

TYBREN HEIGHTS ROAD UPGRADE

APPLICANT:

BJUR RANDALL HOWARD D
6411 NW MCKINLEY DR
VANCOUVER, WA 98665

PREPARED BY:

AARON FULLER, PE
FULLER DESIGNS
645 SE PROSPECT ST.
CHEHALIS, WA 98532
(520) 840-3599
afuller@fullerdesigns.org

ROAD DESIGN ELEMENTS:

ROAD CLASSIFICATION	COWLITZ COUNTY CLASS B/C PRIVATE ROAD
DESIGN SPEED	20 MPH (MAX)
SUPERELEVATION	4% MAX
ADT	<240

STANDARD NOTES:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH COWLITZ COUNTY PRIVATE ROAD STDS.
2. TEMPORARY EROSION/WATER POLLUTION MEASURES SHALL BE REQUIRED IN ACCORDANCE WITH 1-07.15 OF THE STD SPECS AND THE DRAINAGE DESIGN AND EROSION CONTROL MANUAL.
3. ALL DISTURBED AREAS SHALL BE SEEDED, MULCHED OR OTHERWISE STABILIZED TO THE SATISFACTION OF THE JURISDICTION.
4. CONTRACTOR RESPONSIBLE FOR USE AND RELATED PERMITS PRIOR TO CONSTRUCTION ACTIVITY IN THE PUBLIC RIGHT-OF-WAY (POWELL ROAD).
5. NO FINAL CUT SLOPE SHALL EXCEED 1.5:1 (H:V) WITHOUT STABILIZATION BY ROCKERY OR RETAINING WALL. UNSUPPORTED FINAL FILL SLOPES SHALL NOT EXCEED 2:1.
6. ROADWAY DESIGNED FOR MAX. HS-25 FOR CLASS B ROADS AND 70,000LB FOR CLASS C ROADS GVM EMERGENCY FIRE AND LIFE SAFETY TRUCKS.

GRADING NOTES:

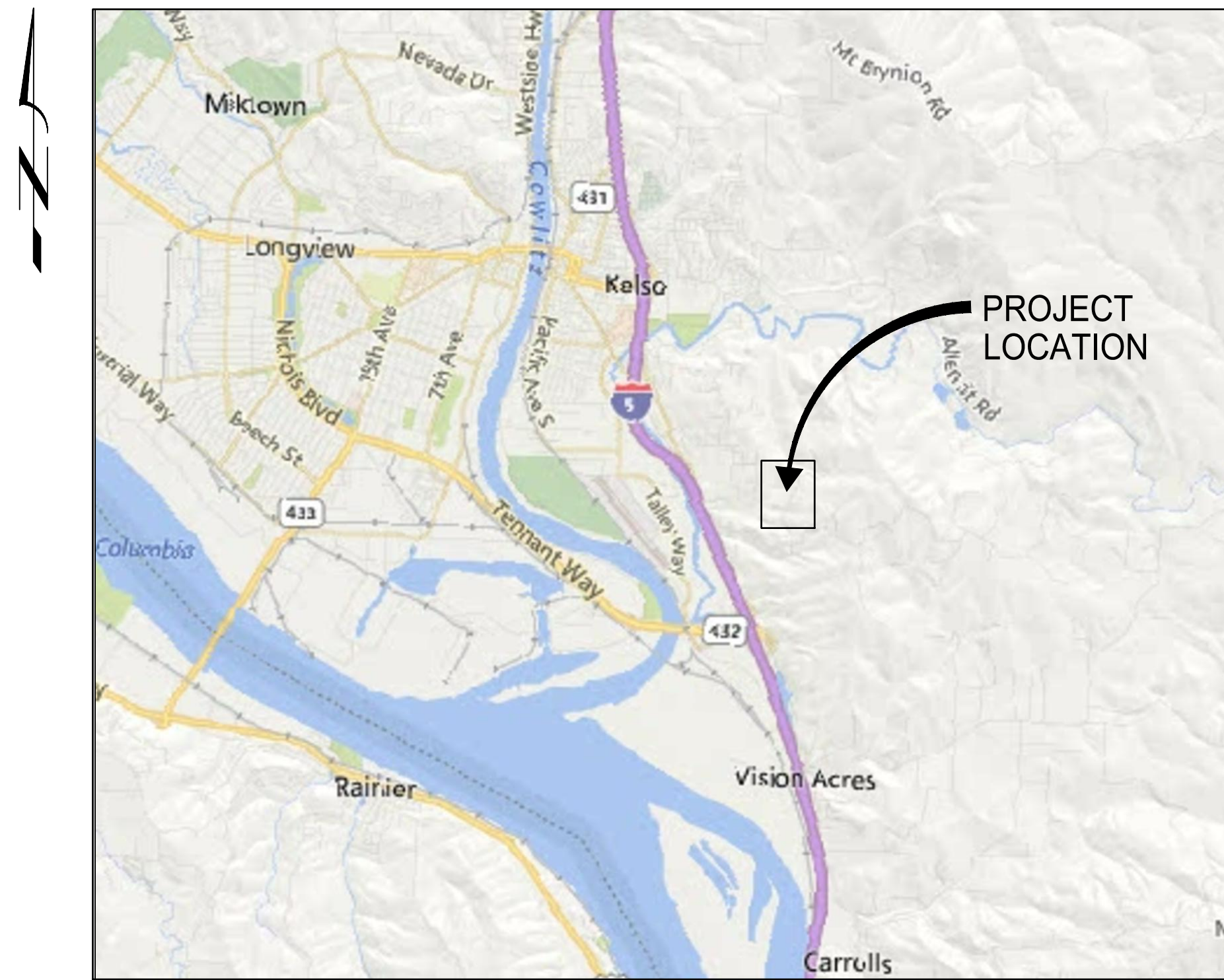
1. 2' MINIMUM BUFFER SHALL BE RECOGNIZED BETWEEN THE SUBJECT PROPERTY LINES AND ALL GRADING DISTURBANCE RELATED TO THIS PROJECT EXCEPT WHERE A SIGNED LETTER OF AGREEMENT IS SUBMITTED TO COWLITZ COUNTY FOR GRADING WITHIN 2' OF THE PROPERTY LINE FROM THE PROPERTY OWNER ABUTTING
2. PRIOR TO PLACEMENT OF EMBANKMENT FILL, OR ROAD BASE COURSE, EXPOSED SUBGRADE SHALL BE PROOF ROLLED UNDER THE OBSERVATION OF THE GEOTECHNICAL ENGINEER.
3. ALL SOFT OR YIELDING ZONES SHALL BE OVER EXCAVATED AND REPLACED WITH STRUCTURAL FILL.

PROJECT NOTES:

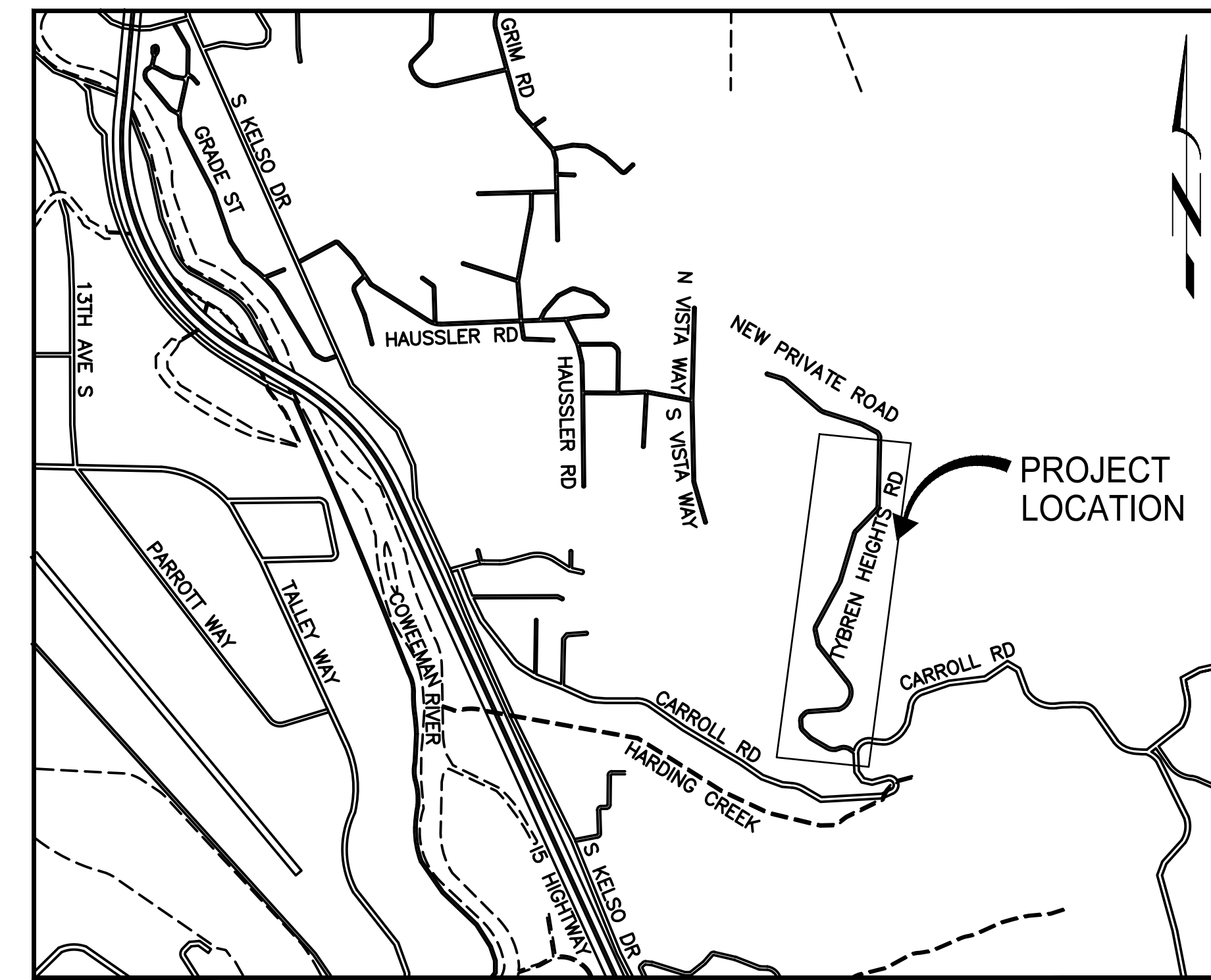
1. THIS GRADING PLAN IS TO DOCUMENT WORK REQUIRED TO UPGRADE THE EXISTING HISTORICAL LOGGING ROAD TO SUPPORT ACCESS TO THE TYBREN HEIGHTS DEVELOPMENT.
2. HISTORICAL INFORMATION WAS COLLECTED AND FIELD VERIFIED BASED ON TESTIMONY AND DOCUMENTATION OF THE OWNER AND SURVEYOR
3. SINCE 2005, MAINTENANCE HAS BEEN PERFORMED BUT NOT DOCUMENTED. IN 2014-2015 LONGVIEW FIBER ADDED AND DRESSED ROCK TO SUPPORT THEIR LOGGING OPERATION

SHEET INDEX

SHEET NO.	SHEET TITLE
C-01	COVER SHEET
C-02	OVERALL ROAD PLAN
C-03	ROAD PLAN & PROFILE STA 0+00 - 19+00
C-04	ROAD PLAN & PROFILE STA 19+00 - 37+32
C-05	CROSS SECTION STA 13+00 - 24+00
C-06	CROSS SECTION STA 25+00 - 37+00
C-07	CULVERT SECTIONS
C-08	DETAILS & EROSION CONTROL NOTES



2 VICINITY MAP
C-01 SCALE: 1" = 5000'



1 ROAD MAP
C-01 SCALE: NTS

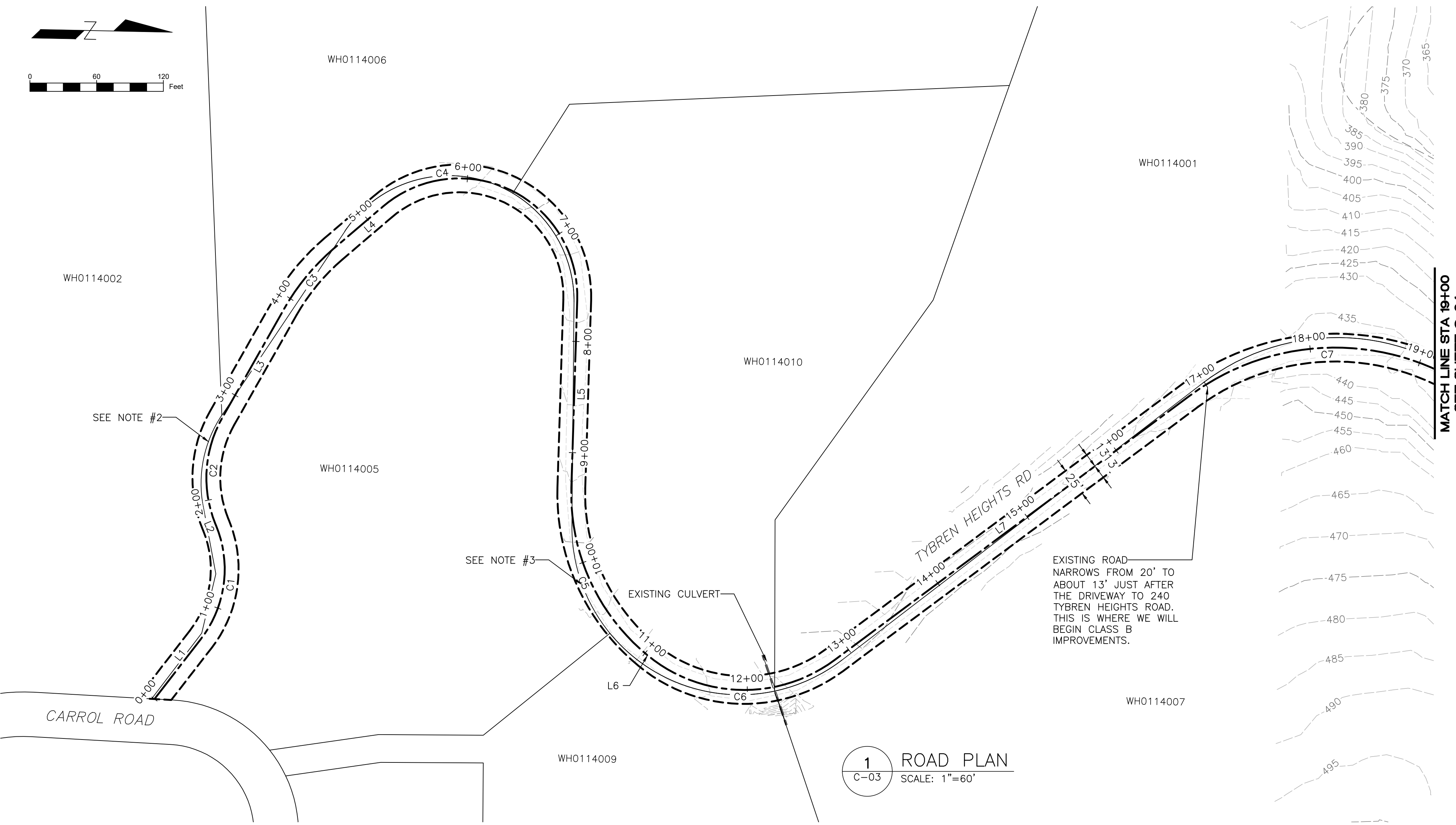
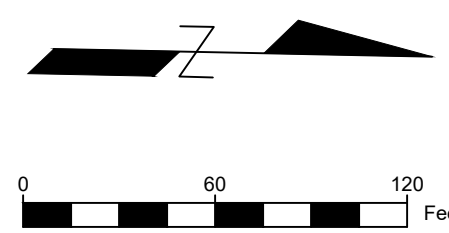


