UTILITY POLE
CONT	= CONTOUR	HYD	= HYDRANT	PRC	= POINT OF REVERSE CURVE	UTIL	= UTILITY
CPSSP	= CORRUGATED POLYETHYLENE STORM SEWER PIPE	IE, INV	= INVERT ELEVATION	PROP	= PROPOSED	VC	= VERTICAL CURVE
		IW	= INJECTION WELL	PT	= POINT OF TANGENCY	VLT	= VAULT
CULV	= CULVERT	L	= LENGTH	PVC	= POLYVINYL CHLORIDE	VPC	= VERTICAL POINT OF CURVATURE
D/W	= DRIVEWAY	LDCS	= LANDSCAPING	PVI	= POINT OF VERTICAL INTERSECTION	VPI	= VERTICAL POINT OF INTERSECTION
DEC	= DECIDUOUS	LF	= LINEAR FEET	PWR	= POWER	VPT	= VERTICAL POINT OF TANGENCY
DI	= DUCTILE IRON	LOC	= LOCATION	R	= RADIUS	W	= WEST
E	= EAST	LP	= LOW POINT	R&C	= RING AND COVER	WM	= WATER METER
EOP, EP	= EDGE OF PAVEMENT	LT	= LEFT	RET	= RETAINING	WSDOT	= WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
EQUIV	= EQUIVALENT	MAX	= MAXIMUM	ROW	= RIGHT OF WAY		
EVCE	= END VERTICAL CURVE ELEVATION	MIN	= MINIMUM	RT	= RIGHT	XEOA	= EXISTING EDGE OF ASPHALT

NOTES

1. FIELD WORK PERFORMED BY _____, _____, WA. TOPOGRAPHIC SURVEY PERFORMED IN _____, 20__.
2. HORIZONTAL DATUM: WASHINGTON STATE PLANE (NORTH) COORDINATES – NAD 83-2011, VERTICAL DATUM: NAVD 88

LEGEND

EXISTING

- = EXISTING TOP OF BANK
- = EXISTING BOTTOM OF BANK
- = EXISTING DITCH ℄
- = EXISTING GRADE BREAK
- = EXISTING MAJOR CONTOUR
- = EXISTING MINOR CONTOUR
- = EXISTING GUARDRAIL
- = EXISTING FENCE
- = EXISTING GRAVEL
- = EXISTING WALL
- = EXISTING BUILDING
- = EXISTING PROPERTY BOUNDARY
- = EXISTING RIGHT OF WAY
- = EXISTING RIGHT OF WAY ℄
- = EXISTING EASEMENT
- = EXISTING ROAD ℄
- = EXISTING WETLANDS BOUNDARY
- = EXISTING TRAFFIC STRIPING
- = EXISTING EDGE OF PAVEMENT
- = EXISTING FLOWLINE
- = EXISTING TOP BACK OF CURB
- = EXISTING SIDEWALK
- = EXISTING POWER BURIED
- = EXISTING OVERHEAD POWER
- = EXISTING COMMUNICATIONS BURIED
- = EXISTING OVERHEAD COMMUNICATIONS
- = EXISTING FIBER OPTICS BURIED
- = EXISTING TV BURIED
- = EXISTING TELEPHONE BURIED
- = EXISTING CONDUIT
- = EXISTING GAS MAIN
- = EXISTING WATER MAIN
- = EXISTING IRRIGATION LINE
- = EXISTING SANITARY SEWER FORCE MAIN
- = EXISTING SANITARY SEWER
- = EXISTING STORM DRAIN
- = EXISTING ORDINARY HIGH WATER
- = EXISTING CULVERT
- = EXISTING TREE LINE
- = EXISTING CONCRETE
- = EXISTING RR TRACKS
- = EXISTING SIGNAL POLE
- = EXISTING SIGNAL POLE W/ LUMINARE
- = EXISTING STREET LIGHT ASSEMBLY
- = EXISTING YARD LIGHT
- = EXISTING GUY WIRE
- = EXISTING GAS METER
- = EXISTING GAS VALVE
- = EXISTING TRANSFORMER PAD
- = EXISTING POWER VAULT
- = EXISTING JBOX
- = EXISTING SOIL BORING LOCATION
- = EXISTING MAIL BOX
- = EXISTING WATER SPIGOT
- = EXISTING WATER BLOW OFF
- = EXISTING WATER METER
- = EXISTING WATER VALVE
- = EXISTING FIRE HYDRANT
- = EXISTING TRAFFIC SIGNAL VAULT
- = EXISTING SEWER MANHOLE
- = EXISTING STORM DRAIN CATCH BASIN TYPE I
- = EXISTING STORM DRAIN CATCH BASIN TYPE II
- = EXISTING UTILITY POLE
- = EXISTING MONITORING WELL
- = EXISTING STORM CLEANOUT
- = EXISTING SEWER CLEANOUT
- = EXISTING SIGN
- = EXISTING TELEPHONE PEDESTAL
- = EXISTING COMMUNICATIONS VAULT
- = EXISTING BENCH MARK
- = EXISTING NAIL AND SHINER
- = EXISTING IRON PIPE
- = EXISTING MONUMENT (IN CASE)
- = EXISTING MONUMENT (SURFACE)
- = EXISTING ANGLE POINT
- = EXISTING TREE STUMP
- = EXISTING TREE
- = EXISTING VEGETATION

PROPOSED

- = PROPOSED TOP OF BANK
- = PROPOSED TOE OF BANK
- = PROPOSED DITCH ℄
- = PROPOSED GRADE BREAK
- = PROPOSED MAJOR CONTOUR
- = PROPOSED MINOR CONTOUR
- = PROPOSED GUARDRAIL
- = PROPOSED FENCE
- = PROPOSED GRAVEL
- = PROPOSED WALL
- = PROPOSED BUILDING
- = PROPOSED PAVEMENT VALLEY
- = PROPOSED RIGHT OF WAY
- = PROPOSED AUTOTURN
- = PROPOSED CONSTRUCTION EASEMENT
- = PROPOSED ROAD ℄
- = PROPOSED SAWCUT
- = PROPOSED TRAFFIC STRIPE
- = PROPOSED ROAD EDGE OF PAVEMENT
- = PROPOSED CURB AND GUTTER
- = PROPOSED PATH
- = PROPOSED SIDEWALK
- = PROPOSED POWER LINE
- = PROPOSED ROCK WALL
- = PROPOSED PARKING STRIPE
- = PROPOSED TRAFFIC SIGNAL CONDUCTOR
- = PROPOSED FIBER OPTICS
- = PROPOSED SILT FENCE
- = PROPOSED CONDUIT
- = PROPOSED HANDRAIL
- = PROPOSED IRRIGATION LINE
- = PROPOSED WATER MAIN
- = PROPOSED SANITARY SEWER FORCE MAIN
- = PROPOSED SANITARY SEWER
- = PROPOSED STORM DRAIN
- = PROPOSED CULVERT
- = PROPOSED TREE LINE
- = PROPOSED CONC. SIDEWALK/DRIVEWAY
- = PROPOSED INFILTRATION TRENCH
- = PROPOSED INFILTRATION FILTER MEDIA
- = PROPOSED GRIND
- = PROPOSED DEMOLITION AREA
- = PROPOSED ASPHALT
- = PROPOSED RIGHT OF WAY TAKE
- = PROPOSED STORM DRAIN INLET
- = PROPOSED COUPLER
- = PROPOSED WATER METER
- = PROPOSED WATER VALVE
- = PROPOSED STORM DRAIN CATCH BASIN TYPE II
- = PROPOSED SANITARY SEWER MANHOLE
- = PROPOSED STORM DRAIN CATCH BASIN TYPE I
- = PROPOSED HYDRANT
- = PROPOSED UTILITY POLE
- = PROPOSED JBOX (TYPE I, II, III)
- = PROPOSED MONITORING WELL
- = PROP STORM CLEANOUT
- = PROPOSED SANITARY SEWER CLEAN OUT
- = PROPOSED SIGN
- = FLOW ARROW
- = PROPOSED TREE

DETAIL NUMBER / SHEET NUMBER = SECTION MARK

IAN DWIGHT HINZ — STATE OF WASHINGTON — 46169 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY

30% PLANS	DESIGNED BY / DRAWN BY / CHECKED BY	R&E Reichhardt & Ebe ENGINEERING INC P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687 813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713	NO. / DATE / DESCRIPTION / BY	CITY OF MOUNT VERNON 1024 CLEVELAND AVE. MOUNT VERNON, WA 98273	COLLEGE WAY (SR538) WIDENING LEGEND AND ABBREVIATIONS	DWG 15038 COVER JOB# 15038	SCALE H: N/A V: N/A	DATE 9/14/2016 SHEET 2 of 16

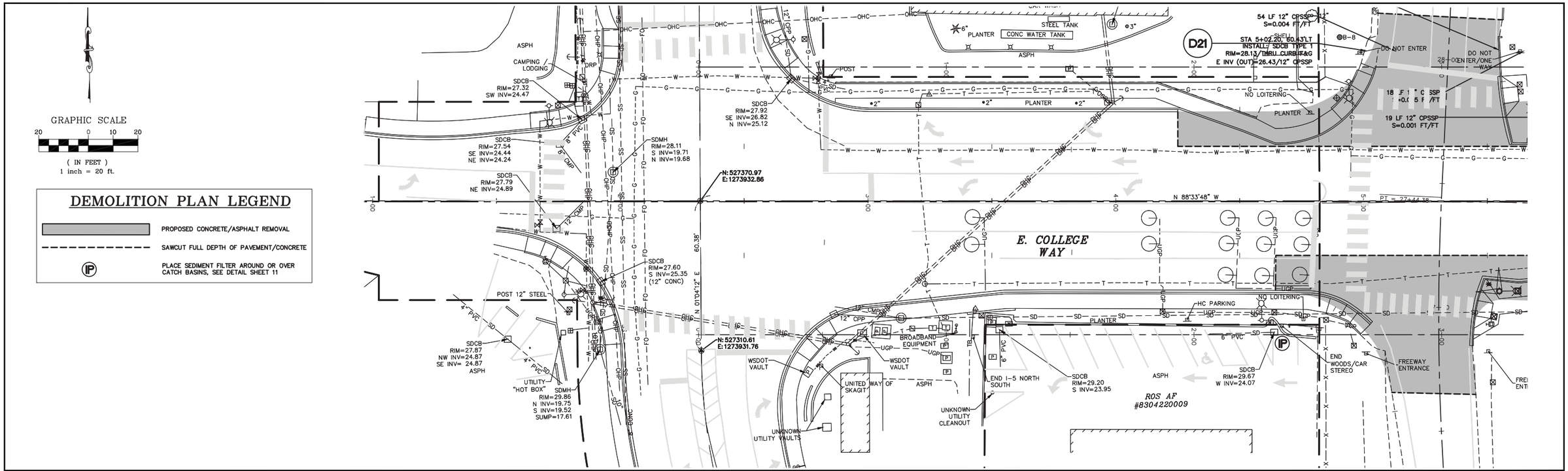
GRAPHIC SCALE

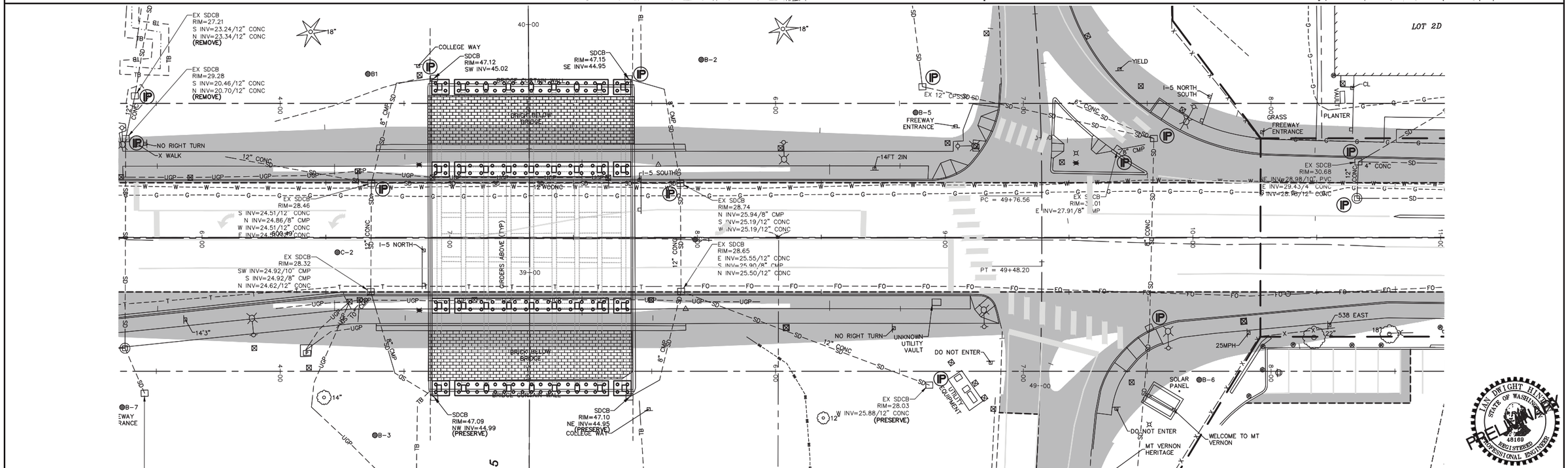
20 0 10 20

(IN FEET)
1 inch = 20 ft.

DEMOLITION PLAN LEGEND

	PROPOSED CONCRETE/ASPHALT REMOVAL
	SAWCUT FULL DEPTH OF PAVEMENT/CONCRETE
IP	PLACE SEDIMENT FILTER AROUND OR OVER CATCH BASINS, SEE DETAIL SHEET 11





IAN DWIGHT HINTON
STATE OF WASHINGTON
48169
REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY

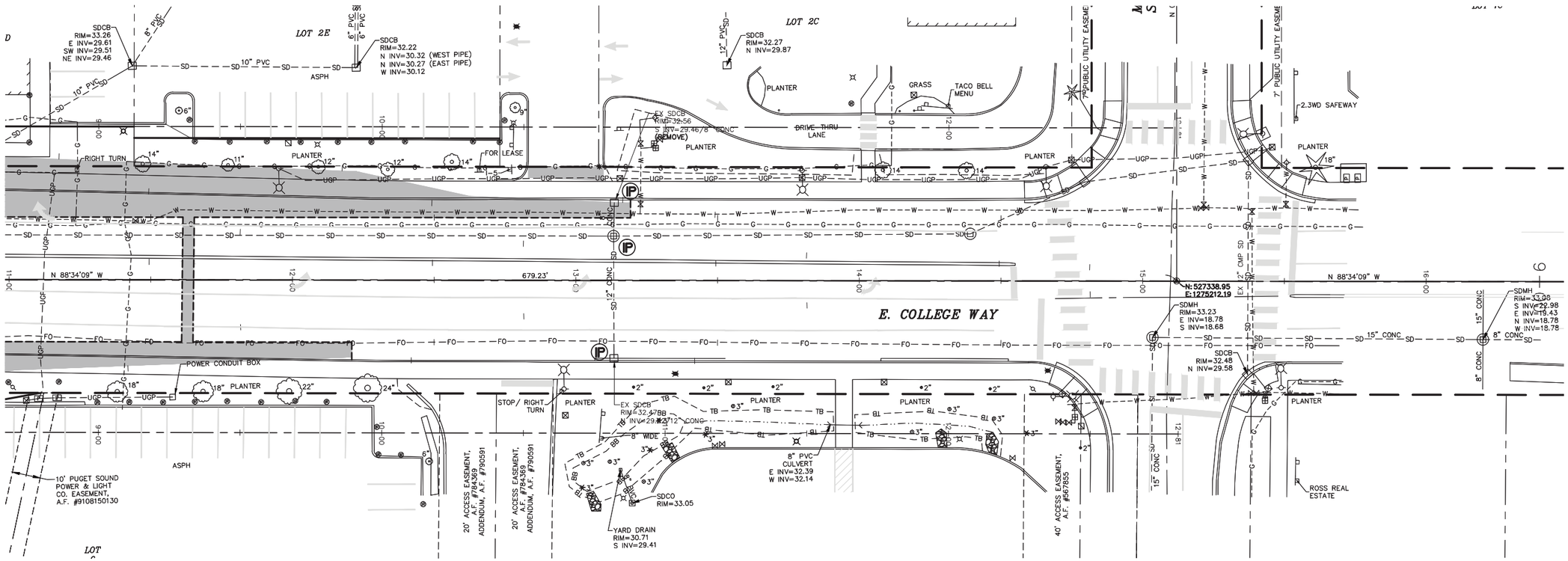
30% PLANS	DESIGNED BY IDH DRAWN BY RWG CHECKED BY RWG	R&E Reichhardt & Ebe ENGINEERING INC P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687 813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713	NO.	DATE	DESCRIPTION	BY	CITY OF MOUNT VERNON 1024 CLEVELAND AVE. MOUNT VERNON, WA 98273	COLLEGE WAY (SR538) WIDENING EXISTING CONDITIONS, DEMOLITION AND TESC PLAN

DWG 15038_PLOT		DATE 9/14/2016
JOB# 15038	SCALE H: 1"=20' V: N/A	SHEET 3 of 16

GRAPHIC SCALE

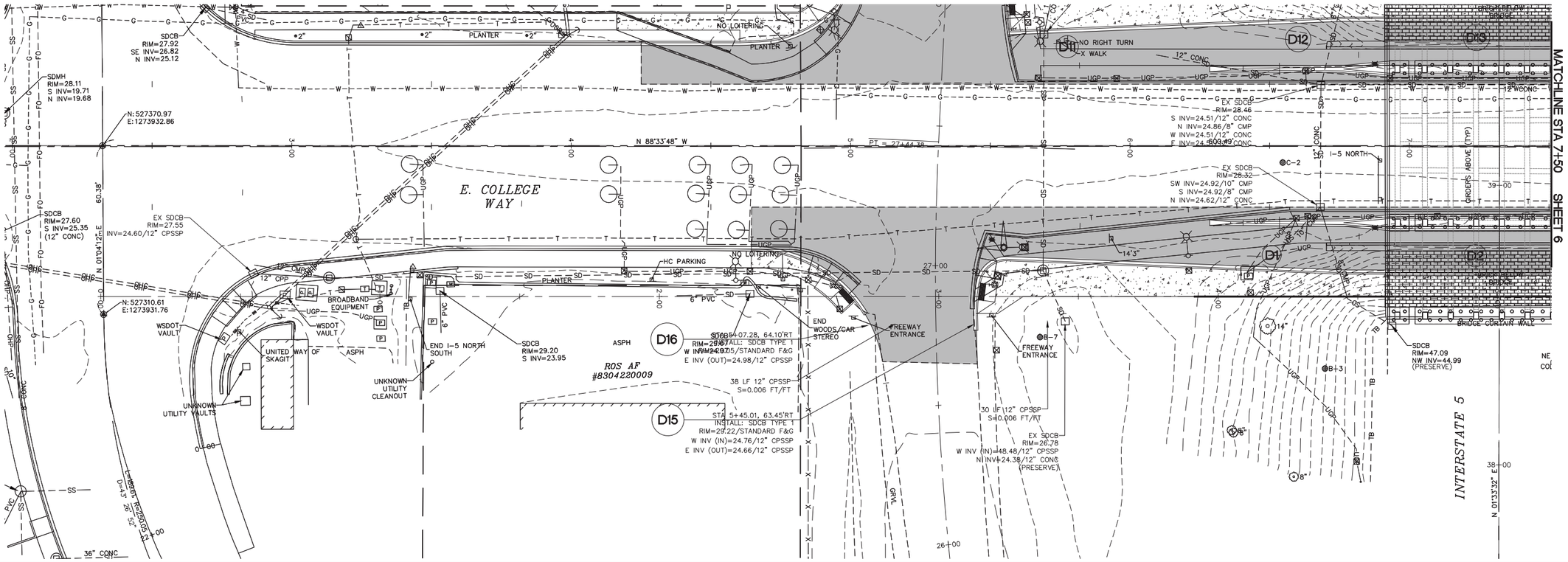
20 0 10 20

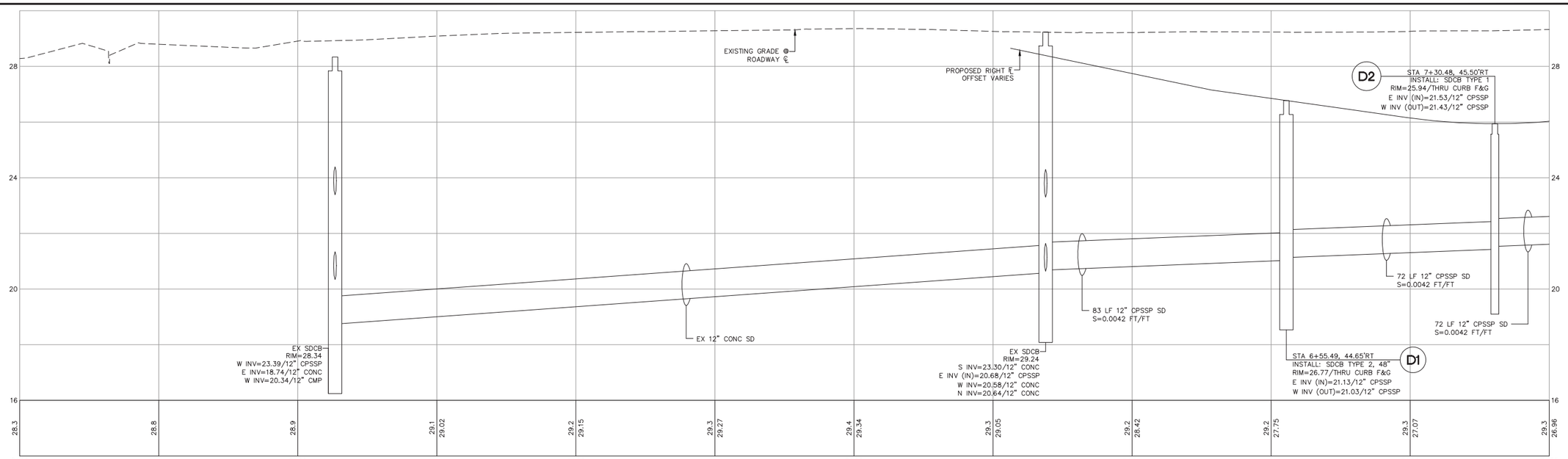
(IN FEET)
1 inch = 20 ft.



PRELIMINARY

30% PLANS	DESIGNED BY IDH DRAWN BY RWG CHECKED BY RWG	R&E Reichhardt & Ebe ENGINEERING INC P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687 813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713	NO. | DATE | DESCRIPTION | BY	CITY OF MOUNT VERNON 1024 CLEVELAND AVE. MOUNT VERNON, WA 98273	COLLEGE WAY (SR538) WIDENING EXISTING CONDITIONS, DEMOLITION AND TESC PLAN	DWG 15038_PLOT JOB# 15038 SCALE H: 1"=20' V: N/A	DATE 9/14/2016 SHEET 4 of 16





IAN DWIGHT HINDS
STATE OF WASHINGTON
48169
REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY

30% PLANS

DESIGNED BY	IDH
DRAWN BY	RWG
CHECKED BY	RWG

R&E Reichhardt & Ebe ENGINEERING INC
P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687
813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713

NO.	DATE	DESCRIPTION	BY

CITY OF MOUNT VERNON
1024 CLEVELAND AVE.
MOUNT VERNON, WA 98273

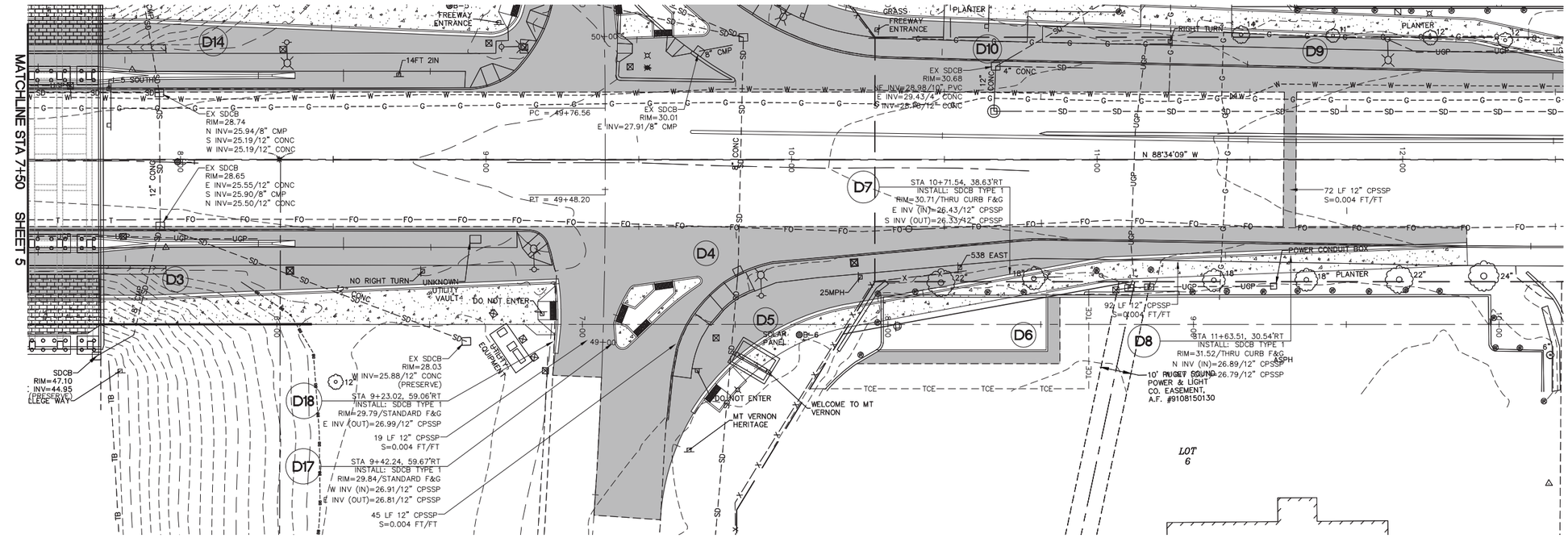
COLLEGE WAY (SR538) WIDENING
PLAN AND PROFILE
SOUTH - STA 2+00 TO 7+50

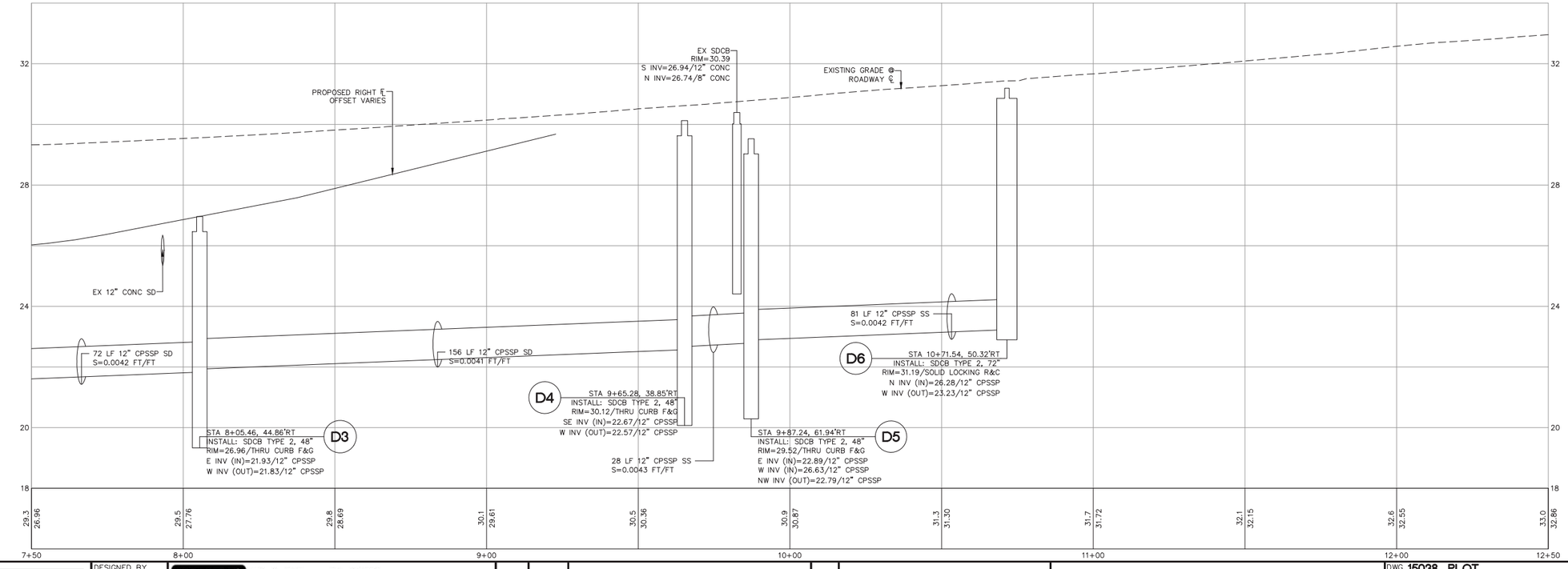
DWG 15038_PLOT			DATE 9/14/2016
JOB# 15038	SCALE H: 1"=20'	V: 1"=2'	SHEET 5 of 16

GRAPHIC SCALE

20 0 10 20

(IN FEET)
1 inch = 20 ft.





PRELIMINARY
JAMES DWIGHT HINDS
STATE OF WASHINGTON
48169
REGISTERED
PROFESSIONAL ENGINEER

30% PLANS

DESIGNED BY	IDH
DRAWN BY	RWG
CHECKED BY	RWG

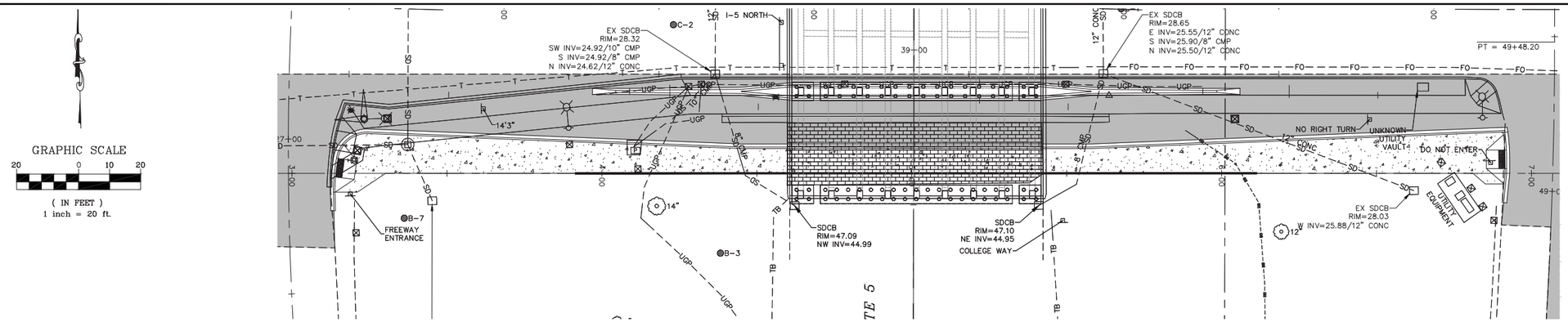
R&E Reichhardt & Ebe ENGINEERING INC
P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687
813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713

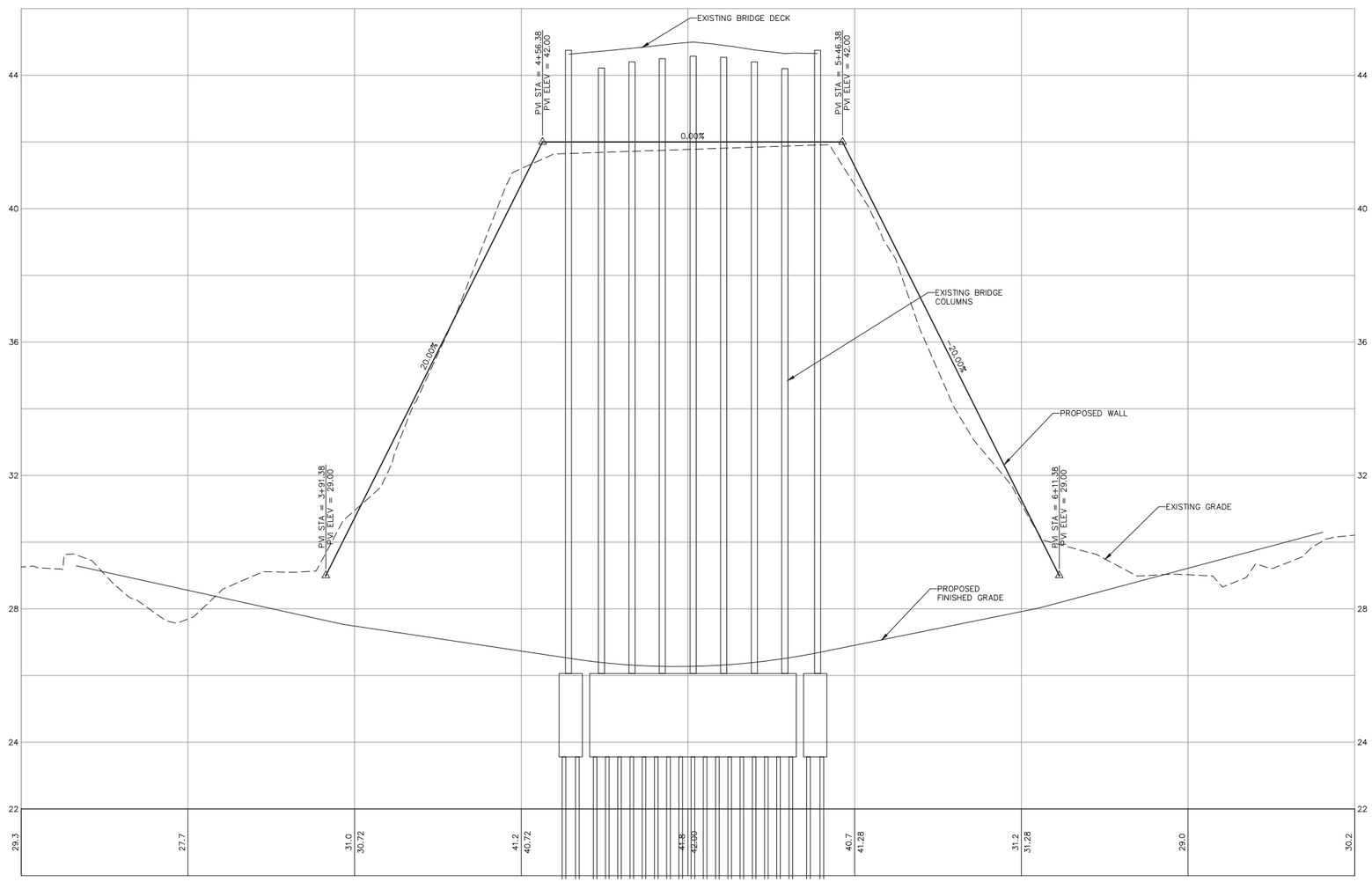
NO.	DATE	DESCRIPTION	BY

CITY OF MOUNT VERNON
1024 CLEVELAND AVE.
MOUNT VERNON, WA 98273

COLLEGE WAY (SR538) WIDENING
SOUTH SIDE STORMWATER IMPROVEMENTS
SOUTH - STA 7+50 TO 12+50

DWG 15038_PLOT		DATE 9/14/2016
JOB# 15038	SCALE H: 1"=20' V: 1"=2'	SHEET 6 of 16





30% PLANS

DESIGNED BY	IDH
DRAWN BY	RWG
CHECKED BY	RWG

R&E Reichhardt & Ebe ENGINEERING INC
P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687
813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713