TYBREN HEIGHTS ROAD AS BUILTS GRADING PLAN
(CITY OF KELSO, WASHINGTON)

COVER SHEET

PROJECT: 19-20	DRAWN: AXA	CHECKED: AF	DATE: 2020-31-01	NAME:
REVISIONS:				
			1/31/20	

Preliminary
01/31/2020 11:54:16 AM



1 ROAD PLAN
C-03 SCALE: 1"=60'

NOTES:

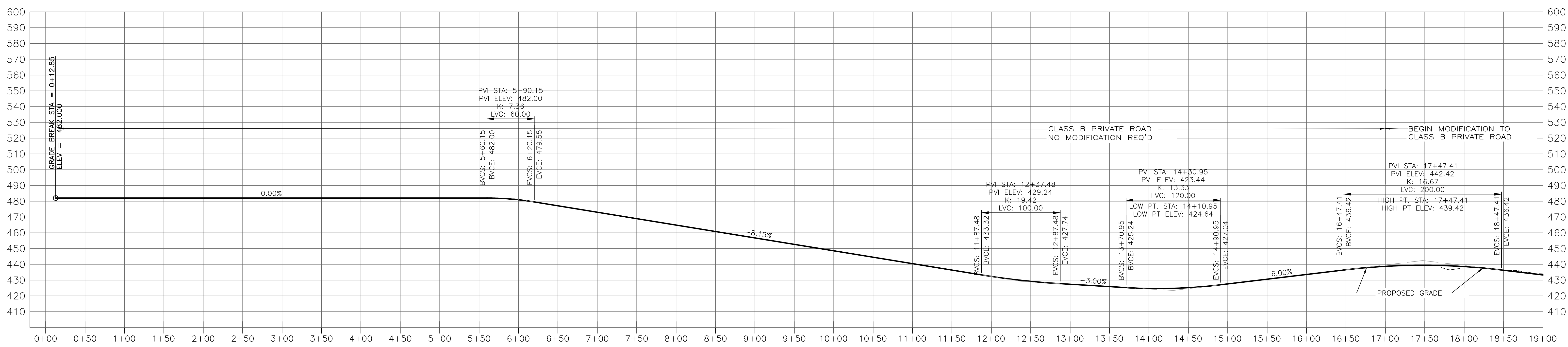
1. PROPOSED HORIZONTAL AND VERTICAL ROAD CENTERLINE ALIGNMENTS ARE INTENDED TO BE A LINE OF BEST FIT WITH EXISTING ROAD SURFACE. PROPOSED IMPROVEMENT TO TYBREN HEIGHTS ROAD IS INTENDED TO FOLLOW EXISTING ROAD SURFACE. MINOR DEVIATIONS FROM THESE PROPOSED ALIGNMENTS ARE ALLOWED TO BE PERFORMED IN FIELD BY CONTRACTOR. MAJOR DEVIATIONS WILL BE AT THE DISCRETION OF ENGINEER OR CITY INSPECTOR. ALL DEVIATIONS ARE REQUIRED TO BE AS-BUILT PER CITY REQUIREMENTS.
2. AFTER ROAD EVALUATION THIS IS ALREADY A CLASS "A" ROADWAY FROM STATION 0+00 TO APPROXIMATELY 7+00. NO IMPROVEMENT WILL BE REQUIRED UNTIL APPROXIMATELY 17+00.
3. AFTER ROAD EVALUATION THIS IS ALREADY A CLASS "B" ROADWAY FROM 7+00 TO APPROXIMATELY 17+00. NO IMPROVEMENT WILL BE REQUIRED UNTIL APPROXIMATELY 17+00. "

LINE TABLE: ALIGNMENTS

LINE #	LENGTH	DIRECTION
L1	67.92	N53° 23' 38.54"W
L2	2.05	S66° 37' 17.66"W
L3	113.64	N61° 34' 45.27"W
L4	40.27	N41° 41' 07.89"W
L5	168.84	S89° 22' 40.84"E
L6	0.50	N38° 16' 10.68"E
L7	398.04	N37° 48' 57.24"W

CURVE TABLE: ALIGNMENTS

CURVE #	RADIUS	LENGTH	CHORD DIRECTION
C1	103.00	107.83	N83° 23' 10.44"W
C2	109.00	98.54	N87° 28' 43.81"W
C3	200.00	69.44	N51° 37' 56.58"W
C4	106.00	244.78	N24° 28' 05.64"E
C5	187.46	171.29	N64° 26' 44.92"E
C6	136.40	181.14	N0° 13' 36.72"E
C7	218.76	265.86	N3° 00' 00.84"W

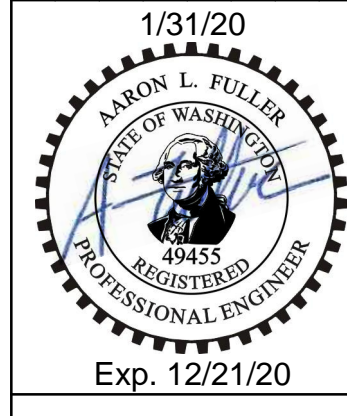


2 ROAD PROFILE
C-03 SCALE: 1"=60' HORZ
1"=30' VERT

TYBREN HEIGHTS ROAD AS BUILTS GRADING PLAN
(CITY OF KELSO, WASHINGTON)

ROAD PLAN & PROFILE STA 0+00 - 19+00

PROJECT: 19-20
DRAWN: AXA
CHECKED: AF
DATE: 2020-31-01
NAME:



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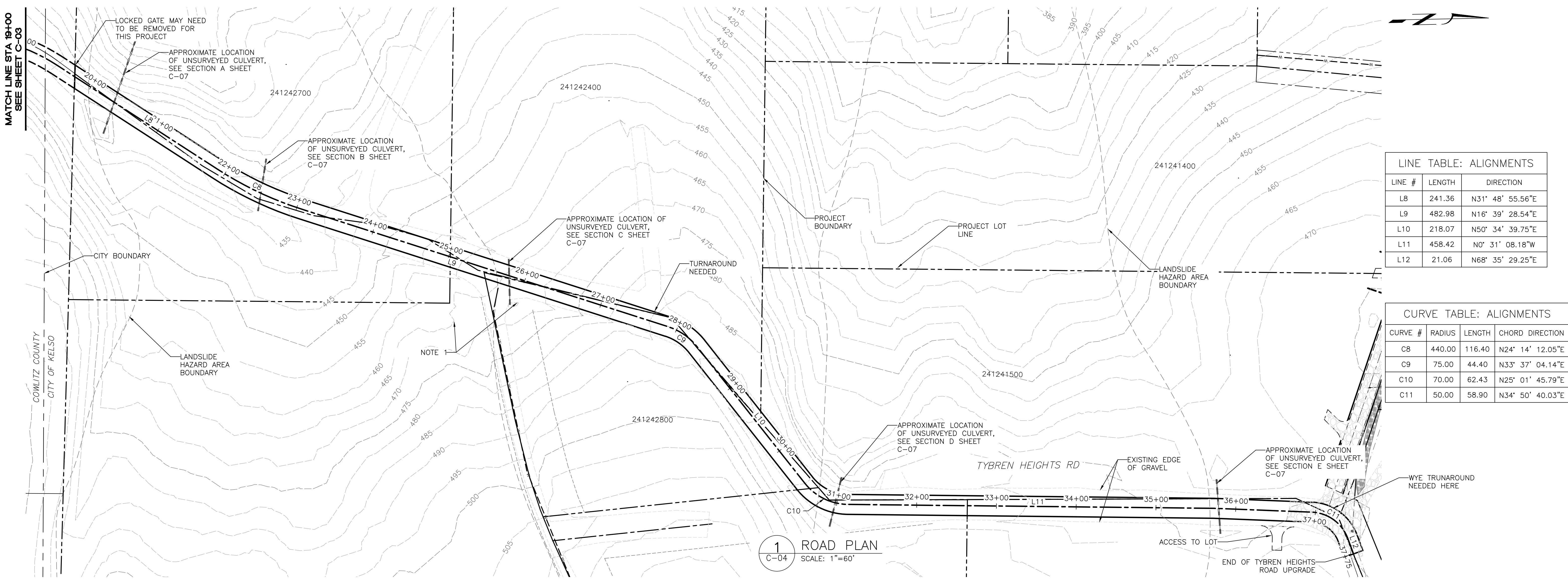


FILE: C-IV-03 ROAD PLAN & PROFILE SAVE DATE: 1/31/2020 8:32:04 AM PLOT DATE: 1/31/2020 8:32:48 AM



TYBREN HEIGHTS ROAD AS BUILTS GRADING PLAN
(CITY OF KELSO, WASHINGTON)

ROAD PLAN & PROFILE STA 19+00 - 37+32



LINE TABLE: ALIGNMENTS

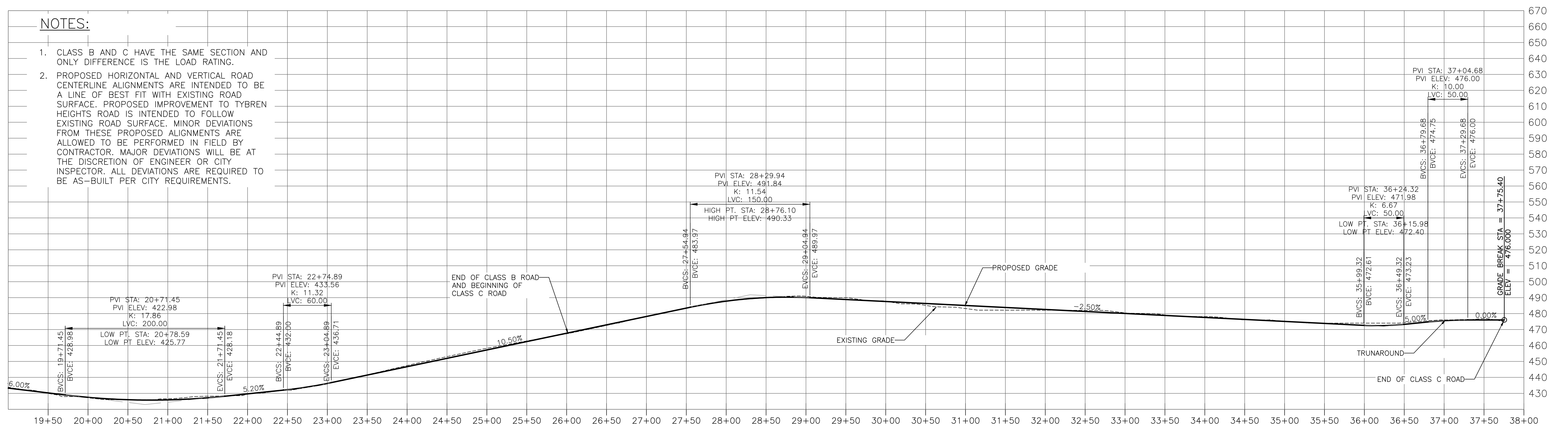
LINE #	LENGTH	DIRECTION
L8	241.36	N31° 48' 55.56"E
L9	482.98	N16° 39' 28.54"E
L10	218.07	N50° 34' 39.75"E
L11	458.42	N0° 31' 08.18"W
L12	21.06	N68° 35' 29.25"E

CURVE TABLE: ALIGNMENTS

CURVE #	RADIUS	LENGTH	CHORD DIRECTION
C8	440.00	116.40	N24° 14' 12.05"E
C9	75.00	44.40	N33° 37' 04.14"E
C10	70.00	62.43	N25° 01' 45.79"E
C11	50.00	58.90	N34° 50' 40.03"E

1 ROAD PLAN
C-04 SCALE: 1"=60'

- NOTES:
- CLASS B AND C HAVE THE SAME SECTION AND ONLY DIFFERENCE IS THE LOAD RATING.
 - PROPOSED HORIZONTAL AND VERTICAL ROAD CENTERLINE ALIGNMENTS ARE INTENDED TO BE A LINE OF BEST FIT WITH EXISTING ROAD SURFACE. PROPOSED IMPROVEMENT TO TYBREN HEIGHTS ROAD IS INTENDED TO FOLLOW EXISTING ROAD SURFACE. MINOR DEVIATIONS FROM THESE PROPOSED ALIGNMENTS ARE ALLOWED TO BE PERFORMED IN FIELD BY CONTRACTOR. MAJOR DEVIATIONS WILL BE AT THE DISCRETION OF ENGINEER OR CITY INSPECTOR. ALL DEVIATIONS ARE REQUIRED TO BE AS-BUILT PER CITY REQUIREMENTS.



2 ROAD PROFILE
C-04 SCALE: 1"=60' HORIZ
1"=30' VERT

Preliminary
01/31/2020 11:54:42 AM

REVISIONS:

NO.	DATE	DESCRIPTION
1	1/31/20	ISSUED FOR PERMIT

PROJECT: 19-20
DRAWN: AXA
CHECKED: AF
DATE: 2020-01-01
NAME:

1/31/20
ARON L. FULLER
STATE OF WASHINGTON
PROFESSIONAL ENGINEER
Exp. 12/21/20

NOTES:

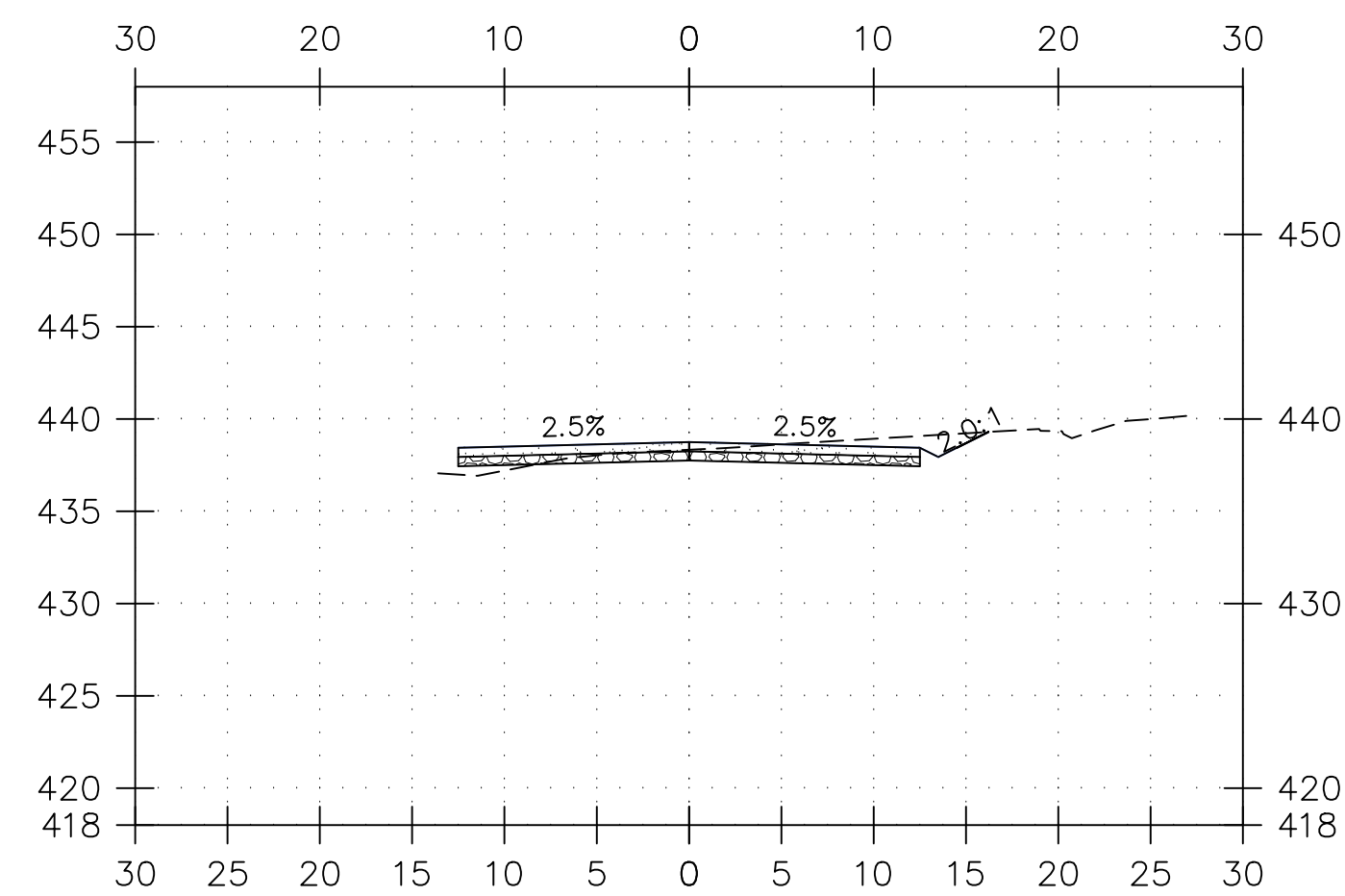
1. PROPOSED ROAD CROSS SECTIONS ARE INTENDED TO BE BEST FIT WITH EXISTING ROAD SURFACE. PROPOSED IMPROVEMENT TO TYBREN HEIGHTS ROAD IS INTENDED TO WIDEN EXISTING ROAD SURFACE. MINOR DEVIATIONS FROM THESE PROPOSED SECTIONS ARE ALLOWED TO BE PERFORMED IN FIELD BY CONTRACTOR. MAJOR DEVIATIONS WILL BE AT THE DISCRETION OF ENGINEER OR CITY INSPECTOR. ALL DEVIATIONS ARE REQUIRED TO BE AS-BUILT PER CITY REQUIREMENTS.



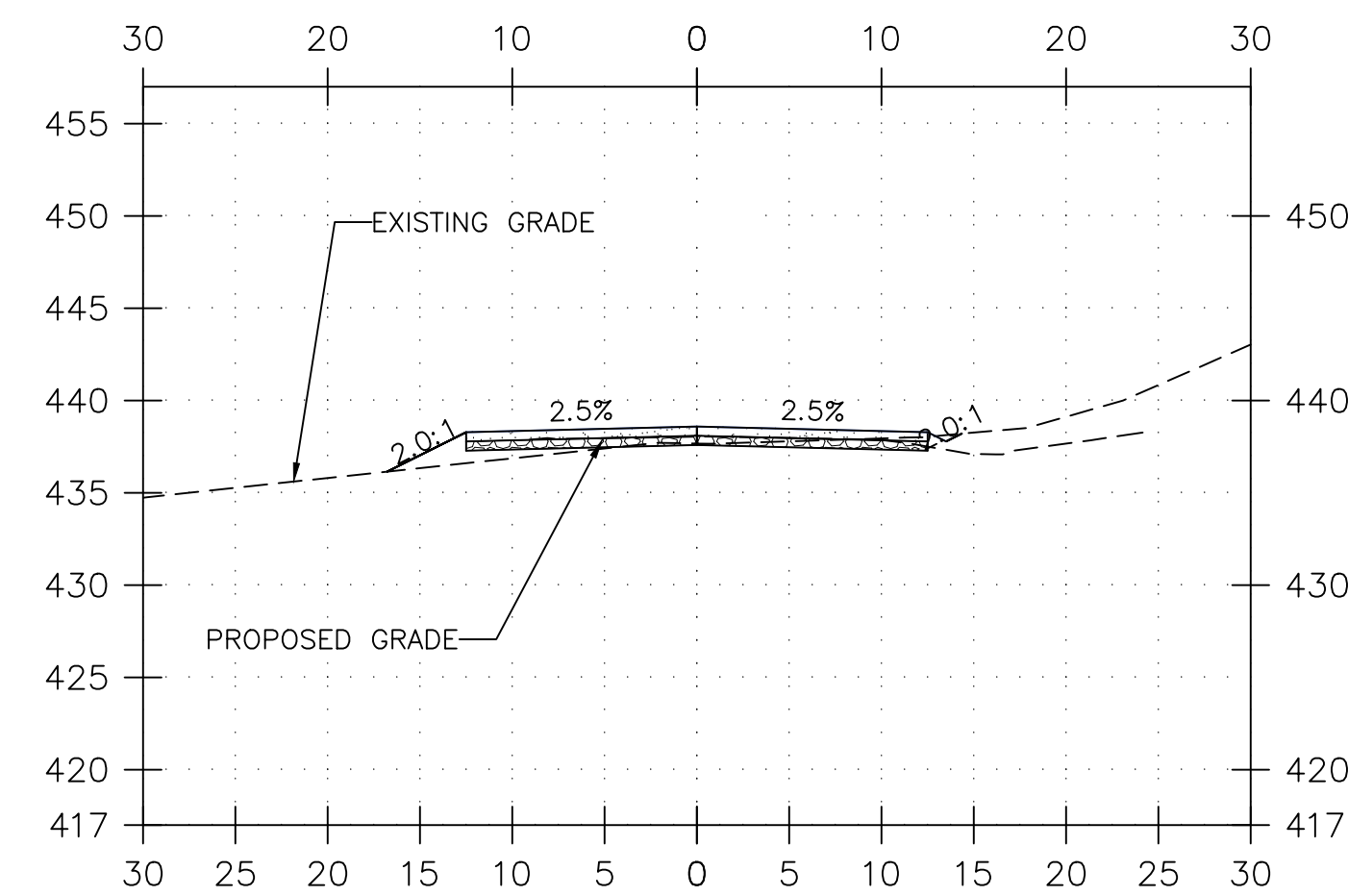
TYBREN HEIGHTS ROAD AS BUILTS GRADING PLAN
(CITY OF KELSO, WASHINGTON)