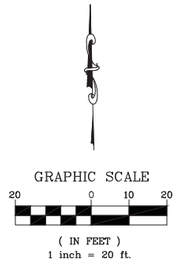
NO.	DATE	DESCRIPTION	BY

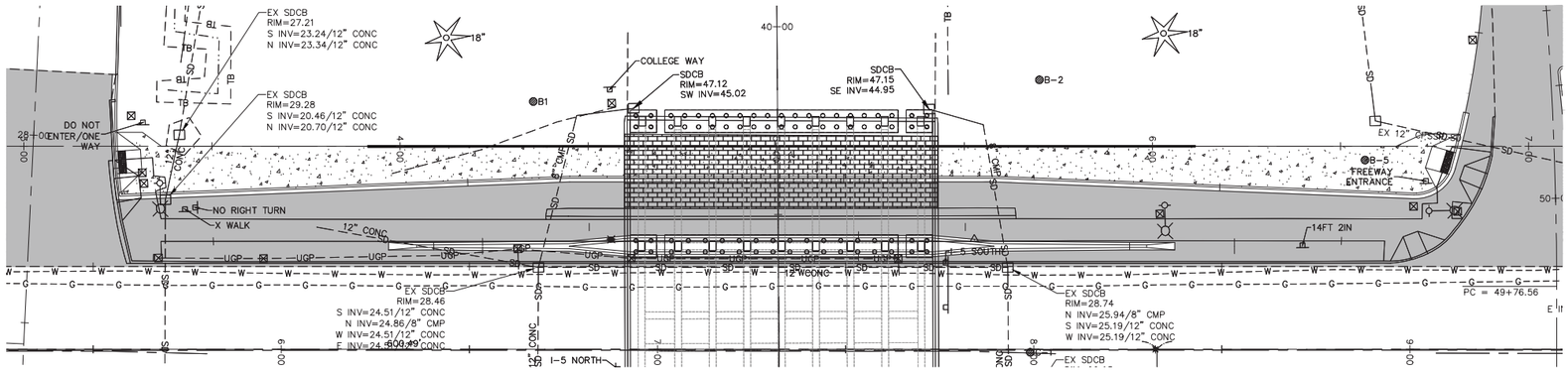
CITY OF MOUNT VERNON
1024 CLEVELAND AVE.
MOUNT VERNON, WA 98273

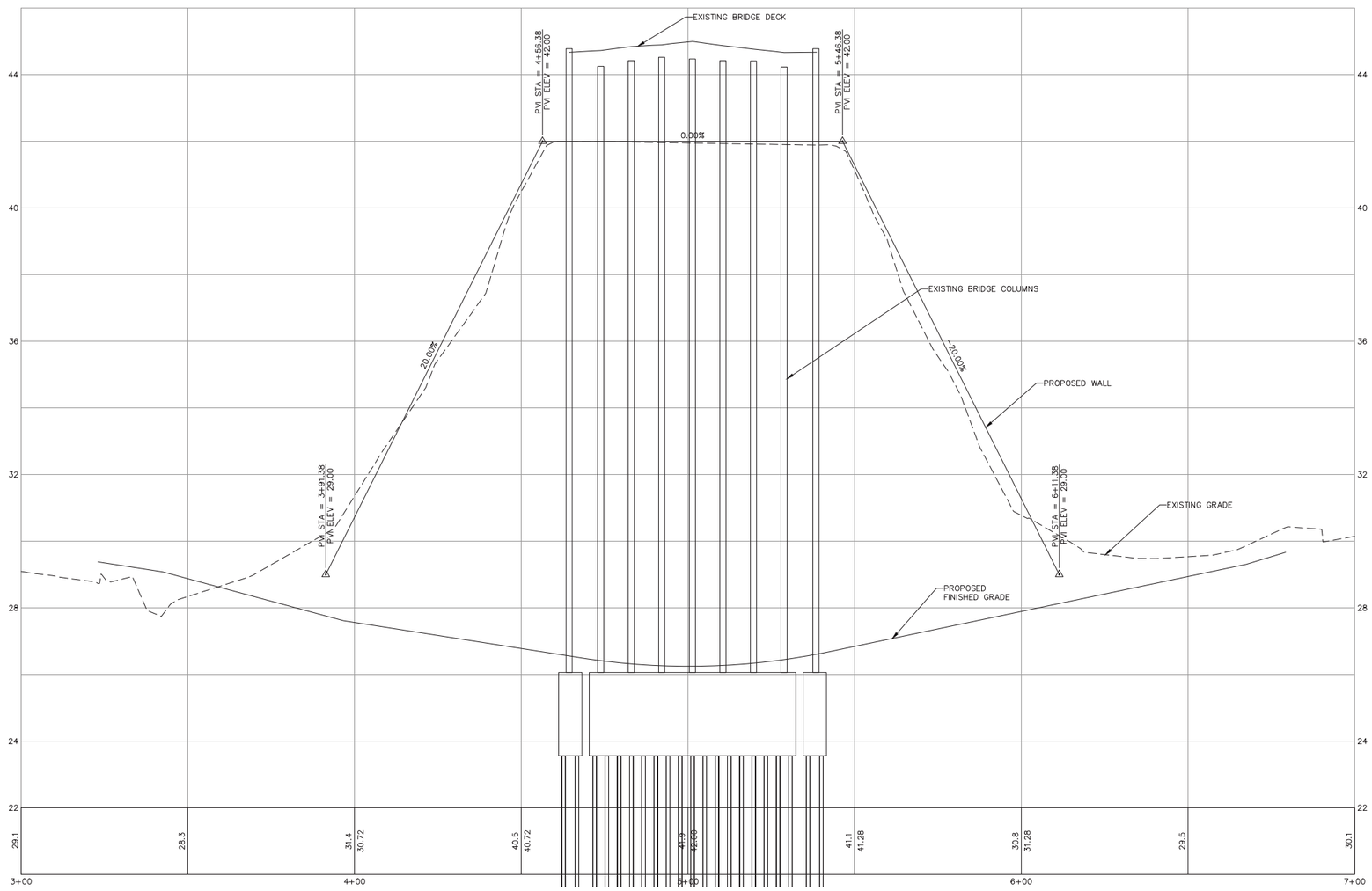
COLLEGE WAY (SR538) WIDENING
NORTH SIDE STORMWATER IMPROVEMENTS
SOUTH WALL

DWG 15038_PLOT		DATE 9/14/2016
JOB# 15038	SCALE H: 1"=20' V: 1"=2'	SHEET 7 of 16

IAN DWIGHT HINDS
STATE OF WASHINGTON
48169
REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY







PRELIMINARY
IAN DWIGHT HINDS
STATE OF WASHINGTON
48169
REGISTERED
PROFESSIONAL ENGINEER

30% PLANS

DESIGNED BY	IDH
DRAWN BY	RWG
CHECKED BY	RWG

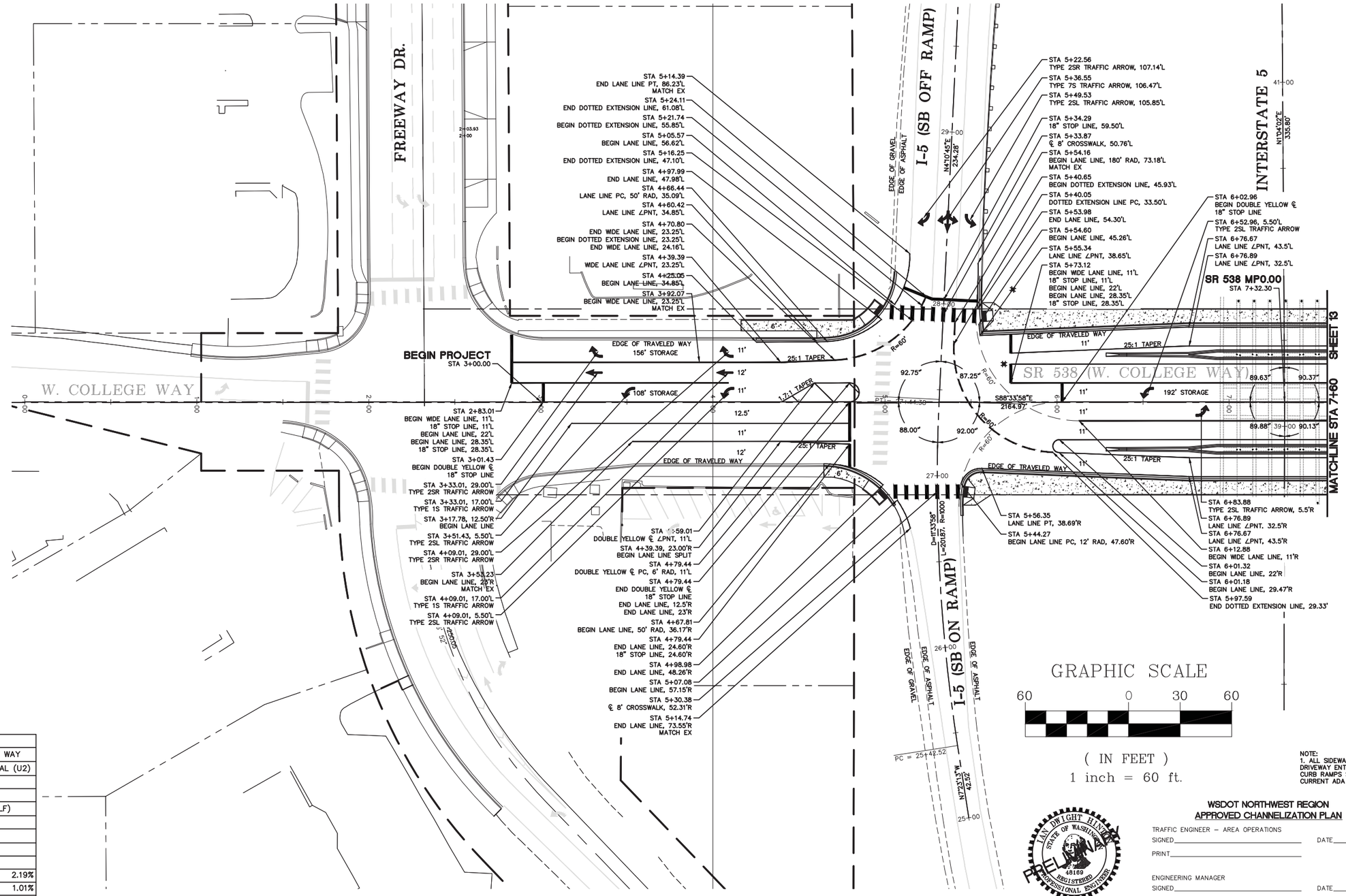
R&E Reichhardt & Ebe ENGINEERING INC
P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687
813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713

NO.	DATE	DESCRIPTION	BY

CITY OF MOUNT VERNON
1024 CLEVELAND AVE.
MOUNT VERNON, WA 98273

COLLEGE WAY (SR538) WIDENING
NORTH SIDE STORMWATER IMPROVEMENTS
NORTH WALL

DWG 15038_PLOT			DATE 9/14/2016
JOB# 15038	SCALE H: 1"=20'	V: 1"=2'	SHEET 11 of 16



DESIGN DATA	
	SR538/W. COLLEGE WAY
FUNCTIONAL CLASS	URBAN MINOR ARTERIAL (U2)
HIGHWAY DESIGN CLASS	2.7
NHS STATUS	NON-NHS
ACCESS CONTROL	FULL CONTROL (LF)
DESIGN VEHICLE	WB-67
POSTED/DESIGN SPEEDS	25/25
TERRAIN	FLAT
TRUCK PERCENTAGE	
SINGLE UNIT	2.19%
DOUBLE UNIT	1.01%
TRIPLE UNIT	0.06%

NOTE:
1. ALL SIDEWALKS, DRIVEWAY ENTRANCES AND CURB RAMPS SHALL MEET CURRENT ADA STANDARDS.

IAN DWIGHT HINTON
STATE OF WASHINGTON
48169
REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY

WSDOT NORTHWEST REGION
APPROVED CHANNELIZATION PLAN

TRAFFIC ENGINEER – AREA OPERATIONS
SIGNED_____ DATE_____
PRINT_____

ENGINEERING MANAGER
SIGNED_____ DATE_____
PRINT_____

30% PLANS

DESIGNED BY
DRAWN BY
CHECKED BY

R&E Reichhardt & Ebe ENGINEERING INC
P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687
813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713

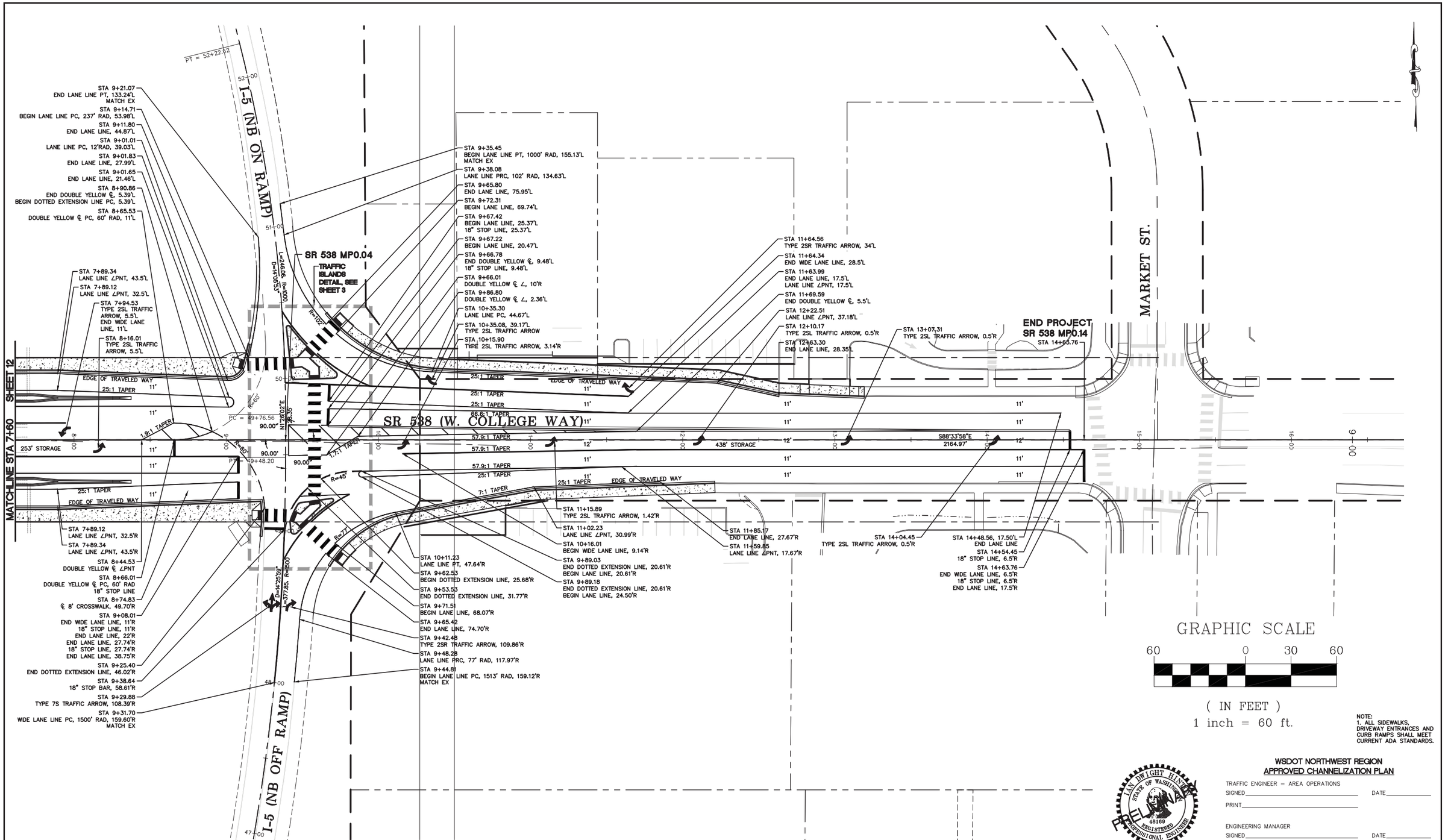
NO.	DATE	DESCRIPTION	BY

CITY OF MOUNT VERNON
1024 CLEVELAND AVE.
MOUNT VERNON, WA 98273

COLLEGE WAY (SR538) WIDENING

CHANNELIZATION PLAN

DWG 15038_CHAN
DATE 9/14/2016
JOB# 15038
SCALE H: 1"=30' V: N/A
SHEET 12 of 16



NOTE:
1. ALL SIDEWALKS, DRIVEWAY ENTRANCES AND CURB RAMPS SHALL MEET CURRENT ADA STANDARDS.

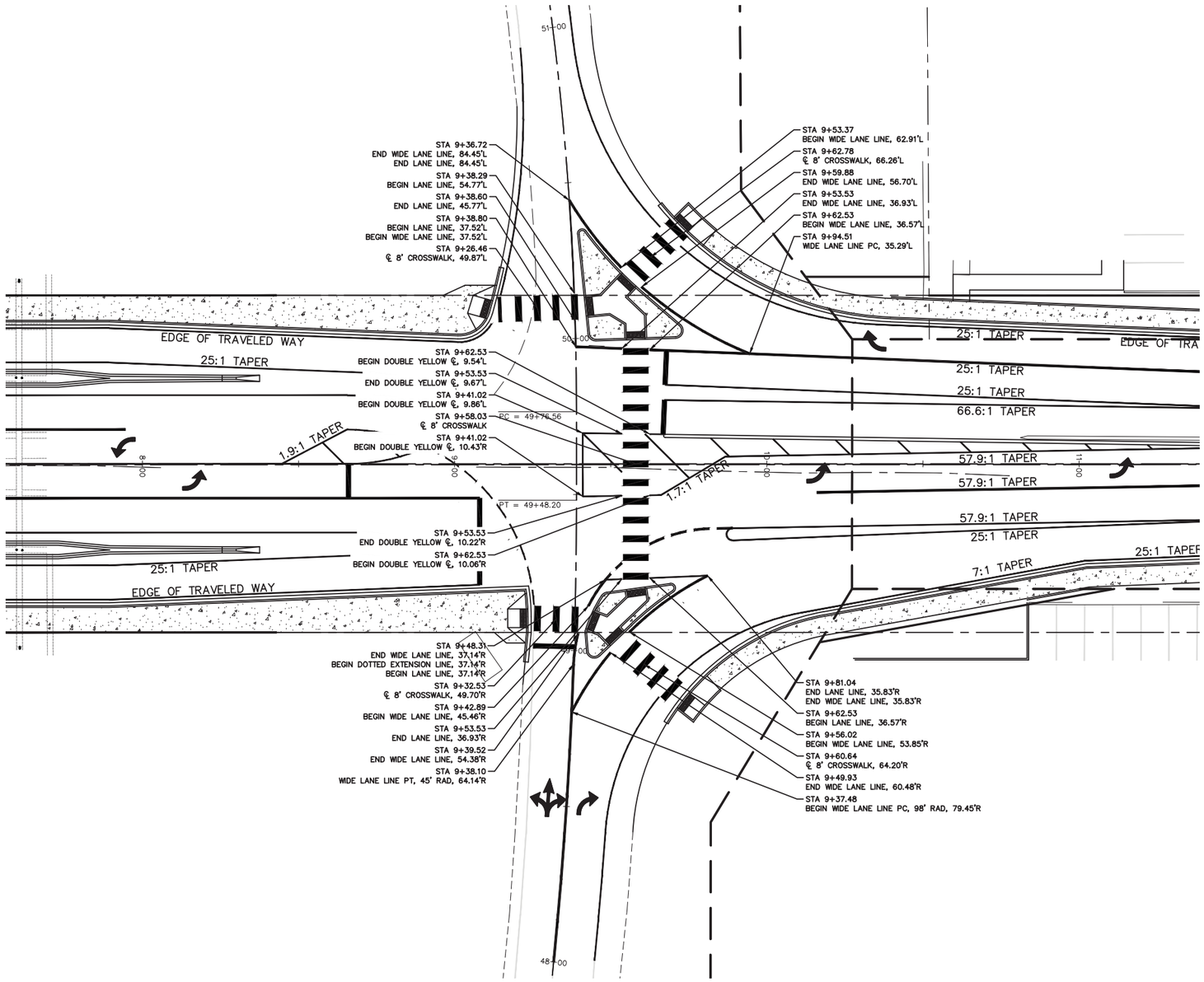
IAN DWIGHT HINTON
STATE OF WASHINGTON
48189
REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY

WSDOT NORTHWEST REGION
APPROVED CHANNELIZATION PLAN

TRAFFIC ENGINEER – AREA OPERATIONS
SIGNED_____ DATE_____
PRINT_____

ENGINEERING MANAGER
SIGNED_____ DATE_____
PRINT_____

30% PLANS	DESIGNED BY DRAWN BY CHECKED BY	R&E Reichhardt & Ebe ENGINEERING INC P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687 813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713	NO.	DATE	DESCRIPTION	BY	CITY OF MOUNT VERNON 1024 CLEVELAND AVE. MOUNT VERNON, WA 98273	COLLEGE WAY (SR538) WIDENING CHANNELIZATION PLAN	DWG 15038_CHAN JOB# 15038	DATE 9/14/2016 SCALE H: 1"=30' V: N/A	SHEET 13 of 16



TRAFFIC ISLANDS DETAIL

GRAPHIC SCALE

40 0 20 40

(IN FEET)
1 inch = 40 ft.

NOTE:
1. ALL SIDEWALKS, DRIVEWAY ENTRANCES AND CURB RAMPS SHALL MEET CURRENT ADA STANDARDS.

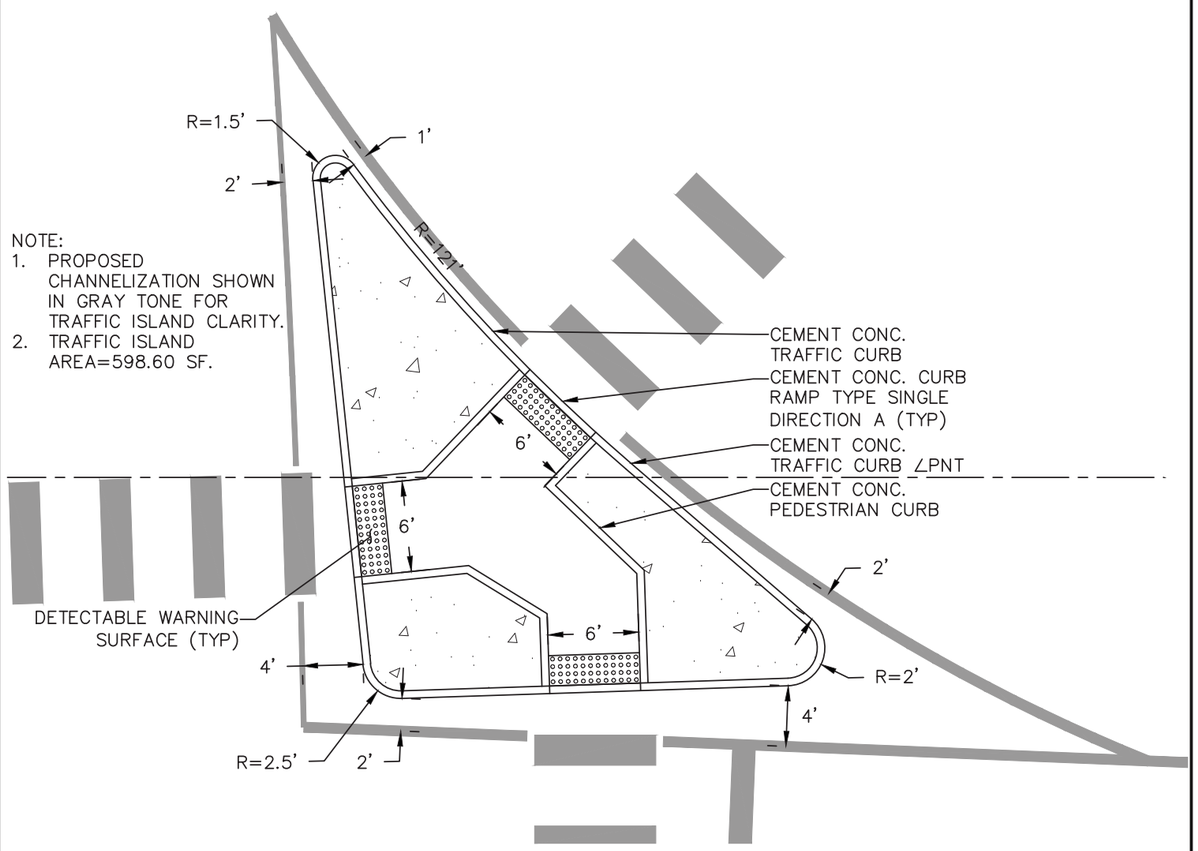
WSDOT NORTHWEST REGION
APPROVED CHANNELIZATION PLAN

TRAFFIC ENGINEER – AREA OPERATIONS
SIGNED_____ DATE_____
PRINT_____

ENGINEERING MANAGER
SIGNED_____ DATE_____
PRINT_____

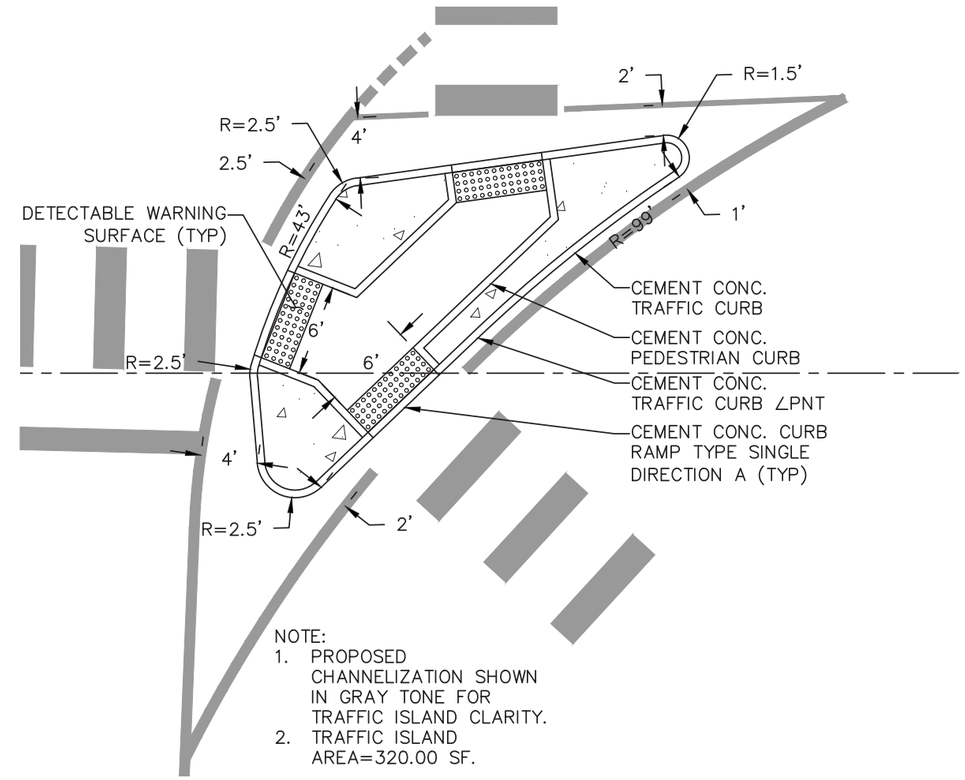
PRELIMINARY

30% PLANS	DESIGNED BY DRAWN BY CHECKED BY	R&E Reichhardt & Ebe ENGINEERING INC P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687 813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713	NO.	DATE	DESCRIPTION	BY	CITY OF MOUNT VERNON 1024 CLEVELAND AVE. MOUNT VERNON, WA 98273	COLLEGE WAY (SR538) WIDENING TRAFFIC ISLANDS CHANNELIZATION	DWG 15038_CHAN JOB# 15038 SCALE H: 1"=30' V: N/A	DATE 9/14/2016 SHEET 14 of 16



NOTE:
1. PROPOSED CHANNELIZATION SHOWN IN GRAY TONE FOR TRAFFIC ISLAND CLARITY.
2. TRAFFIC ISLAND AREA=598.60 SF.

NORTHBOUND ON-RAMP TRAFFIC ISLAND



NOTE:
1. PROPOSED CHANNELIZATION SHOWN IN GRAY TONE FOR TRAFFIC ISLAND CLARITY.
2. TRAFFIC ISLAND AREA=320.00 SF.

NORTHBOUND OFF-RAMP TRAFFIC ISLAND

GRAPHIC SCALE

10 0 5 10

(IN FEET)
1 inch = 10 ft.

NOTE:
1. ALL SIDEWALKS, DRIVEWAY ENTRANCES & CURB RAMPS SHALL MEET CURRENT ADA STANDARDS.

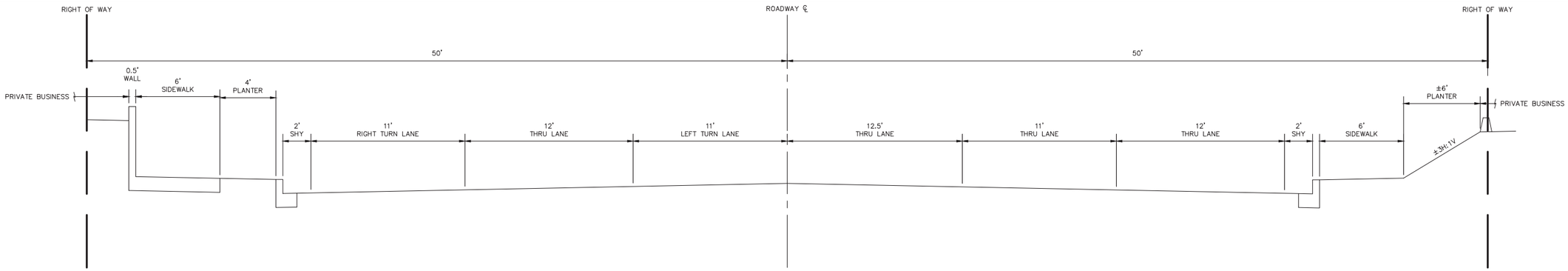
IAN DWIGHT HINTZ
STATE OF WASHINGTON
48189
REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY

WSDOT NORTHWEST REGION
APPROVED CHANNELIZATION PLAN

TRAFFIC ENGINEER – AREA OPERATIONS
SIGNED_____ DATE_____
PRINT_____

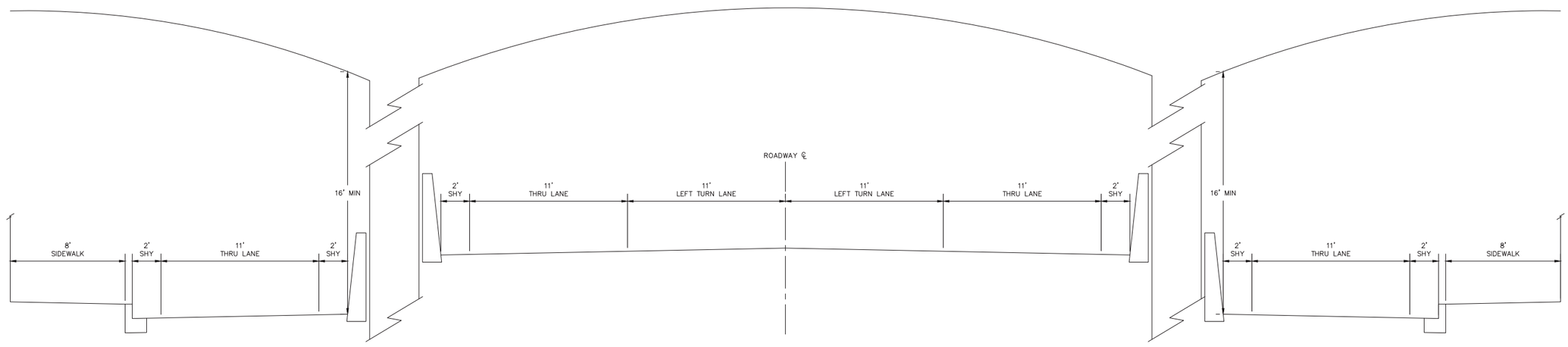
ENGINEERING MANAGER
SIGNED_____ DATE_____
PRINT_____