CROSS SECTION STA 13+00 - 24+00

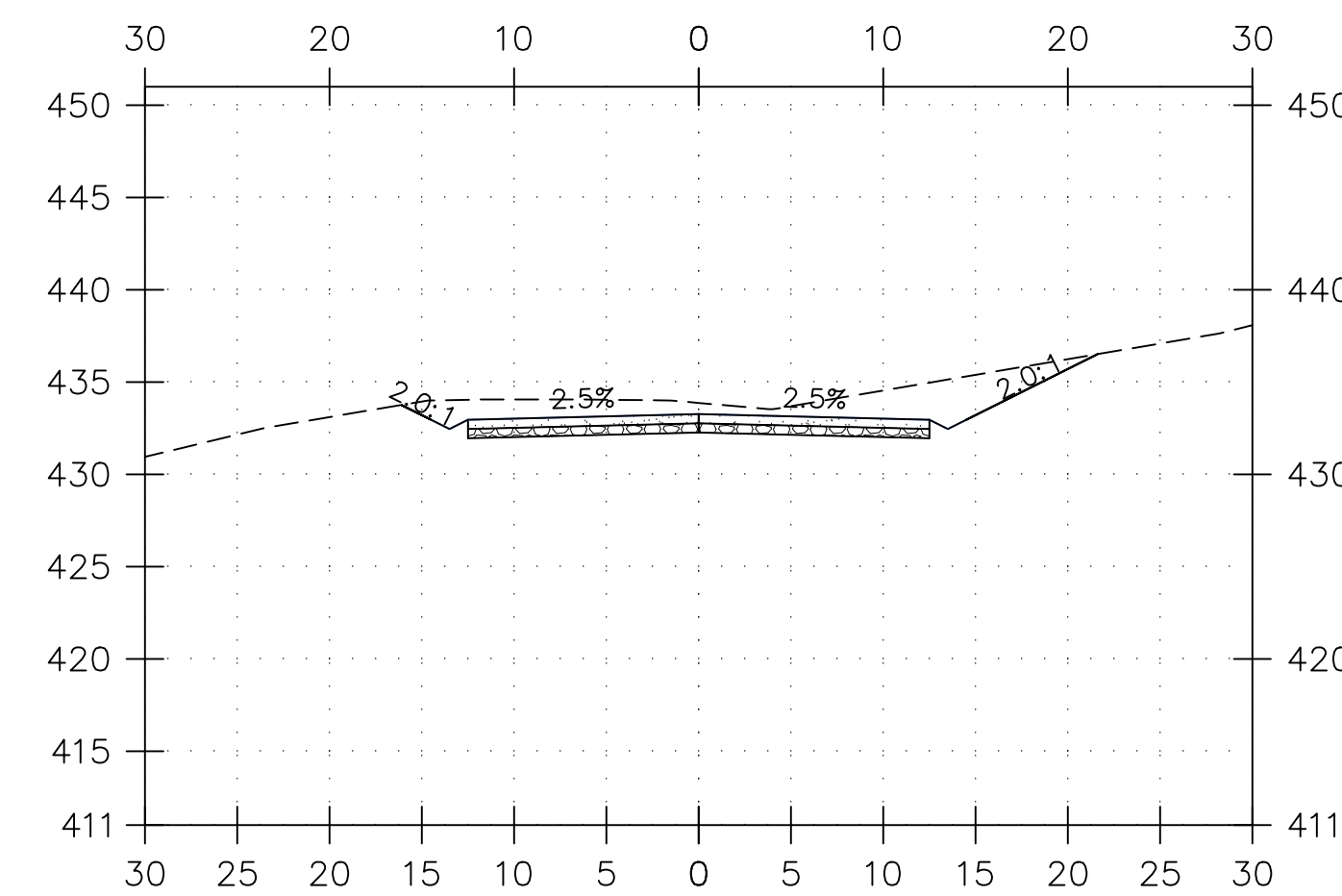
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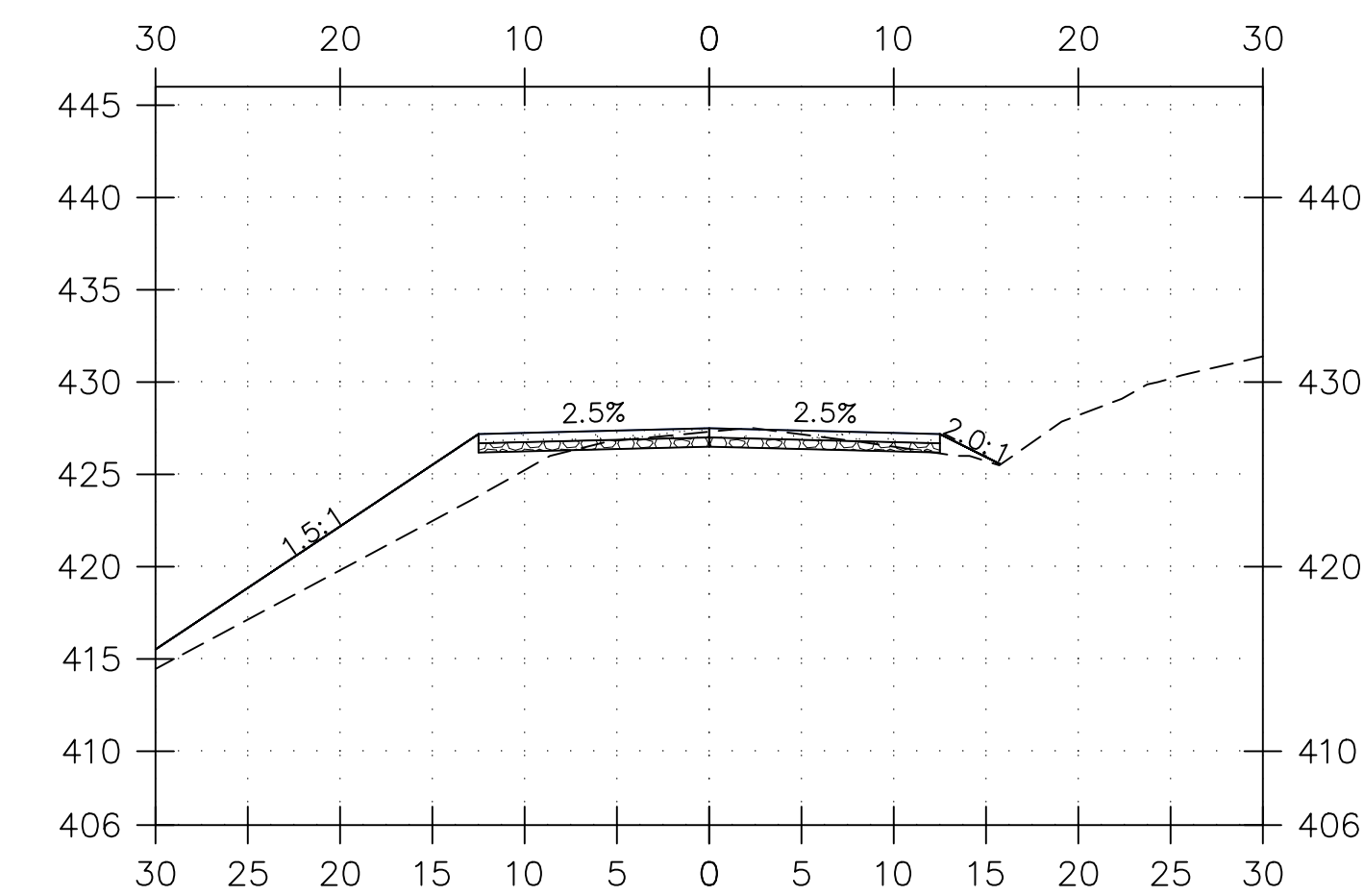
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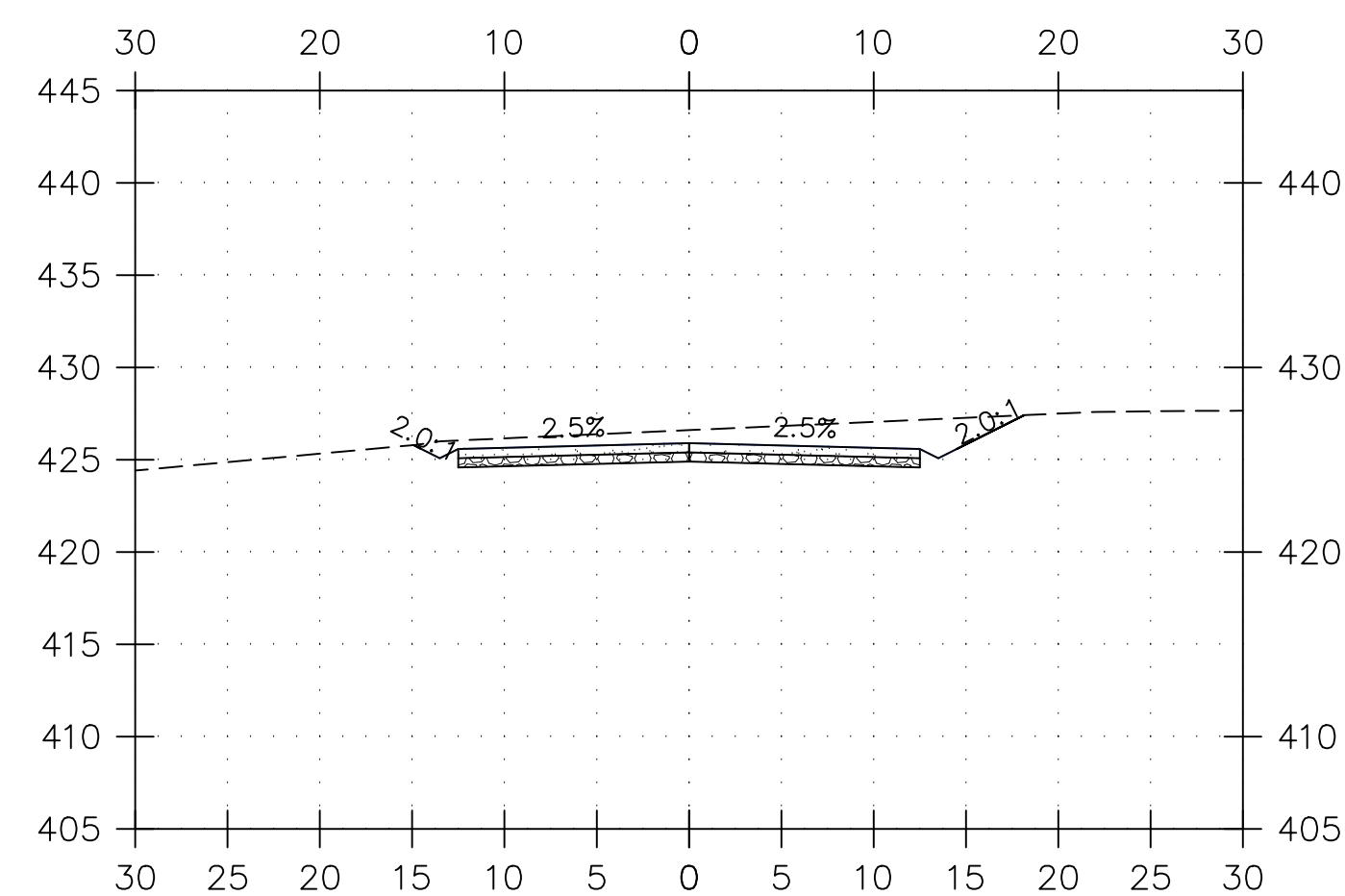
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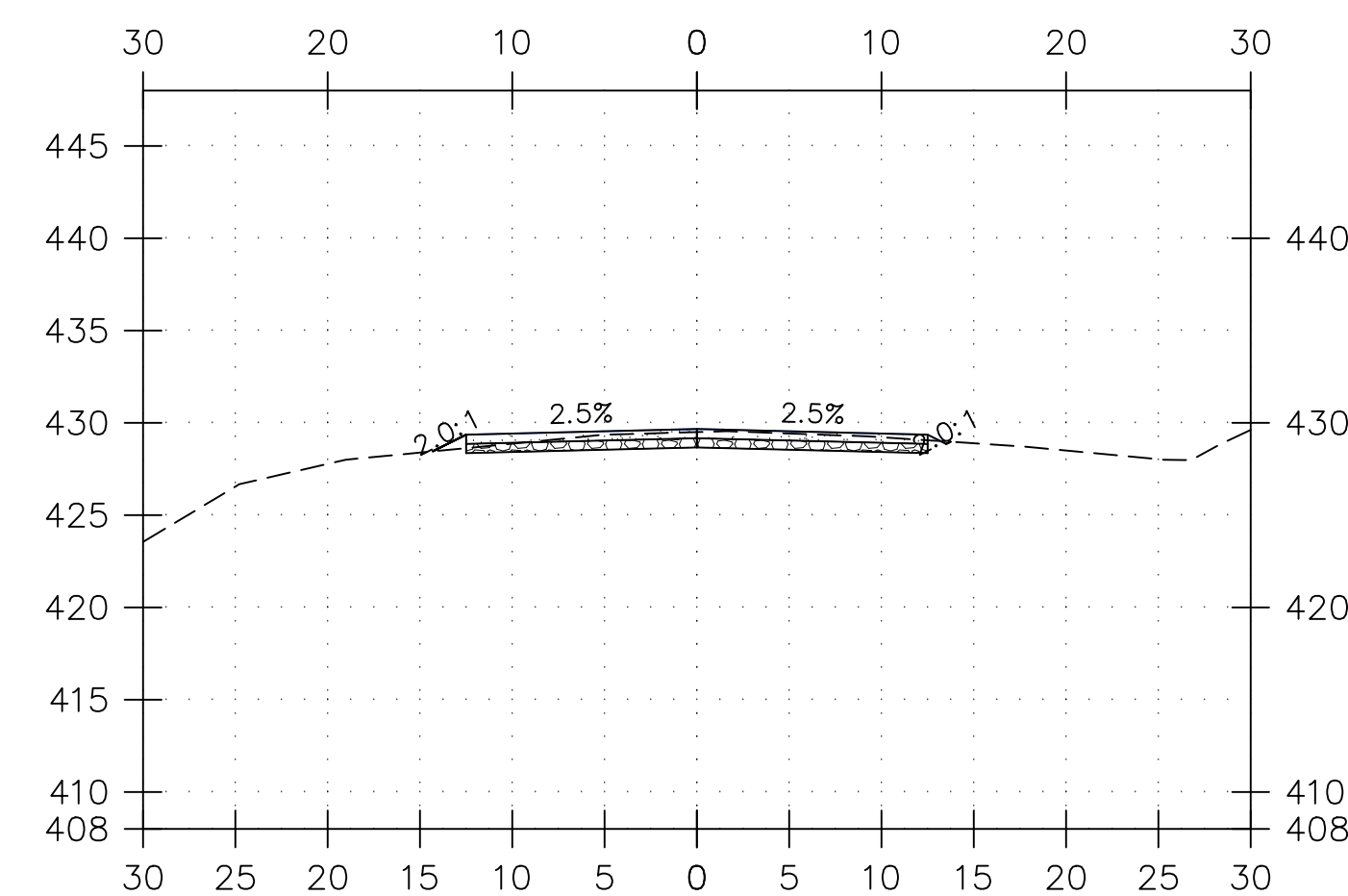
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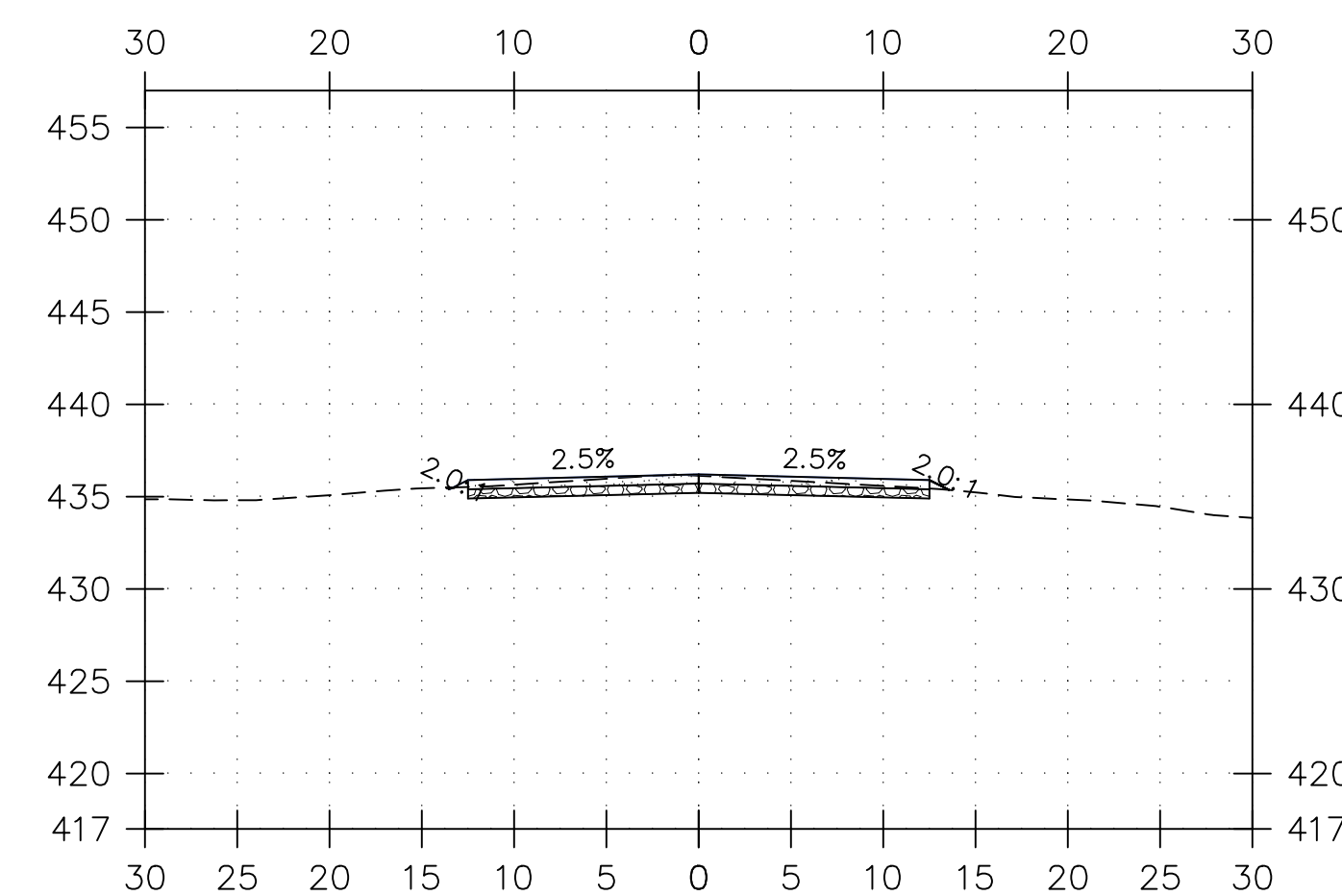
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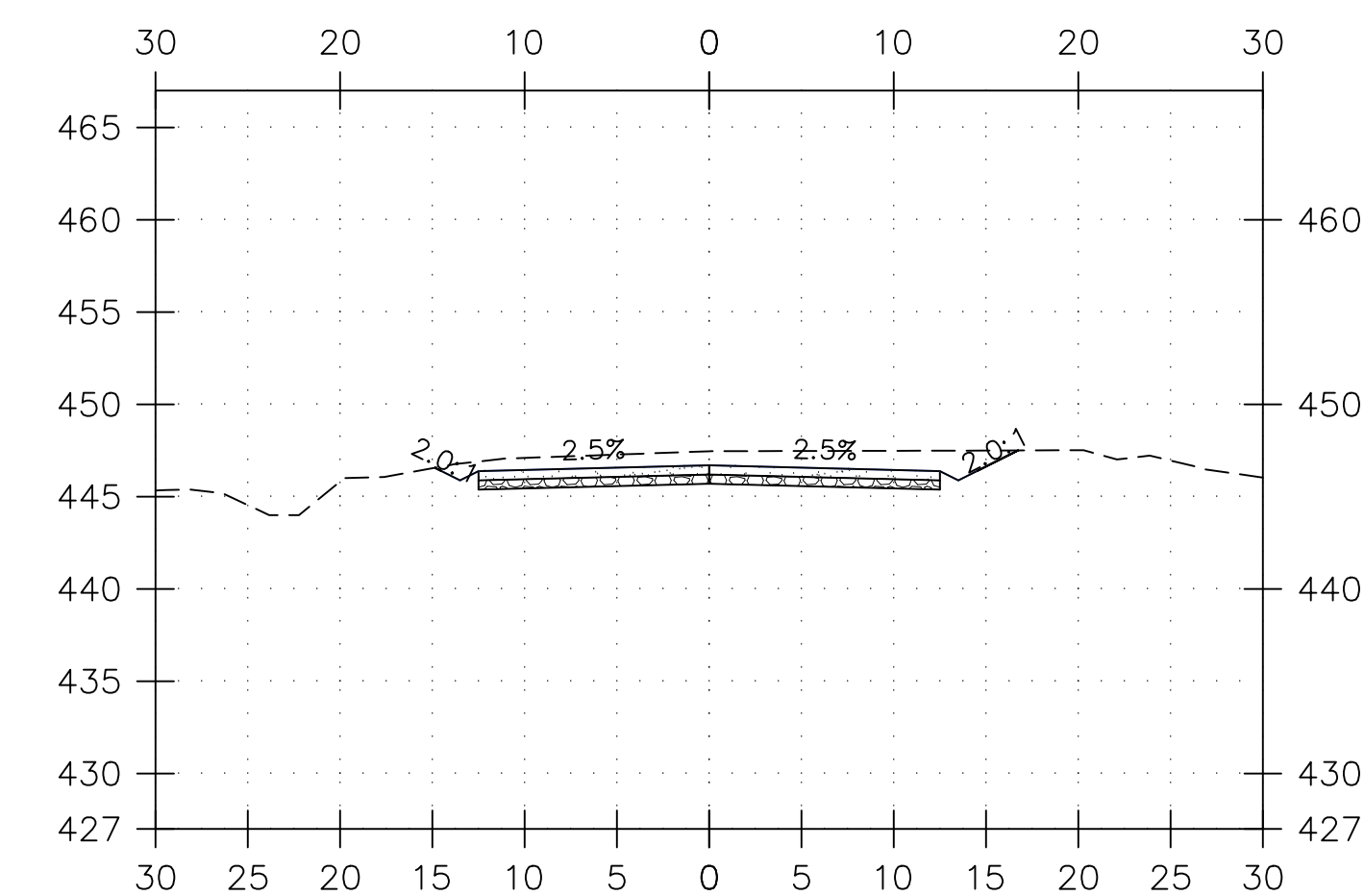
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CROSS SECTION
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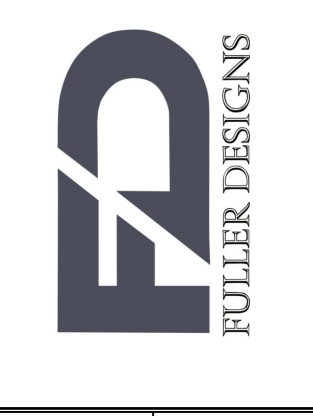