30% PLANS	DESIGNED BY DRAWN BY CHECKED BY	R&E Reichhardt & Ebe ENGINEERING INC P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687 813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713	NO.	DATE	DESCRIPTION	BY	CITY OF MOUNT VERNON 1024 CLEVELAND AVE. MOUNT VERNON, WA 98273	COLLEGE WAY (SR538) WIDENING TRAFFIC ISLANDS DETAILS	DWG 15038_CHAN JOB# 15038	SCALE H: 1"=10' V: N/A	DATE 9/14/2016 SHEET 15 of 16



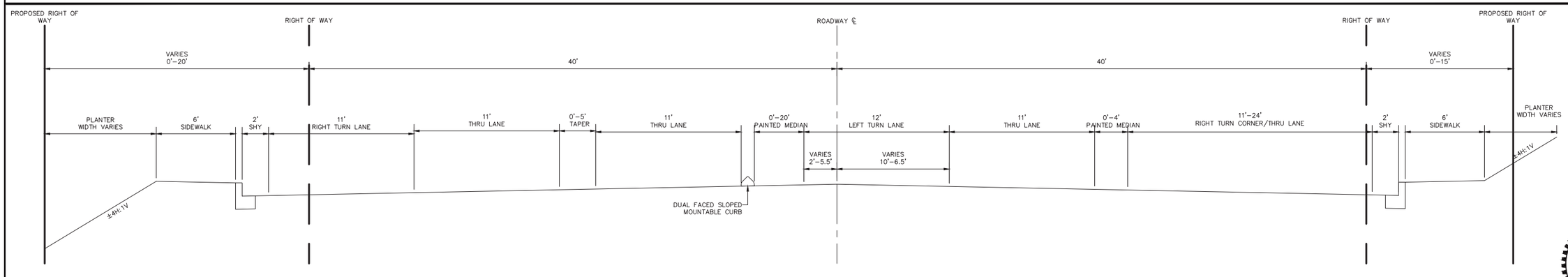
STATION 4+00

NTS LOOKING EAST



STATION 7+25

NTS LOOKING EAST



STATION 10+50

NTS LOOKING EAST

30% PLANS	DESIGNED BY DRAWN BY CHECKED BY	R&E Reichhardt & Ebe ENGINEERING INC P.O. Box 978 | 423 Front Street, Lynden, WA 98264 (360) 354-3687 813 Metcalf Street, Sedro-Woolley, WA 98284 (360) 855-1713	NO.	DATE	DESCRIPTION	BY	CITY OF MOUNT VERNON 1024 CLEVELAND AVE. MOUNT VERNON, WA 98273	COLLEGE WAY (SR538) WIDENING TYPICAL ROADWAY SECTIONS	DWG 15038_CHAN JOB# 15038 SCALE H: N/A V: N/A	DATE 9/14/2016 SHEET 16 of 16

Skagit PUD

PUBLIC UTILITY DISTRICT

NO. 1 of SKAGIT COUNTY

DISTRICT OFFICIALS

AL LITTLEFIELD	PRESIDENT, DISTRICT No. 1
ERON BERG	VICE PRESIDENT, DISTRICT No. 3
ROBBIE ROBERTSON	SECRETARY, DISTRICT No. 2
GEORGE SIDHU, P.E.	GENERAL MANAGER
MARK HANDZLIK, P.E.	ENGINEERING MANAGER
MICHAEL FOX	OPERATIONS MANAGER

UTILITY CONTACTS

CITY OF MOUNT VERNON
1024 CLEVELAND STREET
MOUNT VERNON, WA 98273
CONTACT: ANA CHESTERFIELD & DOUG NATHE
TEL: (360) 336-6214

CASCADE NATURAL GAS
1520 SOUTH 2nd STREET
MOUNT VERNON, WA 98273
TEL: (360) 336-8745

COMCAST XFINITY
400 SEQUOIA DRIVE
BELLINGHAM, WA 98226
CONTACT: CASEY JONES
TEL: (360) 527-8243

PUGET SOUND ENERGY
PO BOX 90868 – MAIL STOP BOT01G
BELLEVUE, WA 98009-0868
CONTACT: CUSTOMER CONSTRUCTION SERVICES
TEL: (888) 321-7779

FRONTIER COMMUNICATION
595 PEASE ROAD
BURLINGTON, WA 98233
CONTACT: BRIAN SMITH
TEL: (360) 707-0641

DISTRICT STANDARD GENERAL NOTES

(MINIMUM REQUIREMENTS)

1. UNLESS STATED OTHERWISE, ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE MOST CURRENT WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT) STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION AND THE DISTRICT REQUIREMENTS AS OUTLINED IN THE DISTRICT'S WATER POLICY MANUAL.
2. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION CONFERENCE WITH THE DISTRICT ENGINEERING DEPARTMENT, (360) 424-7104, A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION.
3. ALL PERMITS NECESSARY FOR THE INSTALLATION OF THE PROPOSED WATER SYSTEM IMPROVEMENTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER, ENGINEER, OR CONTRACTOR TO ACQUIRE. A COPY OF THE PERMITS WILL BE SUBMITTED TO THE DISTRICT, PRIOR TO CONSTRUCTION. ALL RIGHTS SHALL BE GRANTED TO, OR TRANSFERRED TO, THE DISTRICT.
4. DISTRICT REFERENCE DOCUMENTS, SUCH AS STANDARD DETAILS, WATER POLICY MANUAL, DRAWING STANDARDS, ETC., CAN BE FOUND ON THE DISTRICT WEBSITE AT WWW.SKAGITPUD.ORG.
5. ALL TIE-INS, SHUTDOWN, FLUSHING, AND HEALTH SAMPLES SHALL BE COORDINATED WITH THE DISTRICT. THE CONTRACTOR SHALL NOT OPERATE ANY VALVES.
6. A LIST OF ALL MATERIALS, INDICATING THE MANUFACTURER, MODEL, AND SIZE, FOR THE WATER SYSTEM IMPROVEMENTS WILL BE APPROVED BY THE DISTRICT PRIOR TO CONSTRUCTION. CONTACT DISTRICT FOR SUBMITTAL REQUIREMENTS.
7. DUCTILE IRON PIPE WILL BE MINIMUM CLASS 50 AWWA C151 PER WSDOT STANDARD SPECIFICATIONS 9-30.1 AND 9-30.1(1). ALL DUCTILE IRON WATER PIPE AND FITTINGS SHALL BE COMPLETELY WRAPPED WITH A MINIMUM OF EIGHT-MIL POLYETHYLENE PIPE ENCASEMENT AND INSTALLED IN ACCORDANCE WITH AWWA C105 AND WSDOT STANDARD SPECIFICATIONS 7-09.3(17) AND 9-30.1(2).
8. ALL BOLTS USED IN BURIED FLANGES SHALL BE ASTM A307 GRADE B UNFINISHED WITH NUTS TO ASTM A563 GRADE A AND WASHERS TO ASTM F8444, OR ASTM A325 TYPE 3 (CORTEN STEEL) UNFINISHED, WITH NUTS TO ASTM A563C3 OR A563DH3 AND WASHERS TO ASTM F436-1. ALL BOLTS, NUTS AND WASHERS USED IN EXPOSED OR ABOVE GROUND LOCATIONS SHALL BE ASTM A307 GRADE B UNFINISHED OR HOT-DIP GALVANIZED.
9. ALL GATE VALVES TO BE RESILIENT SEATED GATE VALVES, AWWA C515 OR C509 (DUCTILE IRON BODY ONLY) WITH STAINLESS STEEL NUTS, BOLTS AND TRIM.
10. ALL BUTTERFLY VALVES TO BE RUBBER SEATED BUTTERFLY VALVES, AWWA C504 WITH STAINLESS STEEL NUTS, BOLTS AND TRIM.
11. RESTRAINED JOINTS MAY BE USED IN PLACE OF CONCRETE BLOCKING AS DIRECTED BY THE PROJECT'S DESIGN ENGINEER AND ACCEPTED BY THE DISTRICT.
12. ALL FIRE HYDRANTS SHALL CONFORM TO AWWA C502 WITH STORZ ADAPTORS. ACCEPTABLE FIRE HYDRANTS INCLUDE AMERICAN AVK NOSTALGIC, OR APPROVED EQUAL.
13. A #10 SOLID COPPER WIRE WITH BLUE INSULATION IS TO BE INSTALLED WITH/AND ATTACHED TO <u>ALL</u> NEW WATER PIPELINES AND SERVICE PIPELINES. REFER TO DISTRICT DETAILS FOR INSTALLATION REQUIREMENTS.
14. UNLESS OTHERWISE SPECIFIED, ALL WATER PIPELINE INSTALLATIONS REQUIRE A 36-INCH MINIMUM COVER AND 48-INCH TYPICAL TRENCH DEPTH TO EXISTING OR FUTURE FINISH GRADE AND A MINIMUM OF 1-FOOT VERTICAL AND 5-FOOT HORIZONTAL CLEARANCE BETWEEN WATER PIPELINE AND ALL OTHER UTILITIES UNLESS OTHERWISE SPECIFIED.
15. WHEN INSTALLING WATER PIPELINE ACROSS EXISTING OR PROPOSED SANITARY SEWER, A FULL LENGTH OF PIPE SHALL BE INSTALLED WITH MID-SPAN OF THE WATER PIPE OVER THE SEWER. A MINIMUM 10-FOOT HORIZONTAL SEPARATION AND 18-INCH VERTICAL SEPARATION BETWEEN WATER PIPELINES AND SANITARY SEWER PIPELINES IS REQUIRED, UNLESS AN ALTERNATIVE PROPOSAL FROM THE DESIGN ENGINEER IS SUBMITTED TO AND APPROVED BY THE DISTRICT.
16. BEDDING MATERIAL FOR THE DUCTILE IRON PIPE SHALL BE SELECT, NATIVE, GRANULAR MATERIAL FREE FROM WOOD WASTE, ORGANIC MATERIAL OR OTHER EXTRANEOUS OR OBJECTIONABLE MATERIALS AND SHALL BE A MAXIMUM SIZE OF 1 1/2-INCHES OR APPROVED PIPE BEDDING PER WSDOT SPECIFICATION 7-09.3(9) AND 9- 03.12(3). PEA GRAVEL AND BUCKSHOT ARE NOT ACCEPTABLE.
17. BACKFILL TRENCHES IN PAVEMENT AREAS WITH PIT-RUN GRAVEL COMPACTED TO AT LEAST 95 PERCENT MINIMUM DENSITY PER WSDOT SPECIFICATION 7-09.3(11). THE CONTRACTOR SHALL MAKE ALL PAVEMENT REPAIRS AND PERFORM ALL RESTORATION.
18. DISINFECTION AND FLUSHING OF THE WATER PIPELINES ARE TO BE PER WSDOT SPECIFICATIONS. USE DE- CHLORINATION EQUIPMENT WHEN FLUSHING OR, WITH PERMISSION OF THE APPROPRIATE SEWER UTILITY, FLUSH INTO SANITARY SEWER MANHOLES. DO NOT FLUSH INTO OR ALLOW CHLORINATED WATER TO DRAIN INTO ANY CREEK, WETLAND, OR CATCH BASIN. THE CONTRACTOR WILL SUBMIT A PRESSURE TESTING, DISINFECTION, AND FLUSHING PLAN TO THE DISTRICT PRIOR TO CONSTRUCTION.
19. ALL SALVAGED USABLE DISTRICT OWNED MATERIALS ARE TO BE DELIVERED TO THE DISTRICT OFFICE AT 1415 FREEWAY DRIVE, MOUNT VERNON, OR AS DIRECTED BY THE DISTRICT.
20. THE UTILITY LOCATIONS MARKED ON THIS MAP ARE APPROXIMATE. THE CONTRACTOR IS TO VERIFY ACTUAL LOCATION AND DEPTH PRIOR TO CONSTRUCTION. CALL THE UNDERGROUND UTILITY LOCATE CENTER AT 800-424-5555.
21. ALL PRIVATE FIRE SPRINKLERS OR PRIVATE FIRE HYDRANT PIPELINES ARE REQUIRED TO BE INSTALLED WITH A WASHINGTON STATE DEPARTMENT OF HEALTH (WSDOH) APPROVED DOUBLE CHECK DETECTOR ASSEMBLY(IES) OR REDUCED PRESSURE DETECTOR ASSEMBLY(IES), LOCATED IMMEDIATELY AFTER THE FIRE SERVICE CONNECTION. A BADGER RECORDALL METER WITH A REMOTE TOUCH-READ PAD WILL BE SUPPLIED AND INSTALLED BY THE DISTRICT WITHIN 6-INCHES OF THE VAULT LID'S HINGE AND BRASS PLUGS IN THE TEST PORTS. METER SUPPLY AND INSTALLATION WILL BE INCLUDED WITH THE CHARGES IN THE WORK ORDER.
22. A LEAD FREE, WASHINGTON STATE APPROVED, REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED AT TEMPORARY CONNECTIONS BETWEEN THE EXISTING DISTRICT PIPELINES AND NEW WATER PIPELINES FOR FILLING, FLUSHING AND PRESSURE TESTING OF THE IMPROVEMENTS. UPON TEMPORARY CONNECTION, AND PRIOR TO FILLING, THE ASSEMBLY SHALL HAVE BEEN SUCCESSFULLY TESTED BY A BACKFLOW ASSEMBLY TESTER (BAT) AND THE TEST REPORT IS TO BE PROVIDED TO THE DISTRICT.
23. BEFORE FINAL CONNECTION TO THE EXISTING DISTRICT SYSTEM, ALL NEW WATER PIPELINES AND REPAIRED PORTIONS OF/OR EXTENSION TO EXISTING PIPELINES SHALL BE ADEQUATELY DISINFECTED AND A SATISFACTORY BACTERIOLOGICAL REPORT OBTAINED.
24. PRESSURE TEST NEW PIPELINE, INCLUDING FIRE HYDRANTS AND SERVICE LINES AS PER WSDOT STANDARDS.

TEST DATE _____	TEST PRESSURE _____
TIME START _____	TIME END _____
PRESSURE DROP_____	MAKE-UP WATER_____
TEST DATE _____	TEST PRESSURE _____
TIME START _____	TIME END _____
PRESSURE DROP_____	MAKE-UP WATER_____
TEST DATE _____	TEST PRESSURE _____
TIME START _____	TIME END _____
PRESSURE DROP_____	MAKE-UP WATER_____
TEST DATE _____	TEST PRESSURE _____
TIME START _____	TIME END _____
PRESSURE DROP_____	MAKE-UP WATER_____

25. THE CONTRACTOR SHALL POTHOLE ALL UTILITY CROSSINGS AND CONNECTIONS POINTS TO VERIFY EXACT DEPTHS AND ALIGNMENTS A MINIMUM OF THREE (3) PIPE LENGTHS AHEAD.