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SCALE: 1"=10'

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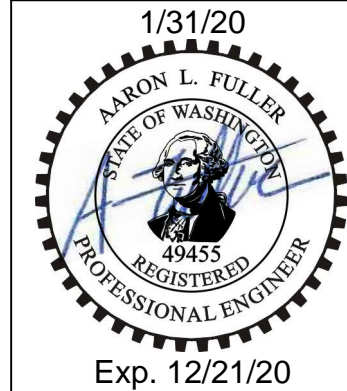


TYBREN HEIGHTS ROAD AS BUILTS GRADING PLAN
(CITY OF KELSO, WASHINGTON)

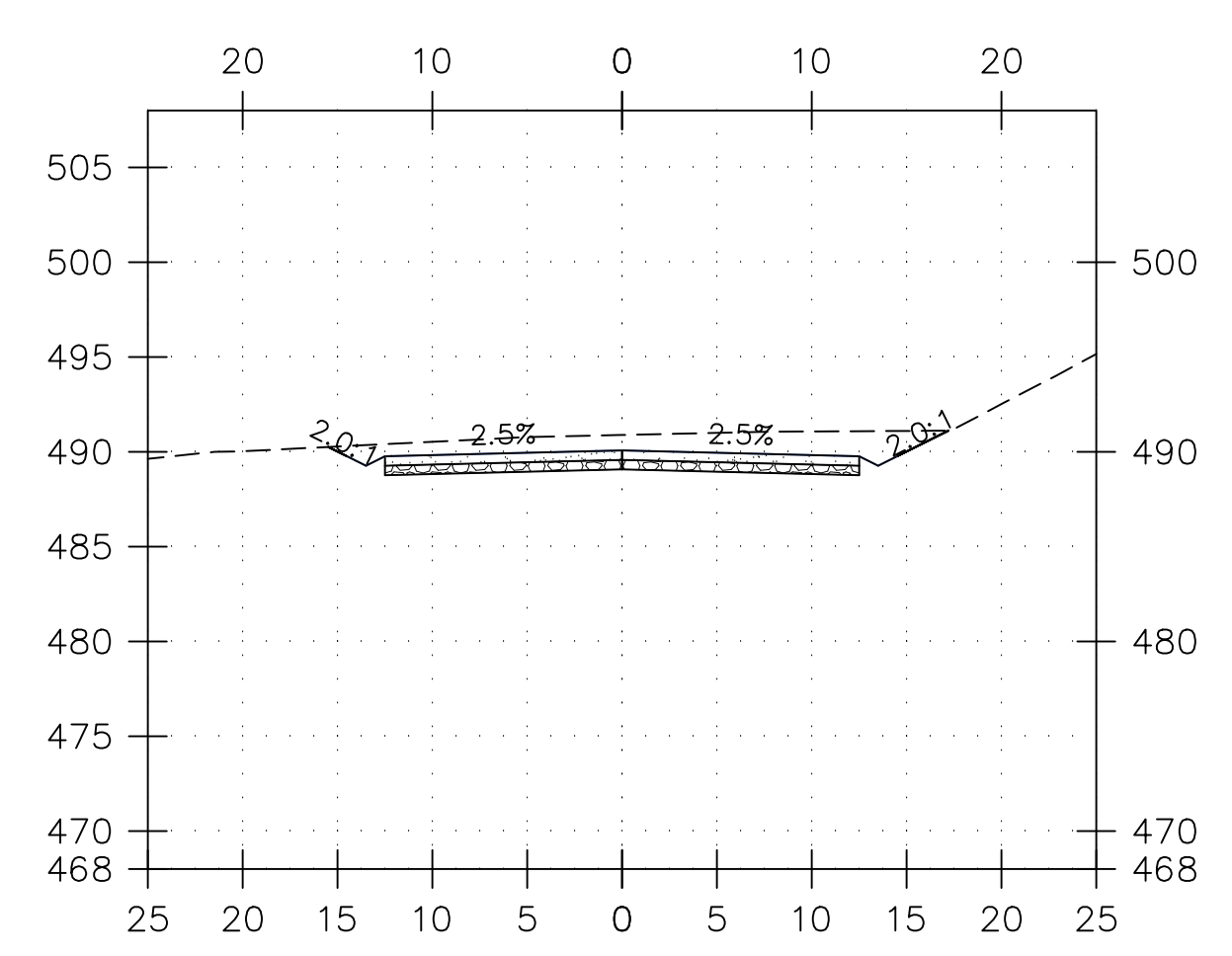
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PROJECT: 19-20	DRAWN: AXA	CHECKED: AF	DATE: 2020-31-01	NAME:
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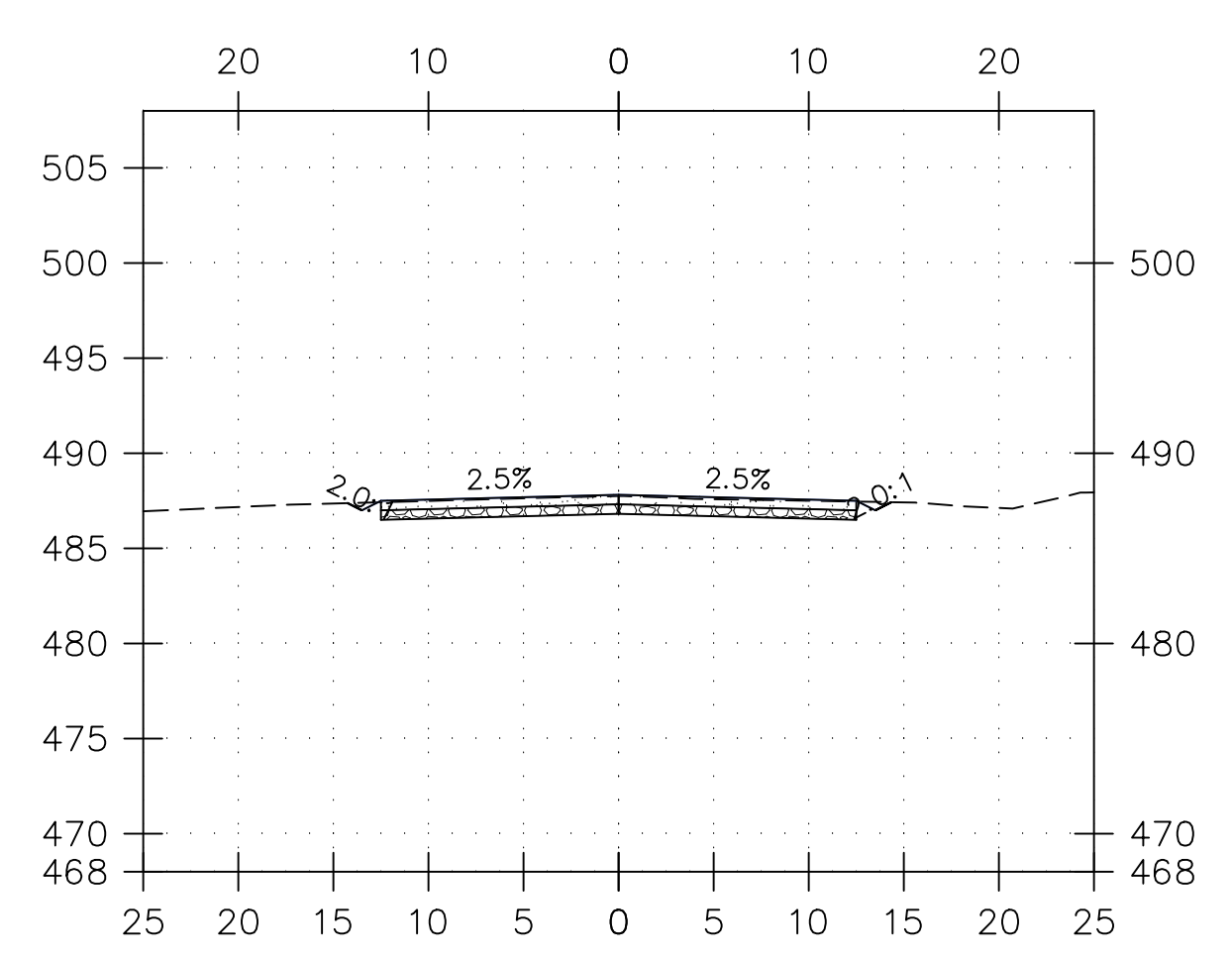
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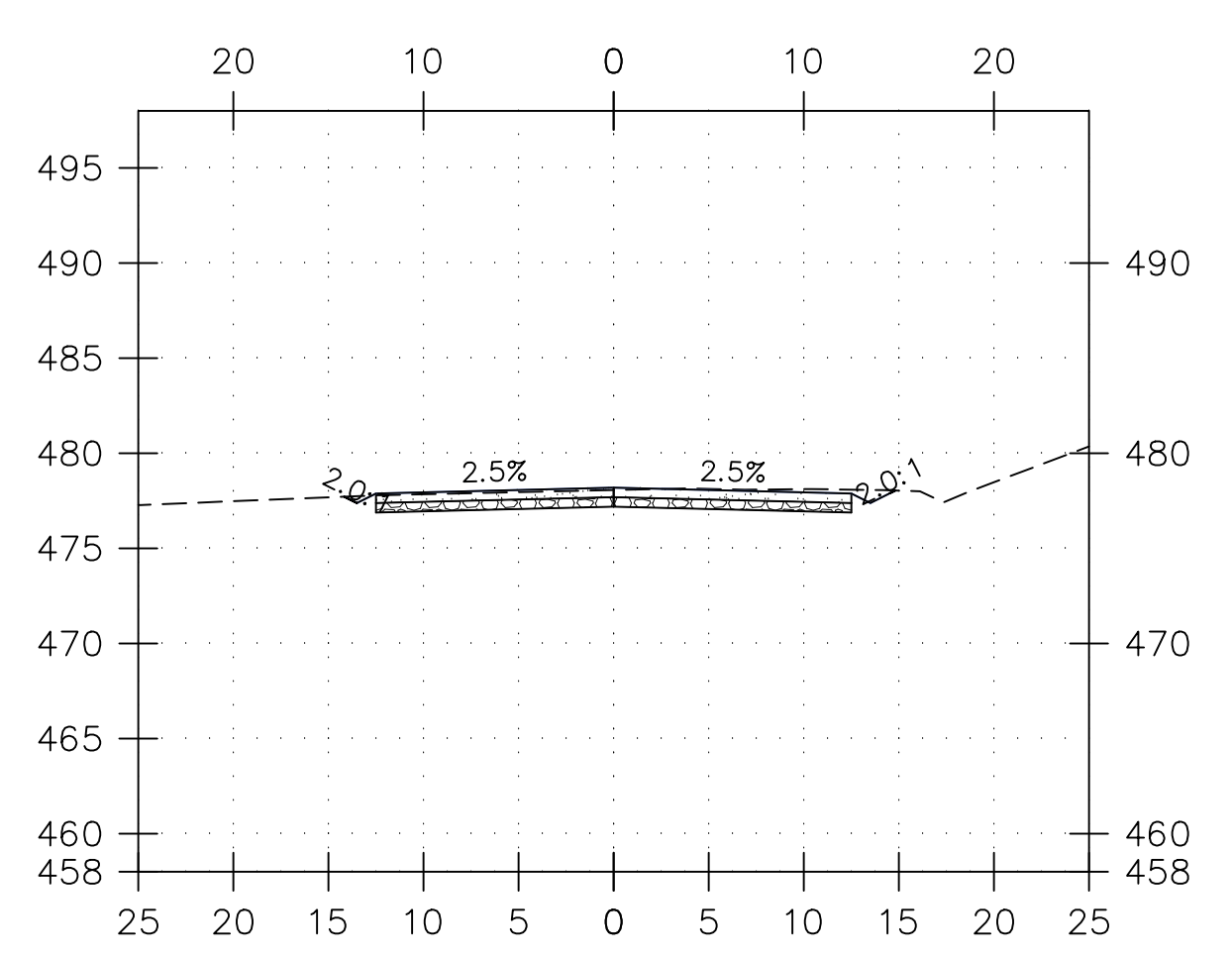