NATHAN J. ZYLSTRA — STATE OF WASHINGTON — 41884 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY

W.O. 16-03663 / C.O. 4953

95% PLANS

DESIGNED BY NZ/IH/OM
DRAWN BY IH/OM/LH
CHECKED BY NZ/IH

R&E Reichhardt & Ebe ENGINEERING INC
P.O. Box 978 | 423 Front Street
Lynden, WA 98264 (360) 354-3687

NO.	DATE	DESCRIPTION	BY

CITY OF MOUNT VERNON
1024 CLEVELAND AVE.
MOUNT VERNON, WA 98273

COLLEGE WAY (SR 538) WIDENING
SKAGIT PUD WATER MAIN
DISTRICT NOTES

DWG 15038.1 COVER
DATE 7/10/18
JOB# 15038
SCALE H: N/A V: N/A
SHEET C32
32 of 141

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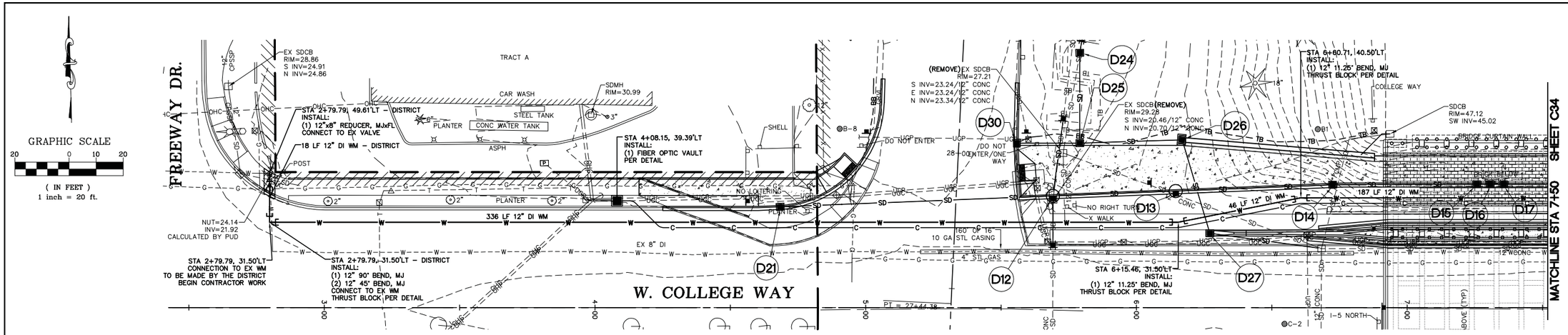

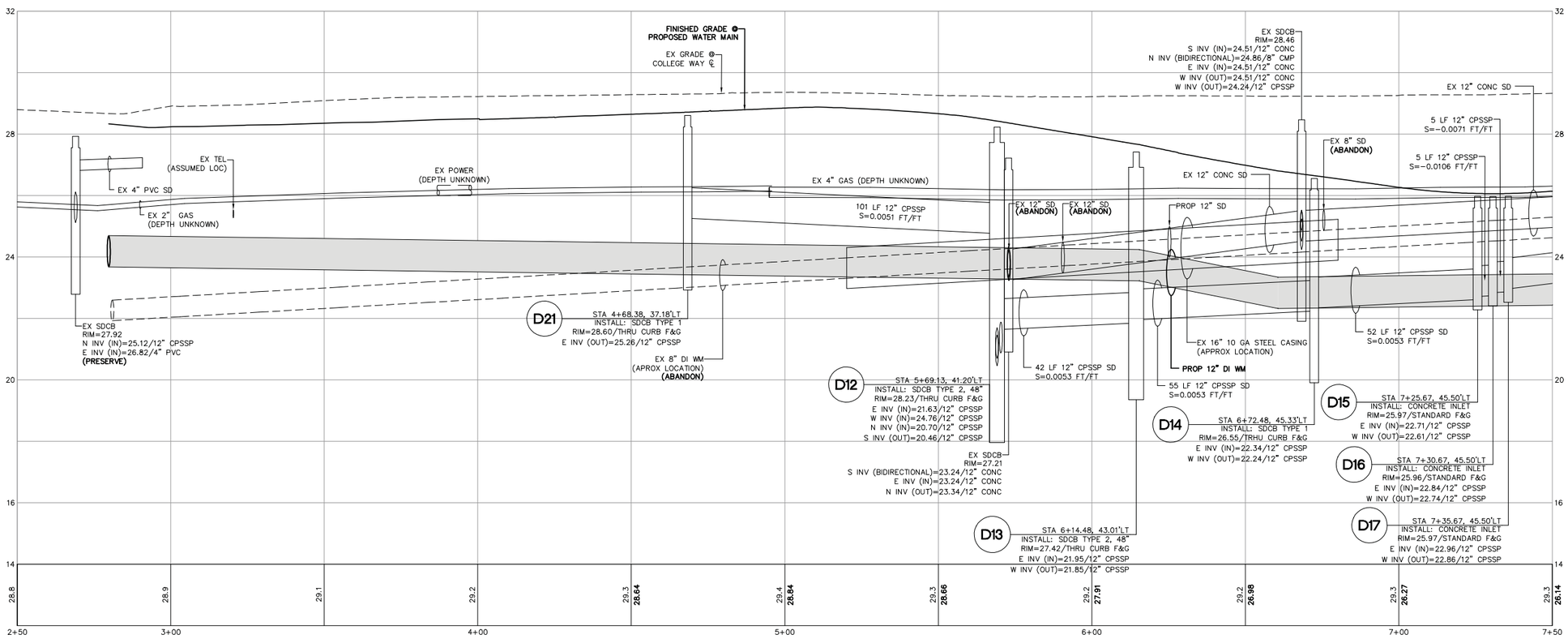

Skagit PUD
PUBLIC UTILITY DISTRICT

W.O. 16-03663 / C.O. 4953

95% PLANS	DESIGNED BY NZ/IH/OM DRAWN BY IH/OM/LH CHECKED BY NZ/IH	R&E Reichhardt & Ebe ENGINEERING INC P.O. Box 978 | 423 Front Street Lynden, WA 98264 (360) 354-3687	NO.	DATE	DESCRIPTION	BY	CITY OF MOUNT VERNON 1024 CLEVELAND AVE. MOUNT VERNON, WA 98273	COLLEGE WAY (SR 538) WIDENING SKAGIT PUD WATER MAIN STA 2+50 TO 7+50	DWG 15038.1 PROBASE JOB# 15038 SCALE H: 1"=20' V: 1"=2'	DATE 7/10/18 SHEET C33 33 of 141

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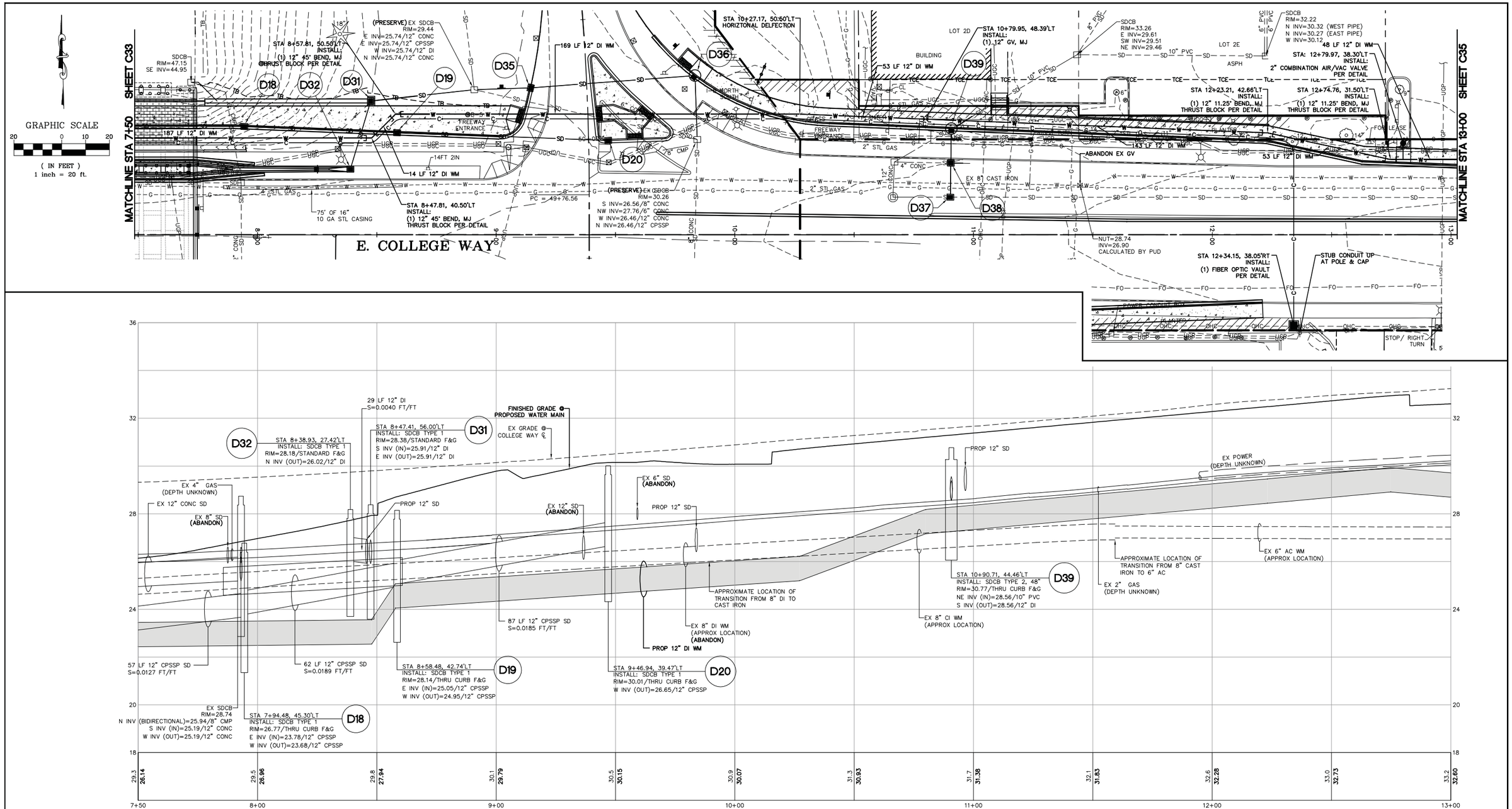

Skagit PUD
PUBLIC UTILITY DISTRICT

W.O. 16-03663 / C.O. 4953

PRELIMINARY
NATHAN J. ZYLSTRA
STATE OF WASHINGTON
41884
REGISTERED PROFESSIONAL ENGINEER

95% PLANS	DESIGNED BY NZ/IH/OM DRAWN BY IH/OM/LH CHECKED BY NZ/IH	R&E Reichhardt & Ebe ENGINEERING INC P.O. Box 978 | 423 Front Street Lynden, WA 98264 (360) 354-3687	NO.	DATE	DESCRIPTION	BY	CITY OF MOUNT VERNON 1024 CLEVELAND AVE. MOUNT VERNON, WA 98273	COLLEGE WAY (SR 538) WIDENING SKAGIT PUD WATER MAIN STA 7+50 TO 13+00	DWG 15038.1 PROBASE JOB# 15038 SCALE H: 1"=20' V: 1"=2'	DATE 7/10/18 SHEET C34 34 of 141

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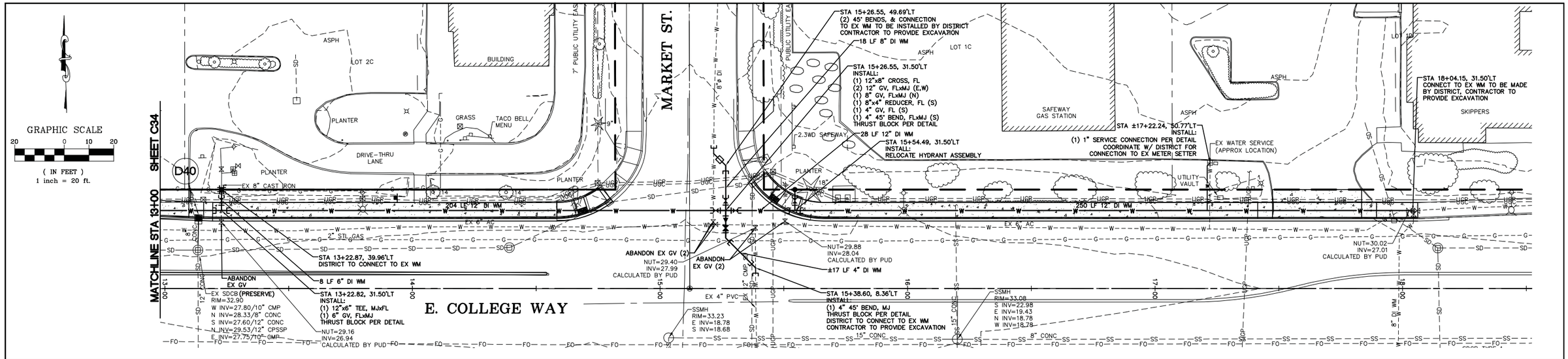

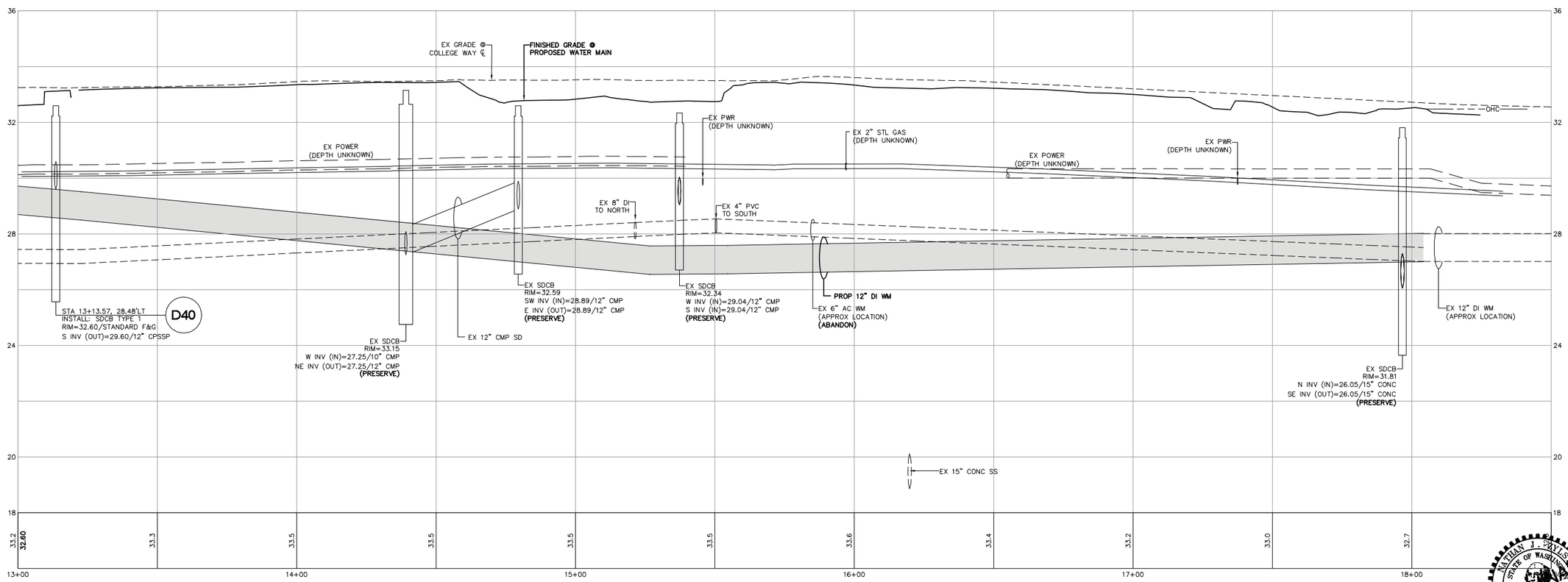

Skagit PUD
PUBLIC UTILITY DISTRICT

W.O. 16-03663 / C.O. 4953

NATHAN J. FOYLSTER
STATE OF WASHINGTON
41884
REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY

95% PLANS	DESIGNED BY NZ/IH/OM DRAWN BY IH/OM/LH CHECKED BY NZ/IH	R&E Reichhardt & Ebe ENGINEERING INC P.O. Box 978 | 423 Front Street Lynden, WA 98264 (360) 354-3687	NO.	DATE	DESCRIPTION	BY	CITY OF MOUNT VERNON 1024 CLEVELAND AVE. MOUNT VERNON, WA 98273	COLLEGE WAY (SR 538) WIDENING SKAGIT PUD WATER MAIN STA 13+00 TO 18+50	DWG 15038.1 PROBASE JOB# 15038 SCALE H: 1"=20' V: 1"=2'	DATE 7/10/18 SHEET C35 35 of 141	

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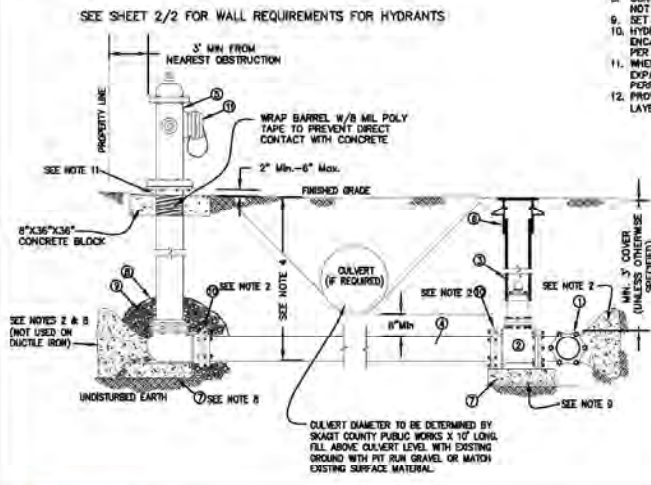
BILL OF MATERIALS

NO.	NOMENCLATURE	REQ'D.
1	TEE WITH FLANGED BRANCH	1
2	8" VALVE WITH FLGxMJ CONNECTIONS (SEE NOTE 6)	1
3	CASING, 8" PVC SEWER PIPE	1
4	PIPE, 8" CLASS 50 DUCTILE IRON, FIELD CUT	
5	FIRE HYDRANT WITH PUMPER PORT, CLOW MEDALLION, OR AS APPROVED BY JURISDICTIONAL FIRE DEPARTMENT DISTRICT	1
6	VALVE BOX, CAST IRON OLYMPIC FOUNDRY VB007/SKAGIT (SEE P.U.D. DETAIL)	1
7	BLOCK, PRECAST CONCRETE, SEE NOTE 8	1
8	FABRIC, GEOTEXTILE, NON-WOVEN (MIRAFI 140N)[a]	
9	1/4 CY DRAIN ROCK, 1-1/2"-3/4", NO FINES	
10	MEG-A-LUG, 6"/GRIP RING 6"	2
11	HYDRANT ADAPTER STORZ STYLE S-37 W/SC CAP & CABLE, 5"x4"PCT	1

[a] OR EQUIVALENT APPROVED BY THE DISTRICT

SEE SHEET 2/2 FOR WALL REQUIREMENTS FOR HYDRANTS



NOTES:

1. ALL MATERIALS AND BRANDS MUST BE APPROVED BY P.U.D.
2. BLOCK TEE AND HYDRANT WITH POURED CONCRETE ON ALL WATER MAINS OTHER THAN DUCTILE IRON AND ON ALL TAPPING SLEEVES AS REQUIRED PER DISTRICT BLOCKING DETAIL. IN ADDITION, 8" "MEGALUGS" (OR APPROVED EQUIVALENT) ARE TO BE INSTALLED AT VALVE AND HYDRANT M.J. OUTLETS. RESTRAIN ANY JOINTS IN THE PIPELINE WITH "FIELD LOK" GASKETS (OR APPROVED EQUIVALENT) INSTALLED IN THE BELLS OF TYTON JOINT PIPE OR "MEGALUGS" ON M.J. BELLS. NO THRUST BLOCK REQUIRED BEHIND TEE ON 8" DUCTILE IRON OR LARGER MAINS.
3. PROTECTIVE BARRIER POSTS MAY BE NECESSARY AT SOME HYDRANT INSTALLATIONS. CONTACT FIRE DEPARTMENT/DISTRICT FOR SPECIFIC REQUIREMENTS.
4. HYDRANT LENGTH AND TRENCH DEPTH SHALL BE SO AS TO PROVIDE FOR HYDRANT SETTING AT 2" MIN. AND 6" MAX. ELEVATION ABOVE FINISH GRADE.
5. SET HYDRANT VERTICAL. USE LEVEL. COMPACT ALL BACKFILL.
6. VALVE SHALL BE AWWA STANDARD GATE, "O" RING PACKING, NON-RISING STEM, 2" OPERATING NUT, RESILIENT WEDGE.
7. HYDRANT LOCATIONS ARE DETERMINED BY THE FIRE MARSHAL WITH AUTHORITY FOR AREA CONCERNED.
8. CONCRETE BLOCK WILL BE BELOW THE DRAIN HOLES AND DRAIN ROCK. TAKE CARE TO NOT PLUG DRAIN HOLES OR CONTAMINATE DRAIN ROCK.
9. SET MINIMUM 1 SQ.FT. CONCRETE SUPPORT TIGHT UP UNDER VALVE AND HYDRANT.
10. HYDRANT BARREL, LEAD, TEE, AND VALVE MUST BE WRAPPED WITH POLYETHYLENE PIPE ENCASEMENT TAPE WHICH IS A MINIMUM OF 8-MIL THICK. IT MUST BE INSTALLED AS PER W.S.D.O.T. STANDARDS AND IN ACCORDANCE WITH A.W.W.A. C105.
11. WHERE HYDRANTS ARE INSTALLED IN THE SIDEWALK, THERE SHALL BE A MINIMUM 3/8" EXPANSION JOINT AROUND THE BARREL OF THE HYDRANT AND AN EXPANSION JOINT PERPENDICULAR ACROSS THE SIDEWALK, INTERSECTING THE HYDRANT BARREL.
12. PROVIDE A MINIMUM OF 3'-0" LEVEL WORKING AREA AROUND HYDRANT USING 6" THICK LAYER OF 5/8" MINUS CRUSHED ROCK COMPACTED TO 95%

ALL FIRE HYDRANTS SHALL COMPLY WITH THE STANDARDS ISSUED BY THE SKAGIT COUNTY FIRE MARSHAL. HYDRANTS SHALL BE THE DRY BARREL TYPE WITH TWO HOSE OUTLETS WITH AN INSIDE DIAMETER OF 2-1/2 INCHES AND ONE LARGE PUMPER OUTLET WITH AN INSIDE DIAMETER OF 4 INCHES. SMALL PORTS SHALL HAVE NATIONAL STANDARD THREADS MEASURING 3.0625 INCHES OUTSIDE DIAMETER AT 7-1/2 THREADS PER INCH. PUMPER PORTS SHALL BE NO. 3 PACIFIC COAST THREADS MEASURING 4.826 INCHES OUTSIDE DIAMETER AT 6 THREADS PER INCH. THE OPERATING NUT SHALL BE 1-1/4 INCH PENTAGON.

A STORZ QUICK COUPLER CONNECTED TO THE PUMPER PORT MAY BE REQUIRED. CONTACT FIRE DISTRICT/DEPARTMENT.

PUD NO. 1 OF SKAGIT COUNTY ENGINEERING MANAGER

APPROVED ON: May 6, 2014

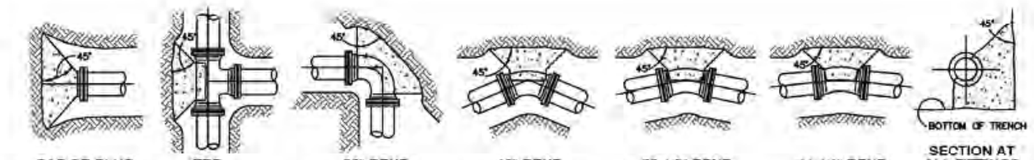
Skagit PUD PUBLIC UTILITY DISTRICT

STANDARD INSTALLATION OF FIRE HYDRANT "CENTER STEM TYPE"

SHEET 1/2

SCALE: NTS | DATE: 3-25-05 | REVISED: 5/6/14 | DRAWN BY: CAS | APPROVED BY: GJS

STANDARD WH-1a



THRUST BLOCK REQUIREMENTS																	
		BEARING AREA REQUIRED IN SQUARE FEET															
		KEY BLOCK** & TEE/CAP OR PLUG test pressures			90 Degree BEND test pressures			45 Degree BEND test pressures			22.5 Degree BEND test pressures			11.25 Degree BEND test pressures			
PIPE SIZE nominal	PIPE SIZE outside dia	200 psi	225 psi	250 psi	200 psi	225 psi	250 psi	200 psi	225 psi	250 psi	200 psi	225 psi	250 psi	200 psi	225 psi	250 psi
4	4.80	1.8	2.0	2.3	2.6	2.9	3.2	1.4	1.6	1.7	0.7	0.8	0.9	0.4	0.4	0.4
6	6.90	3.7	4.2	4.7	5.3	5.9	6.6	2.9	3.2	3.6	1.5	1.6	1.8	0.7	0.8	0.9
8	9.05	6.4	7.2	8.0	9.1	10.2	11.4	4.9	5.5	6.2	2.5	2.8	3.1	1.3	1.4	1.6
12	13.20	13.7	15.4	17.1	19.4	21.8	24.2	10.5	11.8	13.1	5.3	6.0	6.7	2.7	3.0	3.4
16	17.40	23.8	26.8	29.7	33.6	37.8	42.0	18.2	20.5	22.7	9.3	10.4	11.6	4.7	5.2	5.8
18	19.50	29.9	33.6	37.3	42.2	47.5	52.8	22.9	25.7	28.6	11.7	13.1	14.6	5.9	6.6	7.3
24	25.80	52.3	58.8	65.3	73.9	83.2	92.4	40.0	45.0	50.0	20.4	22.9	25.5	10.2	11.5	12.8

NOTES:

1. ALL CONCRETE BLOCKING SHALL BE POURED AGAINST DRY, UNDISTURBED SUBGRADE. TABLE IS BASED ON 2000 POUNDS PER SQUARE FOOT ALLOWABLE SOIL BEARING. WEAKER SOIL WILL REQUIRE INCREASED BEARING AREA. SEE SOIL BEARING LOAD CHART.
2. KEEP CONCRETE CLEAR OF JOINTS AND ACCESSORIES. USE FORMING AS NECESSARY.
3. HORIZONTAL ANCHOR BLOCKING CONFIGURATIONS FOR FITTINGS NOT SHOWN SHALL HAVE APPROVAL OF THE P.U.D.
4. THE SQUARE FOOT AREAS REQUIRED FOR BEARING ARE CALCULATED BY THE FOLLOWING FORMULAS:
   FORMULA AT TEE & CAP OR PLUG:
   T = PA
   T ÷ K = BEARING AREA REQUIRED IN SQUARE FEET
   FORMULA AT ALL PIPE BENDS:
   T = 2PA (SIN 1/2 ANGLE) WHERE ANGLE = THE DEGREE BEND OF THE FITTING
   T ÷ K = BEARING AREA REQUIRED IN SQ. FEET
   WHEN:
   T = THRUST IN POUNDS
   P= TEST PRESSURE IN PSI
   A= CROSS-SECTIONAL AREA OF PIPE IN SQ. INCHES
   K= ASSUMED 2000 PSF SOIL BEARING PRESSURE
5. FITTINGS SHALL BE WRAPPED WITH POLYETHYLENE ENCASEMENT WITH A MIN. OF 8-MIL THICKNESS. IT MUST BE INSTALLED AS PER W.S.D.O.T. STANDARDS AND IN ACCORDANCE WITH A.W.W.A. C105.

BEARING AREA REQUIRED IN SQUARE FEET

THE SAFE SOIL BEARING LOADS SHOWN BELOW ARE FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 2 FEET.

SOIL	SAFE BEARING LOAD LBS/SQ. FT.
*MUCK, PEAT, ETC.	0
SOFT CLAY, SILT	1,000
SAND, SANDY SILT	2,000
SAND AND GRAVEL	3,000
SAND AND GRAVEL CEMENTED W/ CLAY	4,000
HARD SHALE	10,000

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

KEY BLOCK USE
THE INSTALLATION OF A KEY BLOCK IS TO BE CONSIDERED ONLY FOR TEMPORARY BLOCKING FOR 5-10 YEARS. IF THE PIPELINE IS TO REMAIN A DEADEND OR AN EXTENSION IS LIKELY TO BE MORE THAN 10 YEARS AWAY, THEN A STANDARD BLOCK FOR CAP OR PLUG WILL BE INSTALLED. USE OF KEY BLOCK IS TO BE APPROVED BY THE DISTRICT.

**KEY BLOCKING SPECIFICATION:
MATERIALS SHALL INCLUDE 3/4-INCH RESTRAINING RODS, HEX NUTS AND WASHERS OF HIGH STRENGTH LOW ALLOY STEEL MEETING AWWA C-111-90 COMPOSITION SPECIFICATIONS, ROMAC "DUCTILE LUG" OR 90° EYE BOLTS AND "600" SERIES PIPE RESTRAINING SYSTEM. THRUST RESTRAINT TO BE CALCULATED AT 7500 POUNDS PER BOLT OR AS RECOMMENDED BY ENGINEER. ALL RODS, EYE BOLTS AND PIPE RESTRAINTS ARE TO BE CLEAN. TWO SEPARATE BRUSH COATS OF ASPHALT COATING AS APPROVED BY THE ENGINEER TO BE APPLIED. A 3-INCH MINIMUM CLEARANCE IS REQUIRED BETWEEN WATER PIPE AND CONCRETE. SOIL IS TO BE COMPACTED TO 95%. REBAR TO BE MINIMUM #6 (3/4") SIZE AND HAVE A MINIMUM 9-INCH CLEARANCE FROM ANY CONCRETE SURFACE.

KEY BLOCK

PUD NO. 1 OF SKAGIT COUNTY ENGINEERING MANAGER

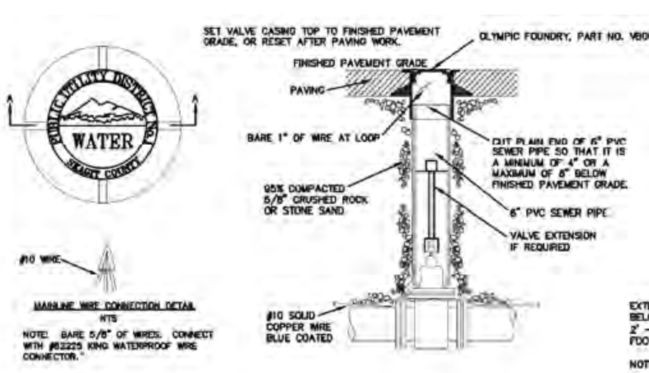
APPROVED ON: MAY 6, 2014

Skagit PUD PUBLIC UTILITY DISTRICT

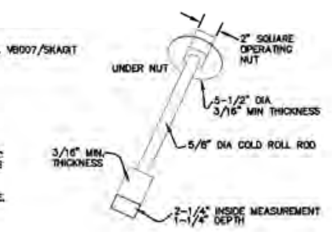
HORIZONTAL THRUST BLOCKING DETAILS

SCALE: NTS | DATE: 3-05-05 | REVISED: 5/6/14 | DRAWN BY: CAS | APPROVED BY: GJS

STANDARD WT-1



MAINLINE WIRE CONNECTION DETAIL
NTS
NOTE: BARE 5/8" OF WIRES. CONNECT WITH #62225 KING WATERPROOF WIRE CONNECTOR."



VALVE OPERATING NUT EXTENSION

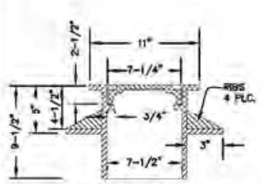
EXTENSIONS ARE REQUIRED WHEN THE VALVE NUT IS MORE THAN THREE (3) FEET BELOW FINISHED GRADE. THE FINISH ELEVATION OF THE OPERATING NUT IS TO BE 2' - 3' BELOW FINISH GRADE. EXTENSIONS ARE TO BE A MINIMUM OF ONE (1) FOOT LONG, ONLY ONE EXTENSION TO BE USED PER VALVE.

NOTE:
1) ALL EXTENSIONS ARE TO BE MADE OF STEEL SIZED AS NOTED, AND PAINTED WITH TWO COATS OF METAL PAINT. WELD ALL PARTS.
2) A CARSONITE CWV-118 BLUE MARKER POST WILL BE INSTALLED AT ALL VALVE(S) LOCATIONS UNLESS DIRECTED OTHERWISE BY DISTRICT REPRESENTATIVE.

VALVE CASING EXTENSION

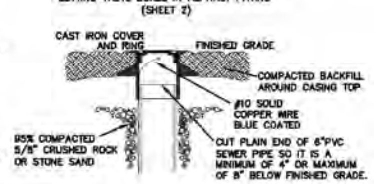
IF THE 6" PVC VALVE CASING PIPE DOES NOT EXTEND HIGH ENOUGH TO SUPPORT THE CAST IRON VALVE BOX, AN EXTENSION CAN BE ADDED FOLLOWING THE PROCEDURE BELOW:

1. CUT A 6" PVC SEWER PIPE 6" - 8" LONGER THAN THE RISE NECESSARY.
2. SPLIT THE 6" PVC SEWER PIPE THE FULL LENGTH.
3. CURL CASING EXTENSION INTO ITSELF AND PLACE INSIDE EXISTING PVC VALVE CASING THE 6"-8" ALLOWED FOR IN STEP 1. INSTALL VALVE BOX.