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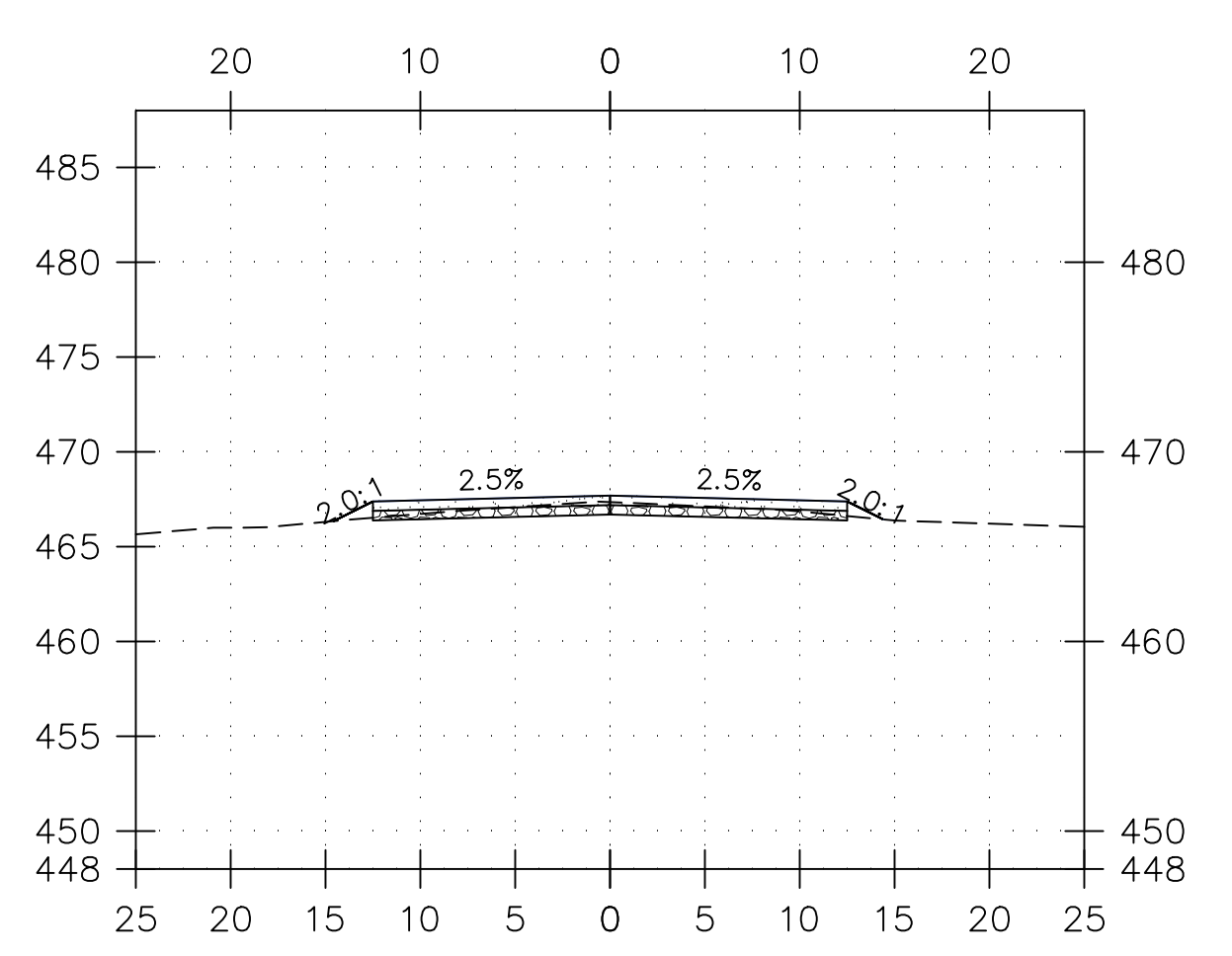
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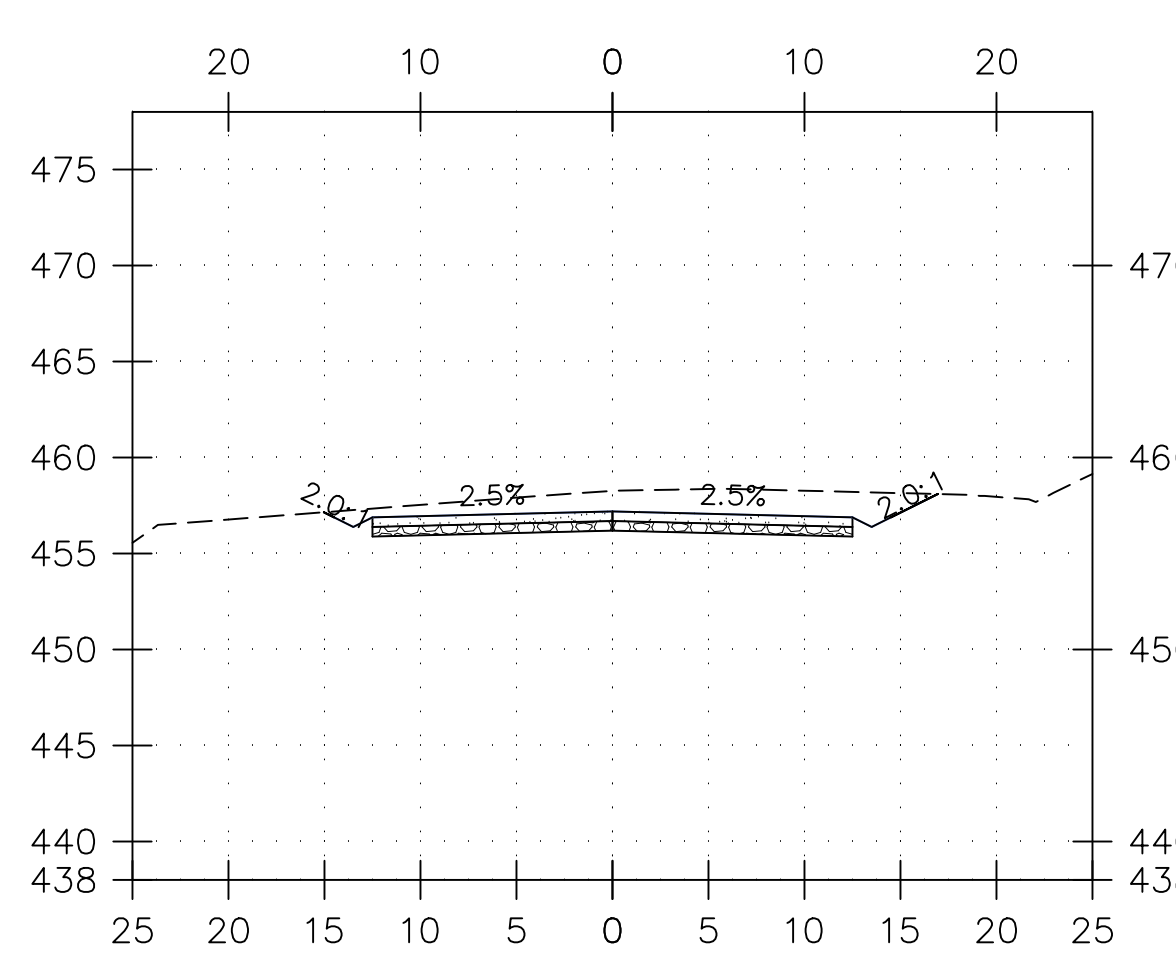
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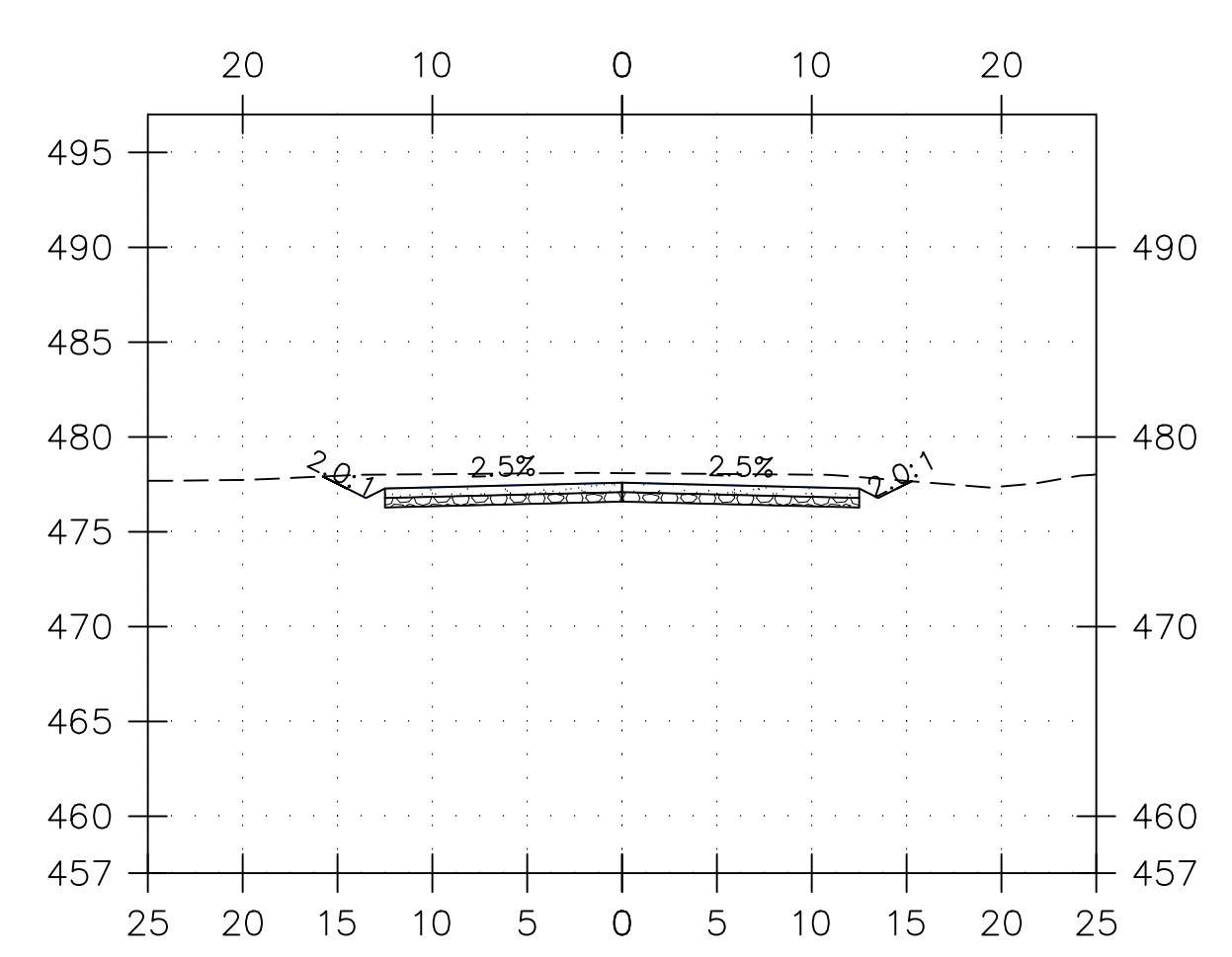
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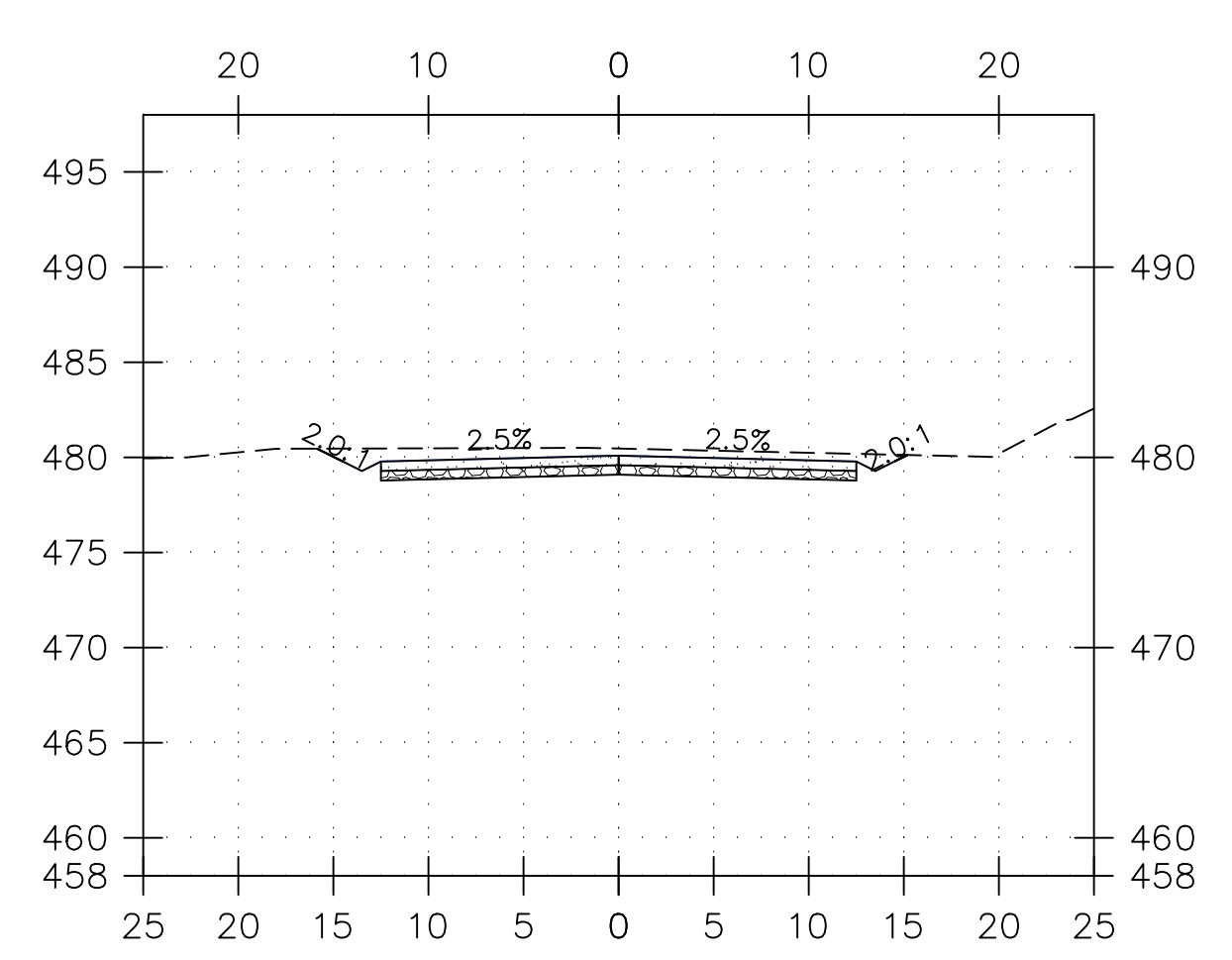
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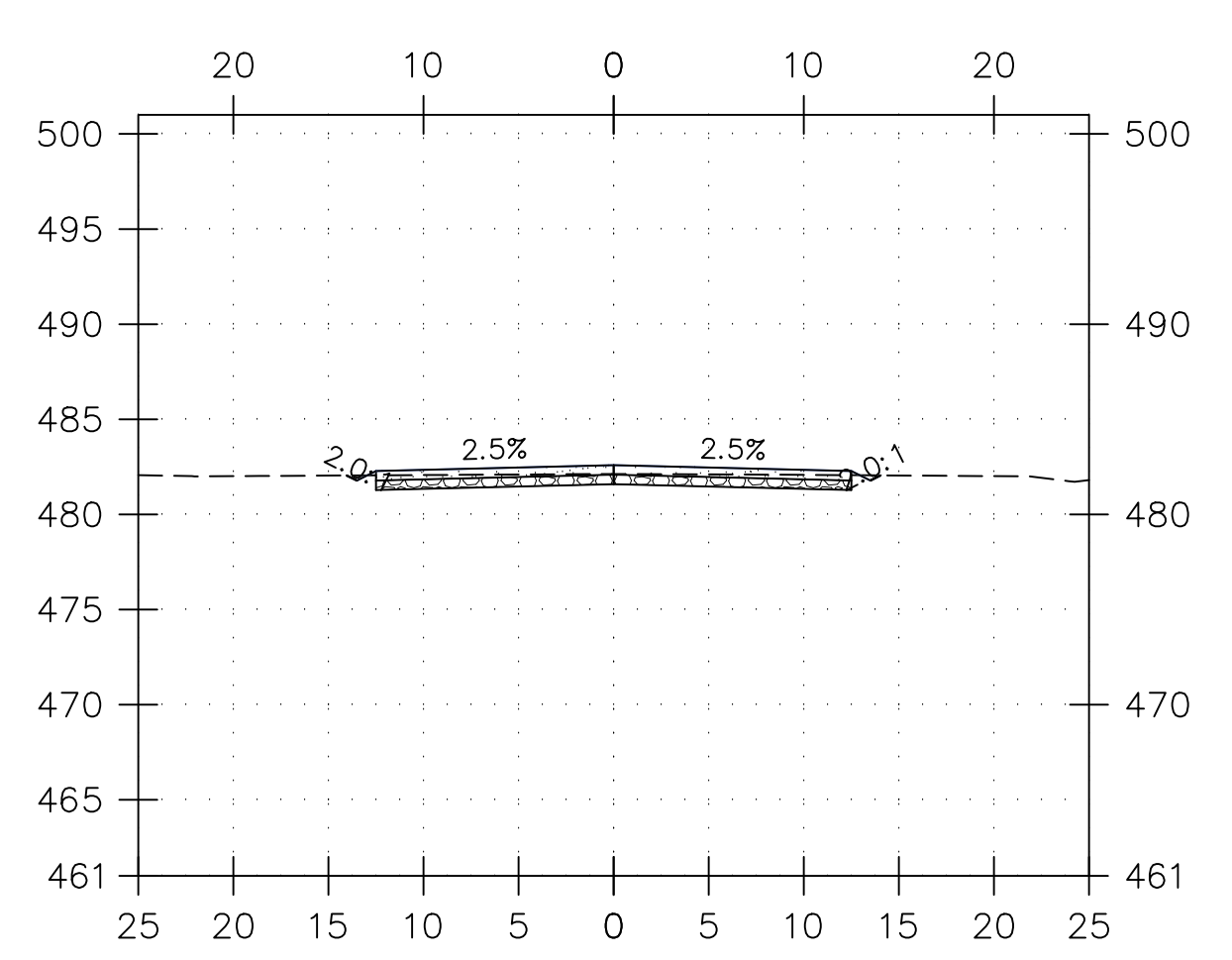
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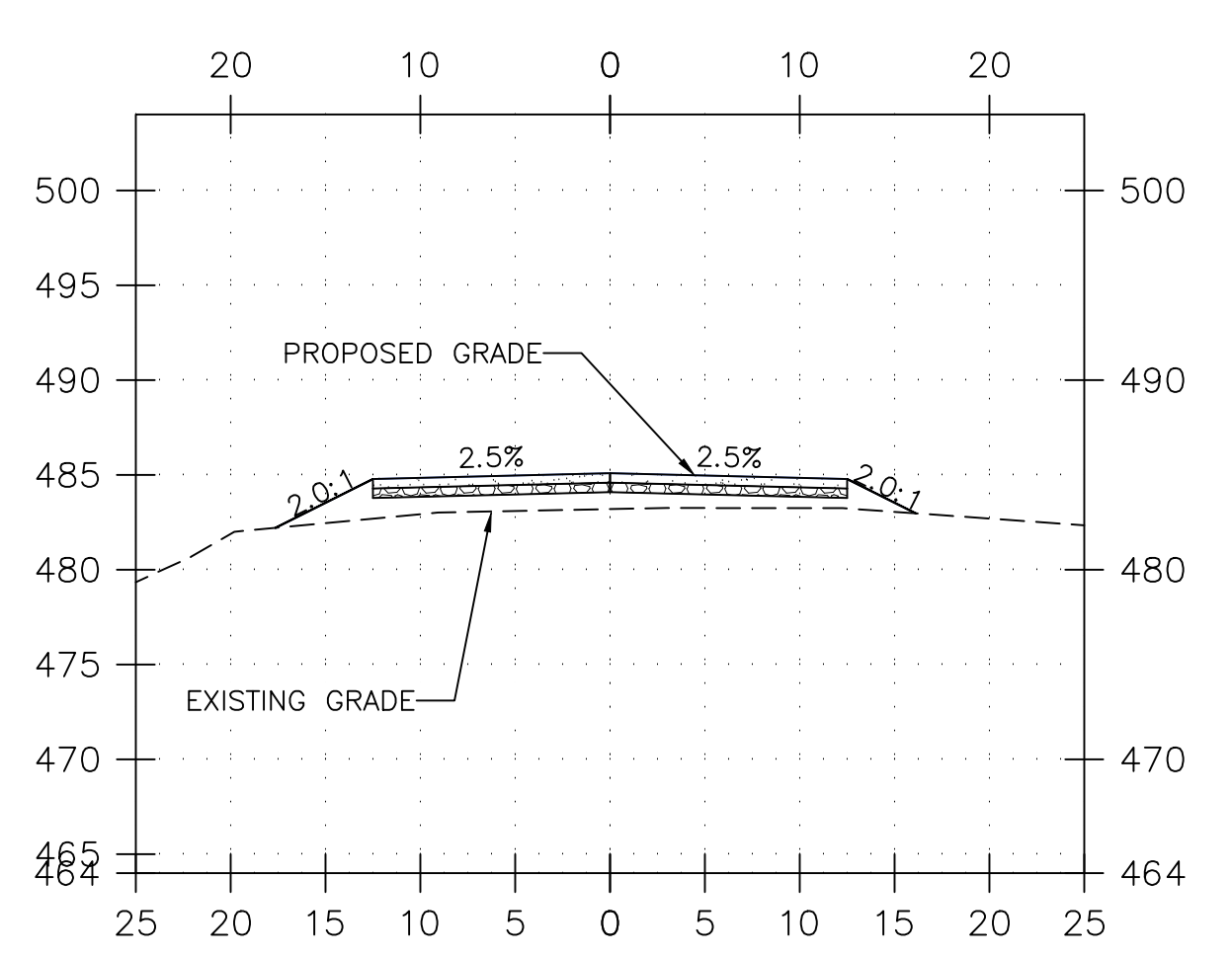
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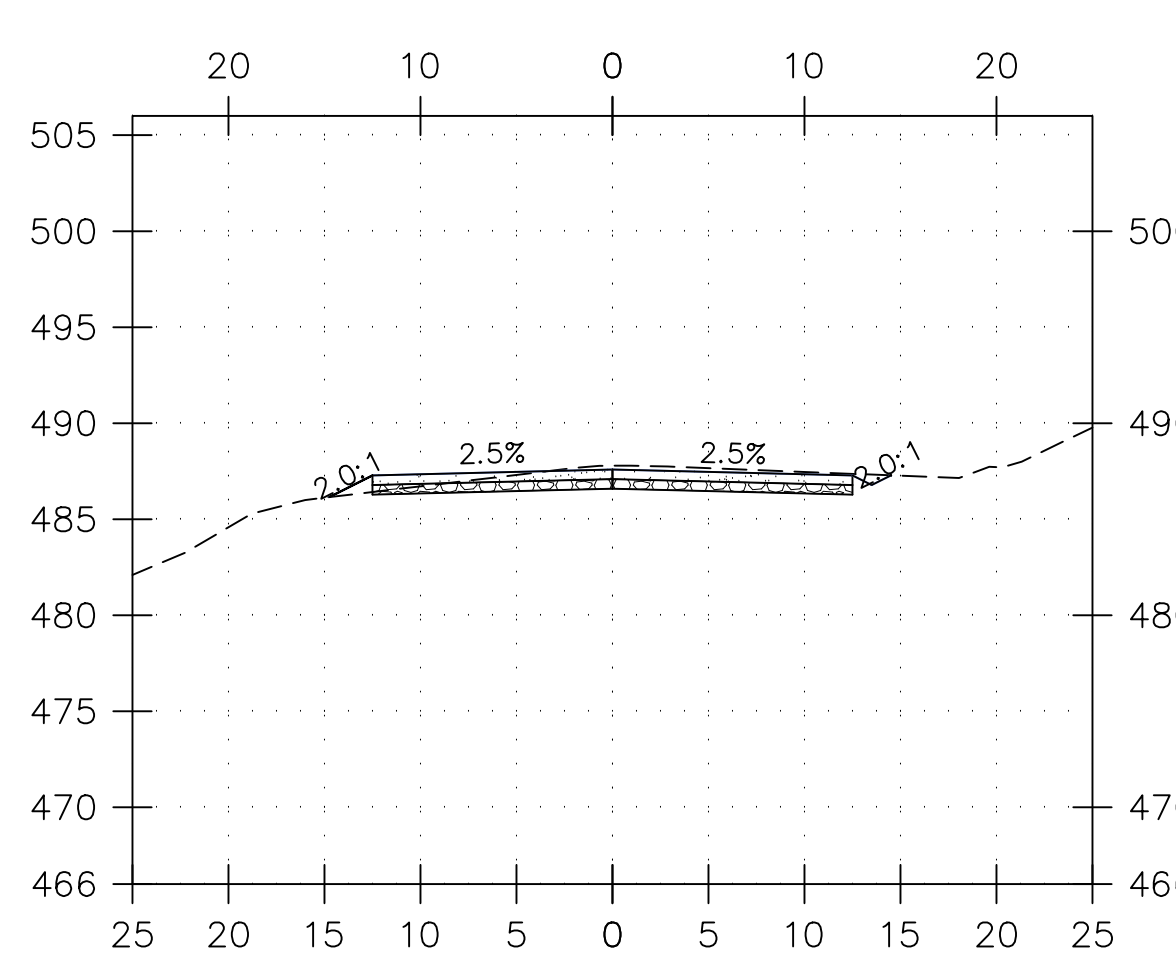
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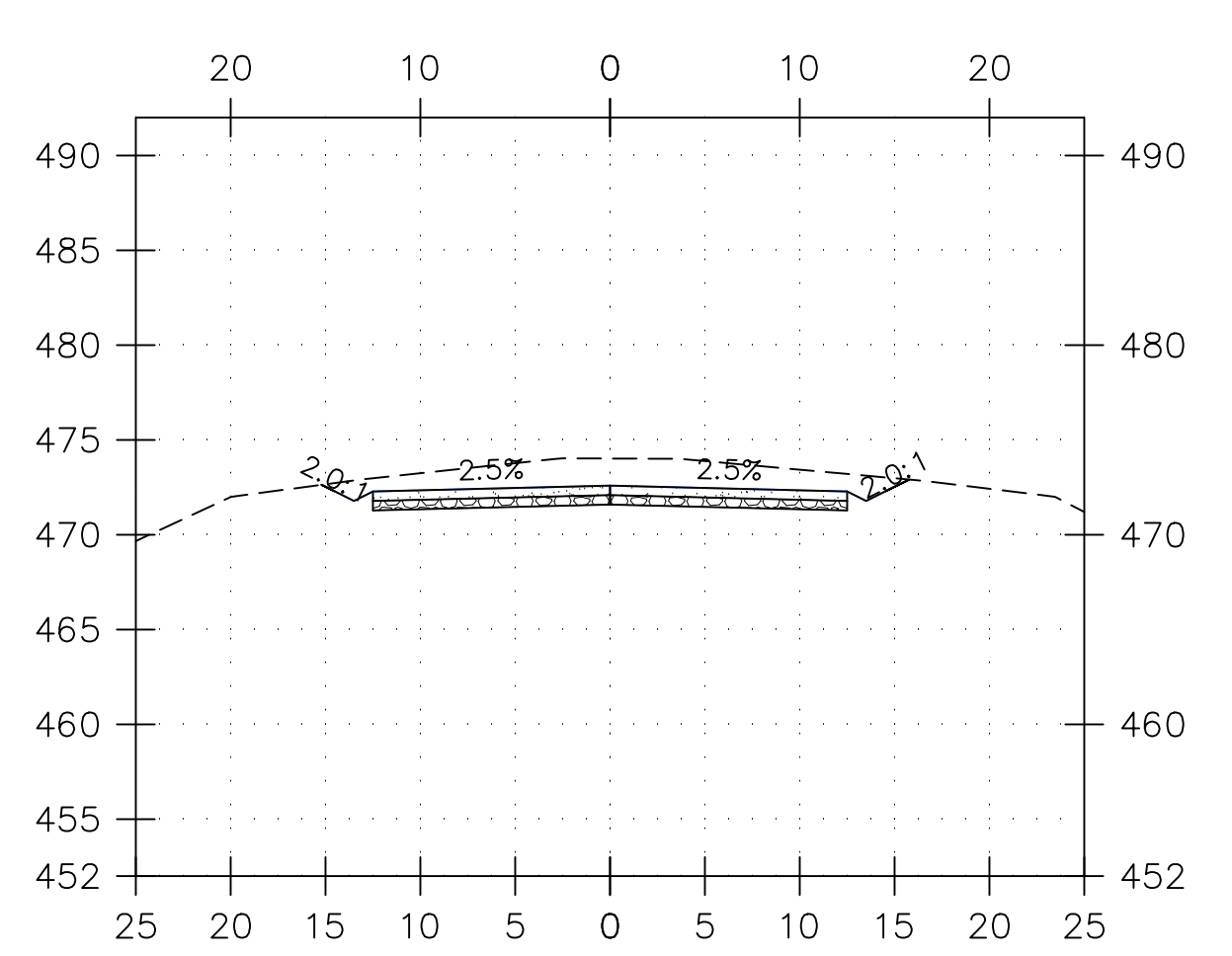
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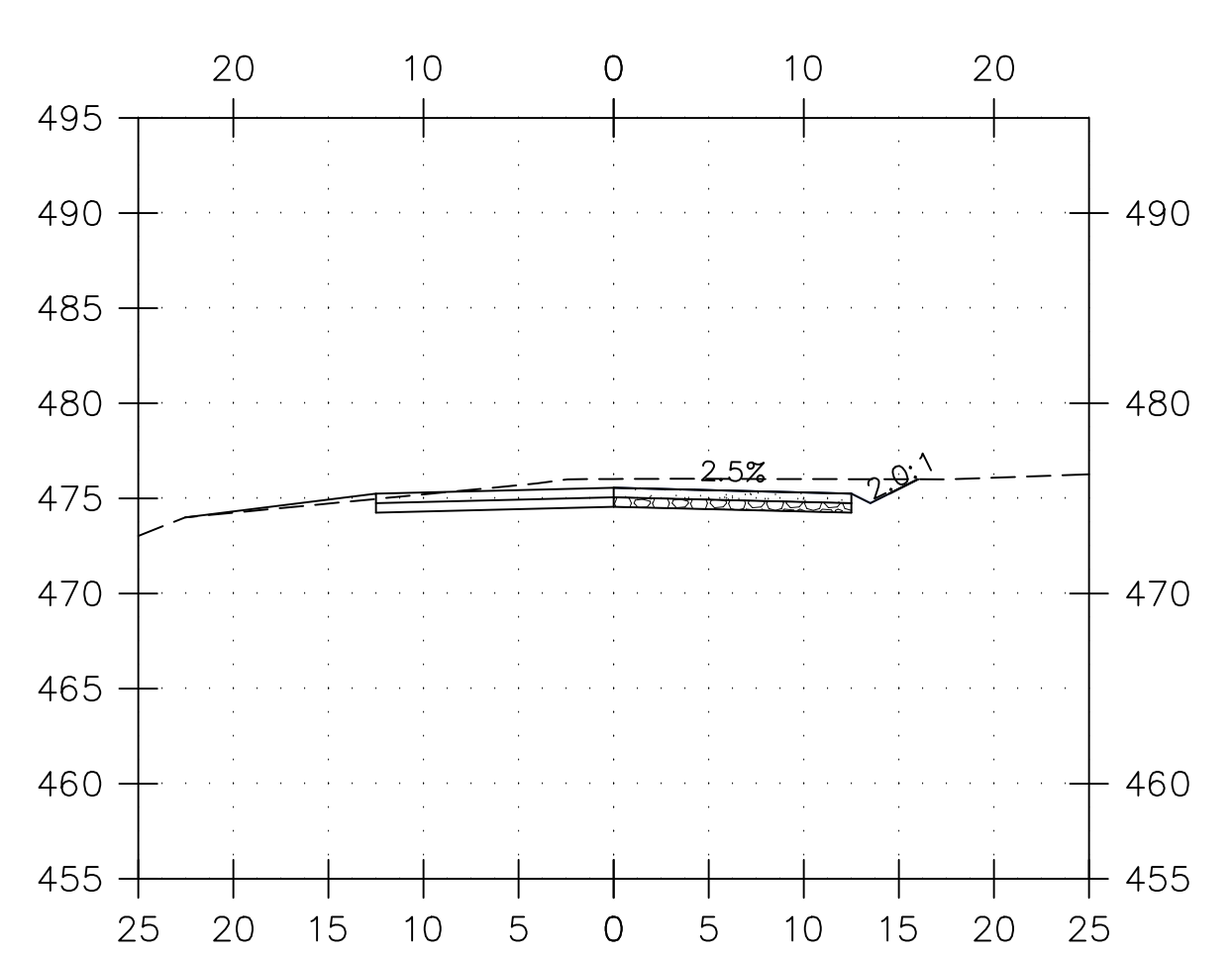
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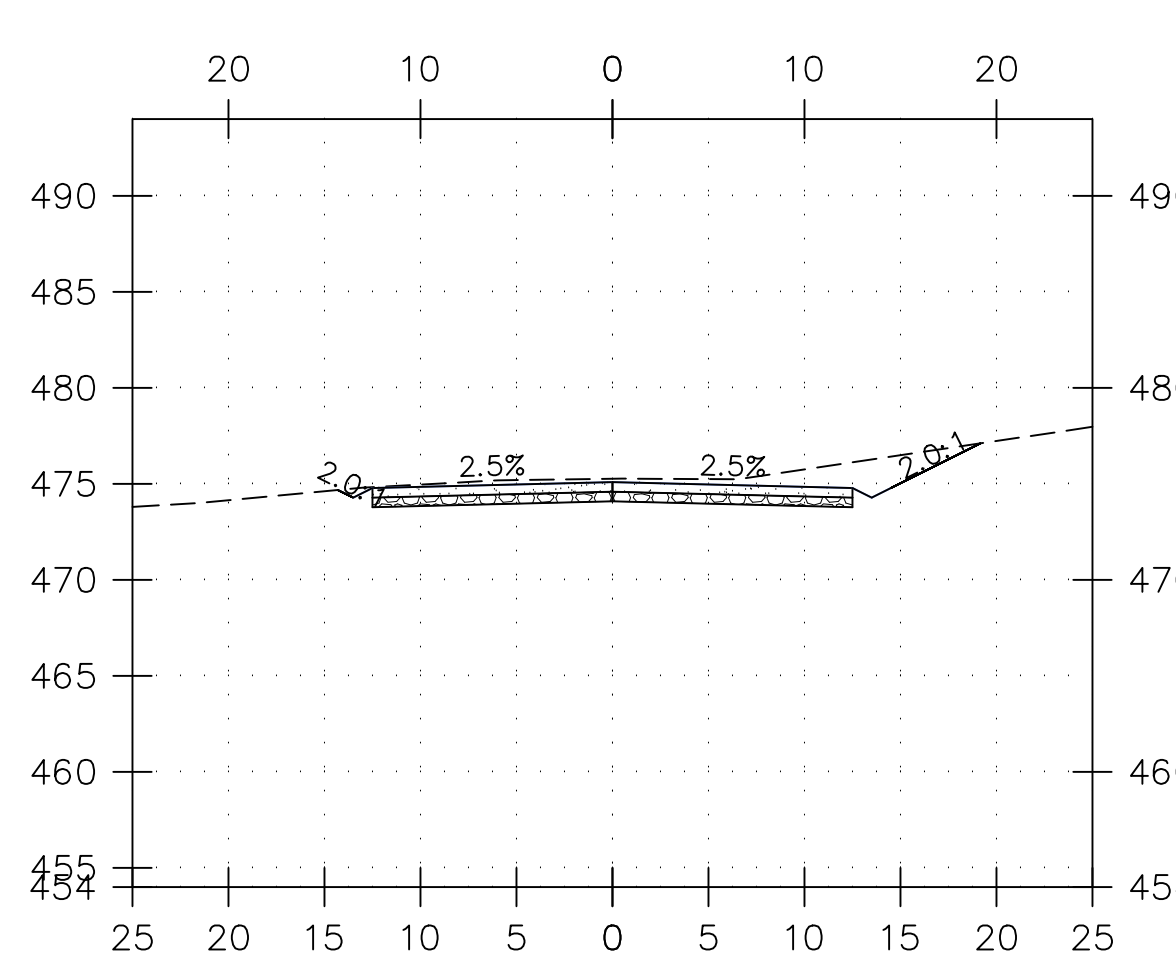
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CROSS SECTION
37+00.00