SECTION A-A
OLYMPIC FOUNDRY, PART NO. VB007/SKAGIT CAST IRON VALVE BOX

VALVE CASING IN PAVED AREAS, STREETS AND SIDEWALKS
REFER TO "RECOMMENDED PROCEDURE FOR SETTING VALVE BOXES IN ASPHALT PAVING" (SHEET 2)



VALVE CASING IN UNPAVED AREAS

PUD NO. 1 OF SKAGIT COUNTY ENGINEERING MANAGER

APPROVED ON: MAY 6, 2014

Skagit PUD PUBLIC UTILITY DISTRICT

STANDARD INSTALLATION OF CAST IRON VALVE BOX & VALVE OPERATING NUT EXTENSION

SHEET 1/2

SCALE: NTS | DATE: 3-25-05 | REVISED: 5/6/14 | DRAWN BY: CAS | APPROVED BY: GJS

STANDARD WV-1a

APPROVED ON: MAY 6, 2014

Skagit PUD PUBLIC UTILITY DISTRICT

STANDARD INSTALLATION OF CAST IRON VALVE BOX & VALVE OPERATING NUT EXTENSION

SHEET 2/2

SCALE: NTS | DATE: 3-25-05 | REVISED: 5/6/14 | DRAWN BY: CAS | APPROVED BY: GJS

STANDARD WV-1b

Skagit PUD PUBLIC UTILITY DISTRICT

95% PLANS

DESIGNED BY NZ/IH/OM
DRAWN BY IH/OM/LH
CHECKED BY NZ/IH

R&E Reichhardt & Ebe ENGINEERING INC
P.O. Box 978 | 423 Front Street
Lynden, WA 98264 (360) 354-3687

NO.	DATE	DESCRIPTION	BY

CITY OF MOUNT VERNON
1024 CLEVELAND AVE.
MOUNT VERNON, WA 98273

COLLEGE WAY (SR 538) WIDENING
SKAGIT PUD WATER MAIN
DETAILS

DWG 15038.1 DETAILS
DATE 7/10/18
JOB# 15038
SCALE H: N/A V: N/A
SHEET C36
36 of 141

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BILL OF MATERIALS

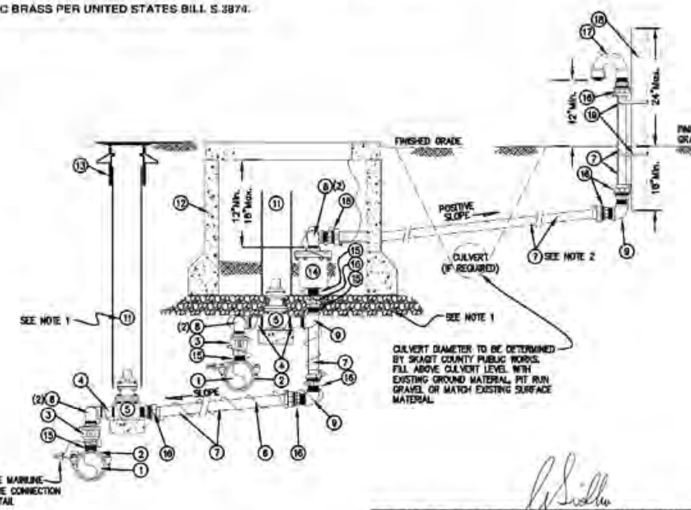
NO.	NOMENCLATURE	REQ'D.	NO.	NOMENCLATURE	REQ'D.
1	WATER MAIN		11	CASING, 6" P.V.C. SEWER PIPE	1
2	CLAMP, SERVICE, DOUBLE STRAP X 2" I.P.T., ALL BRASS, (FORD #202B)ª	1	12	UTILITY VAULT 3842-LA W/2436P LOCKING STEEL COVER	1
3	VALVE, 2" BALL, BRASS, IPTxIPT (FORD #B13-777W)ª	1	13	VALVE BOX, CAST IRON OLYMPIC FOUNDRY VB-007-SKAGIT (SEE P.U.D. DETAIL)	1
4	NIPPLE, BRASS 2X4	1-2	14	VALVE, 2" COMBINATION AIR (APCO 145C.2 SERIES) W/SST TRIM	1
5	VALVE, 2" DUCTILE IRON, RESILIENT WEDGE	1	15	NIPPLE, BRASS, 2" CLOSE	3
6	WIRE, #10 SOLID COPPER, BLUE COATED, EXTEND MIN. 18" INTO BOX, NEAR LID		16	ADAPTER, BRASS PAK JOINT, 2" M.I.P.T. X PVC (FORD #C87-77)ª	4-7
7	PIPE, 2" P.V.C. SCH. 80 (LENGTHS AS REQUIRED)		17	BEND, 2" COPPER, 180°, WITH INSECT SCREEN	1
8	ELL, 2" BRASS, 90°, STREET	4	18	POST, 4'-0" MIN. METAL FENCE POST W/SPADE REMOVED	1
9	ELL, 2" BRASS, 90°	2	19	HOSE CLAMP, 2", STAINLESS STEEL	2
10	UNION, 2" BRASS	1			

ªOR EQUIVALENT APPROVED BY THE DISTRICT
ALL BRASS FITTINGS TO BE LEAD FREE DOMESTIC BRASS PER UNITED STATES BILL S.3874.

NOTES:

1. SET VALVE CASING AND VAULT/BOX TO FINISH GRADE. DO NOT REST CASING OR VAULT ON NIPPLES OR PIPE. PLACE 6 INCHES OF 3/4" MINUS CRUSHED GRAVEL, COMPACTED TO 95% UNDER CONCRETE VAULTS. SUPPORT VALVE CASING WITH 0.2 SQ.FT. OF CONCRETE ON EACH SIDE OF VALVE. SUPPORT 2" VALVE WITH MIN. OF 1 SQ.FT. OF CONCRETE BLOCK ON UNDISTURBED GROUND OR COMPACTED 3/4" CRUSHED GRAVEL.
2. INSTALL LINE PERPENDICULAR TO MAIN OR AS SHOWN ON WATER PLAN.
3. IF THERE IS A GROUND DEPRESSION OR DITCH BETWEEN AIR VALVE LOCATION AND VENT PIPE WHICH AFFECTS THE SLOPE OF THE HORIZONTAL VENT PIPE, INSTALL A CULVERT IF IT IS A DRAINAGE PATH OR FILL WITH DIRT.

NOTE: ALL THREE WIRES ARE TO BE TIED TOGETHER IN AN OVERHAND KNOT APPROXIMATELY 6" FROM WIRE NUT. BARE 5/8" OF WIRES. CONNECT WITH #62325 KING WATERPROOF WIRE CONNECTOR.ª



PUD NO. 1 OF SKAGIT COUNTY ENGINEERING MANAGER

APPROVED ON: MAY 21, 2014

Skagit PUD PUBLIC UTILITY DISTRICT	STANDARD INSTALLATION OF 2" COMBINATION AIR VALVE ASSEMBLY	SCALE: 1" = 2' DATE: 3-25-05 REVISED: 5/21/14 DRAWN BY: CAS APPROVED BY: GJS	STANDARD WV2-1

BILL OF MATERIALS

NO.	NOMENCLATURE	REQ'D.	NO.	NOMENCLATURE	REQ'D.
1	WATER MAIN		10	METER, BADGER MODEL M25 (5/8") OR M35 (3/4") BRONZE METER	1
2	CLAMP, SERVICE, DOUBLE STRAP x 1" I.P.T., ALL BRASS. (FORD #202B)ª	1	11	NIPPLE, BRASS, 1"x6"	1
3	CORP, 1", (FORD #FB500-4)ª	1	12	ADAPTER, BRASS, 1" F.I.P.T. x 1" INSERT	1
4	ADAPTER, BRASS PAC JOINT, 1" F.I.P.T. x 1" COP (FORD #C14-44-Q-NL)ª	1	13	METER BOX & COVER, (CARSON INDUSTRIES LLC, L SERIES 1419-12 W/COVER 1419-3)ª	1
5	INSERT, STIFFENER, 3/4" (FORD #71)ª	2	14	EXTENSION, METER BOX, CARSON INDUSTRIES LLC, L SERIES 1419-6ª	1
6	WIRE, #10 SOLID COPPER, BLUE COATED, EXTEND MIN.18" INTO BOX, NEAR LID		15	CLAMP, 1", ALL STAINLESS(STUB ONLY)	1
7	PIPE, 1" REHAU MUNICIPEX TYPE A, 200 P.S.I.		16	ADAPTER, 3/4" M.I.P.T x 3/4" INSERT W/CAP (GALV.) FORD PTM-1-NL(STUB ONLY)	1
8	BRASS PAC JOINT, 1" M.I.P.T. x 1" COP (FORD #C84-44-Q-NL)ª	1	17	HOSE CLAMP, 1-1/4" STAINLESS STEEL(STUB ONLY)	1
9	COPPERSETTER, 3/4", (FORD #VBHC72-9W-11-44- NL FP)ª	1	18	POST, 4'-0" MIN. METAL FENCE POST W/SPADE REMOVE(STUB ONLY)	1

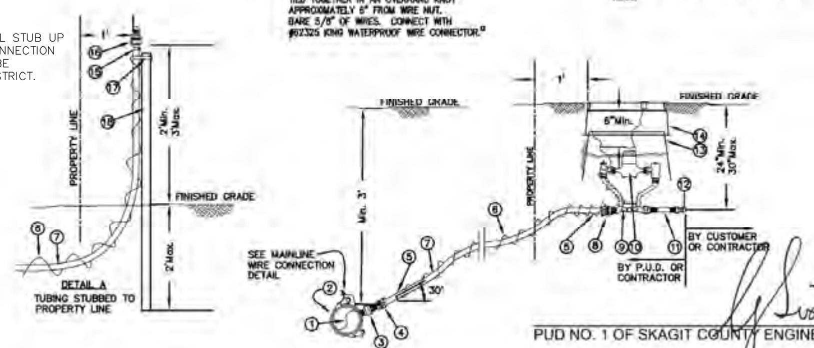
ªOR EQUIVALENT APPROVED BY THE DISTRICT
ᵇELL, 90° STREET, 3/4" M X F I.P.T. (IF NEEDED)
ALL BRASS FITTINGS TO BE LEAD FREE DOMESTIC BRASS PER UNITED STATES BILL S.3874.

NOTES

1. CORP TO BE IN FULL OPEN POSITION BEFORE BACKFILL.
2. INSTALL SERVICE LINE PERPENDICULAR TO MAIN UNLESS OTHERWISE SHOWN ON WATER CONSTRUCTION PLAN.
3. SERVICE LINE IS TYPICALLY 1'6" TO NORTH OR WEST OF PROPERTY CORNER OR AS OTHERWISE SPECIFIED.
4. WATER SERVICE TUBING INSTALLATION IN PLATTED AREAS WILL BE COMPLETED BY THE CONTRACTOR/DEVELOPER FROM THE PIPELINE TO BEYOND THE PROPERTY LINE. IF METER BOX AND COPPERSETTER ARE NOT INSTALLED AT TIME OF SERVICE PIPE INSTALLATION, THEN TUBING IS TO BE STUBBED UP AND COMPLETED AS PER DETAIL A. THE DISTRICT WILL COMPLETE THE ACTUAL METER AND BOX INSTALLATION WHEN NEEDED.
5. IF METER IS NOT INSTALLED IN COPPERSETTER, INSTALL PLUGS IN METER CONNECTIONS. IF CONNECTION IS NOT MADE TO CUSTOMER'S PLUMBING, INSTALL A WATERTIGHT WRAP OF ELECTRICAL TAPE OVER END OF NIPPLE. SET COPPERSETTER FLUSH, PLUMB AND CENTERED IN BOX.
6. FLUSH OUT SERVICE TUBING AND COPPERSETTER BEFORE INSTALLING METER. DO NOT ALLOW MUD OR FOREIGN MATERIAL TO ENTER ANY TUBING OR FITTINGS.
7. FILL BOX WITH FINE DIRT TO TOP OF METER.
8. IF THE METER BOX IS LOCATED IN ASPHALT OR CONCRETE AREA, A TRAFFIC BOX (MID-STATES PLASTICS, INC., MSBCF1324-4526)ª WILL BE REQUIRED. NOT FOR THROUGH-WAY TRAFFIC APPLICATIONS.
9. IF THERE IS PETROLEUM-BASED CONTAMINATED SOIL PRESENT, THE PIPELINE SHALL BE OF TYPE K COPPER WITH BRASS AND COPPER FITTINGS. SEE STANDARD P.U.D. COPPER SERVICE DETAIL.
10. IF SERVICE LINE HAS LESS THAN 2'0" OF COVER, CONTACT DISTRICT ENGINEERING DEPARTMENT FOR FREEZE PROTECTION REQUIREMENTS.
11. A SHUTOFF VALVE SHALL BE INSTALLED ON CUSTOMER'S PLUMBING AFTER DISTRICT'S METER, PER U.P.C. SUCH VALVE SHALL BE ACCESSIBLE AT ALL TIMES.

NOTE: ALL THREE WIRES ARE TO BE TIED TOGETHER IN AN OVERHAND KNOT APPROXIMATELY 6" FROM WIRE NUT. BARE 5/8" OF WIRES. CONNECT WITH #62325 KING WATERPROOF WIRE CONNECTOR.ª

NOTE:
CONTRACTOR SHALL STUB UP SERVICE PIPE. CONNECTION TO METER SHALL BE PERFORMED BY DISTRICT.



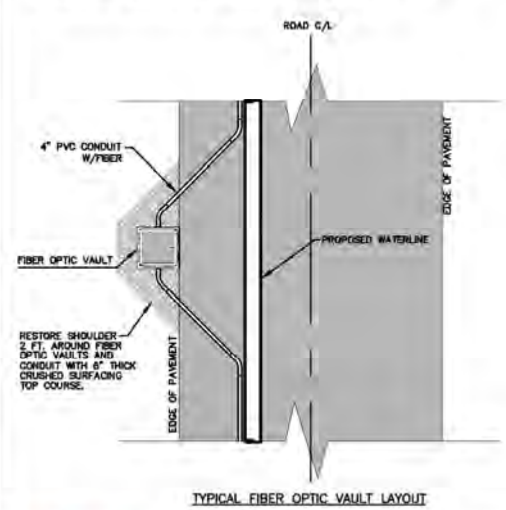
PUD NO. 1 OF SKAGIT COUNTY ENGINEERING MANAGER

APPROVED ON: OCTOBER 15, 2015

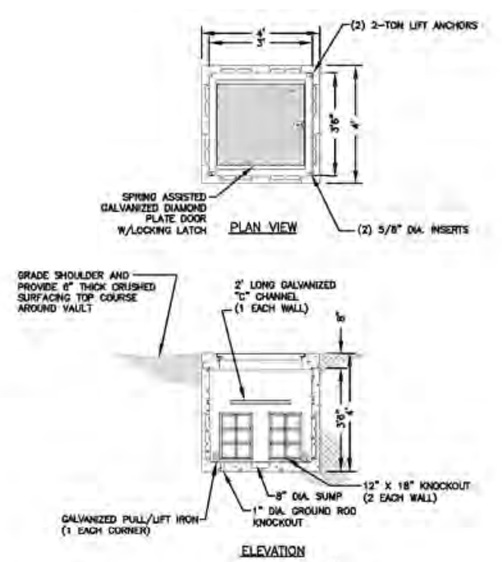
Skagit PUD PUBLIC UTILITY DISTRICT	STANDARD INSTALLATION OF SINGLE 5/8" OR 3/4" METERED SERVICE WITH 200 P.S.I. REHAU SERVICE LINE	SCALE: 1"=2' DATE: 11-14-14 REVISED: 10/13/16 DRAWN BY: JLB APPROVED BY: GJS	STANDARD WS58-1

NOTES

1. VAULTS SHALL BE PRE-CAST CONCRETE MEETING ASTM C478. TOP SLAB SHALL BE DESIGNED TO CARRY HS-20 LOADING.
2. RIGID NON-METALLIC CONDUIT (PVC) FOR FIBER SHALL BE U.L. 651 LISTED, NEMA TC-2, SCHEDULE 40 APPROVED FOR CONCRETE ENCASEMENT. PVC CONDUIT SWEEPS SHALL NOT BE USED.
3. FIBERGLASS CONDUIT FOR FIBER SHALL BE U.L. 1684 LISTED, NEMA TC-14, APPROVED FOR CONCRETE ENCASEMENT. FIBERGLASS CONDUIT SWEEPS SHALL BE A MINIMUM RADIUS OF 36 INCHES.
4. CONDUITS SHALL CONTAIN NO MORE THAN THREE-QUARTER BENDS (270 CUMULATIVE DEGREES) BETWEEN FIBER OPTIC VAULTS.
5. DURING FIBER OPTIC CABLE INSTALLATION, A MINIMUM OF 150 FEET OF SLACK CABLE SHALL BE INSTALLED ON MOUNTING HARDWARE WITHIN EACH FIBER OPTIC VAULT.
6. FIBER OPTIC VAULTS SHALL BE A MAXIMUM OF 2,500 FEET APART.



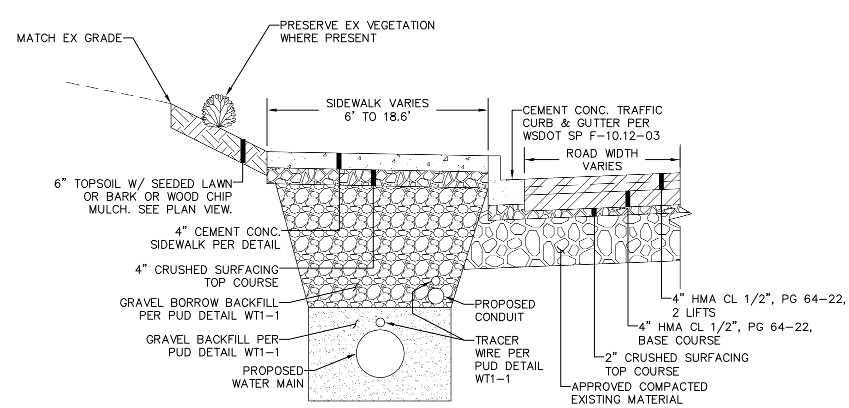
TYPICAL FIBER OPTIC VAULT LAYOUT



PUD NO. 1 OF SKAGIT COUNTY ENGINEERING MANAGER

APPROVED ON: MAY 16, 2014

Skagit PUD PUBLIC UTILITY DISTRICT	STANDARD FIBER OPTIC VAULT AND STANDARD FIBER OPTIC VAULT LAYOUT	SCALE: NO SCALE DATE: 10/22/12 REVISED: 5/16/14 DRAWN BY: KBM APPROVED BY: GJS	STANDARD WFO-1



SIDEWALK AND PAVEMENT RESTORATION DETAIL

NTS

Skagit PUD
PUBLIC UTILITY DISTRICT

95% PLANS	DESIGNED BY NZ/IH/OM DRAWN BY IH/OM/LH CHECKED BY NZ/IH	R&E Reichhardt & Ebe ENGINEERING INC P.O. Box 978 | 423 Front Street Lynden, WA 98264 (360) 354-3687	NO.	DATE	DESCRIPTION	BY	CITY OF MOUNT VERNON 1024 CLEVELAND AVE. MOUNT VERNON, WA 98273	COLLEGE WAY (SR 538) WIDENING SKAGIT PUD WATER MAIN DETAILS	DWG 15038.1 DETAILS JOB# 15038 SCALE H: N/A V: N/A	DATE 7/10/18 SHEET C37 37 of 141

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