CROSS SECTION
35+00.00



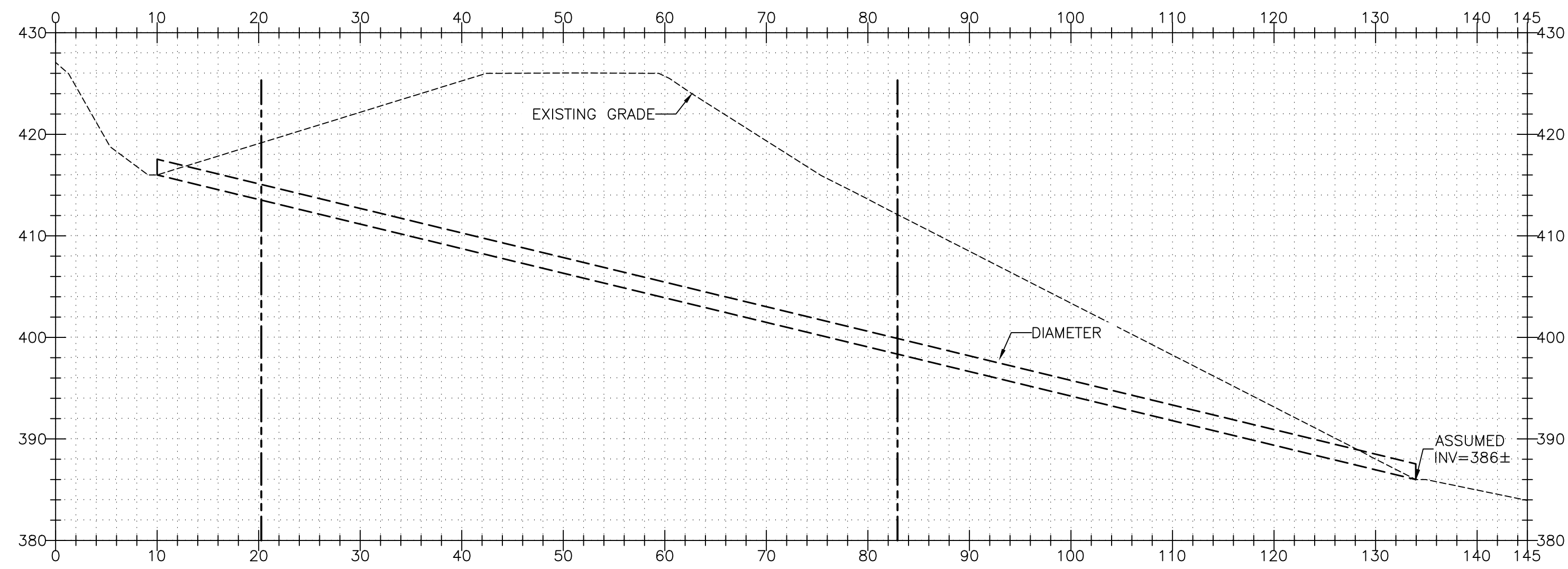
NOTES:

1. PROPOSED ROAD CROSS SECTIONS ARE INTENDED TO BE BEST FIT WITH EXISTING ROAD SURFACE. PROPOSED IMPROVEMENT TO TYBREN HEIGHTS ROAD IS INTENDED TO WIDEN EXISTING ROAD SURFACE. MINOR DEVIATIONS FROM THESE PROPOSED SECTIONS ARE ALLOWED TO BE PERFORMED IN FIELD BY CONTRACTOR. MAJOR DEVIATIONS WILL BE AT THE DISCRETION OF ENGINEER OR CITY INSPECTOR. ALL DEVIATIONS ARE REQUIRED TO BE AS-BUILT PER CITY REQUIREMENTS.

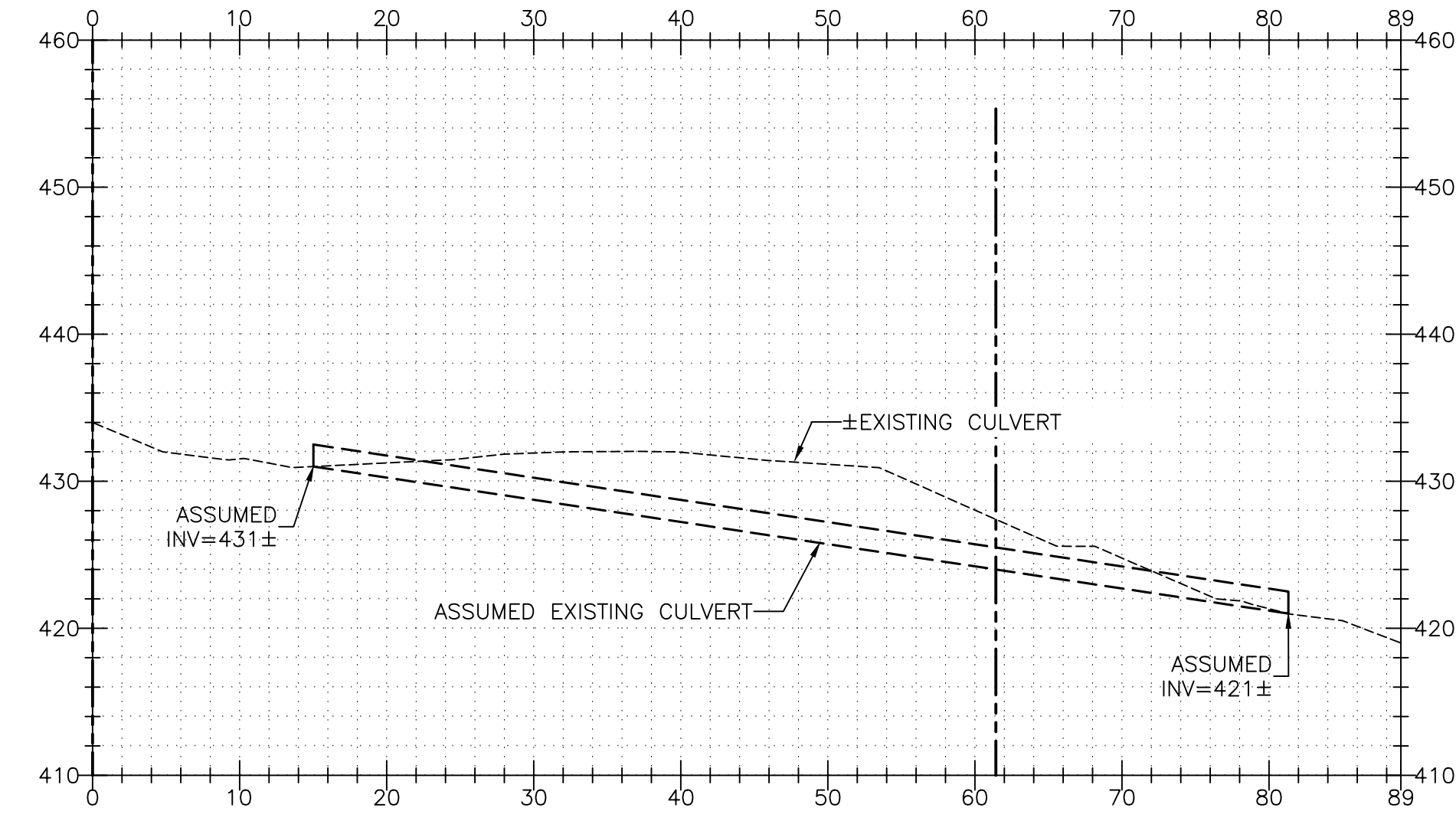
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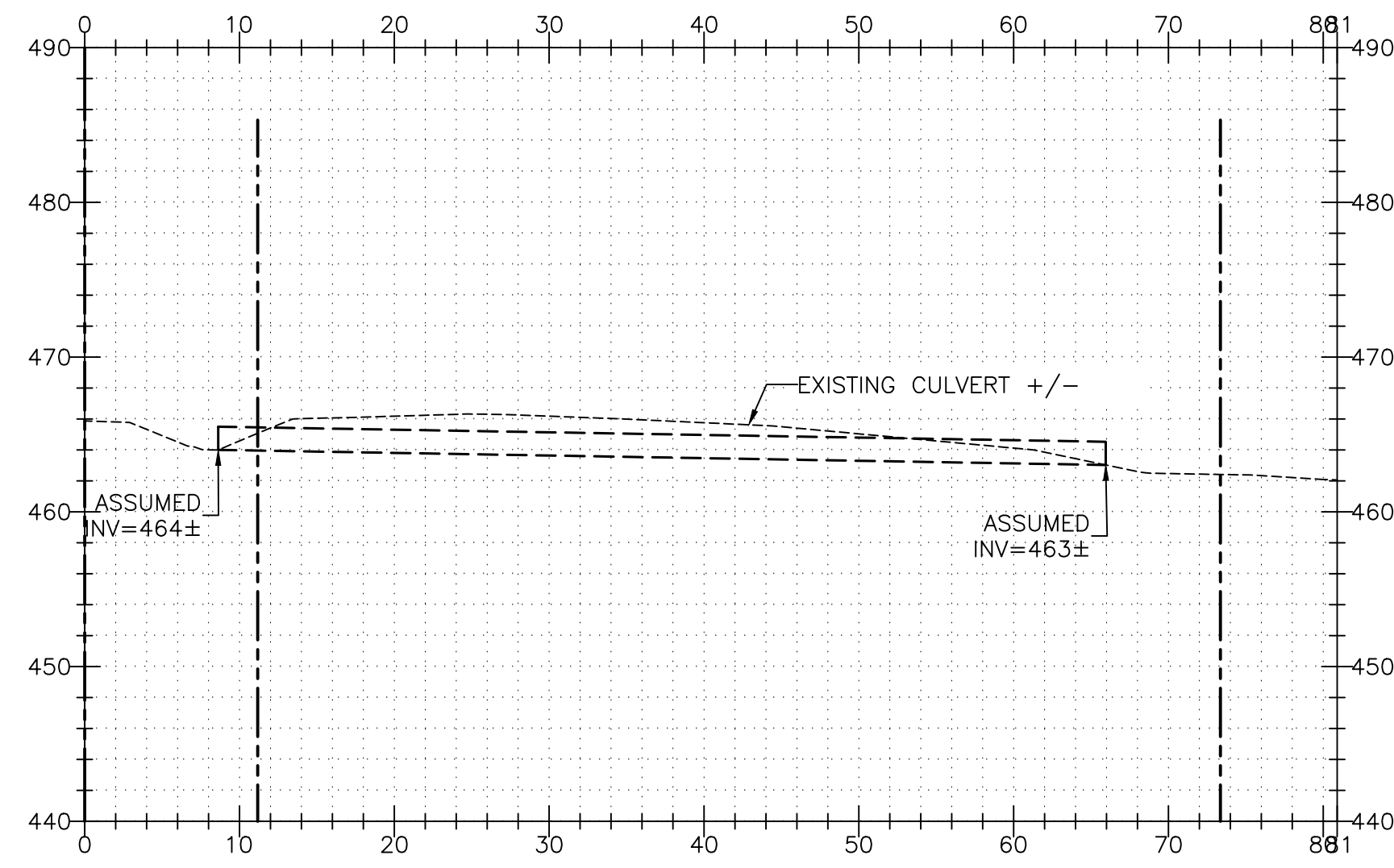
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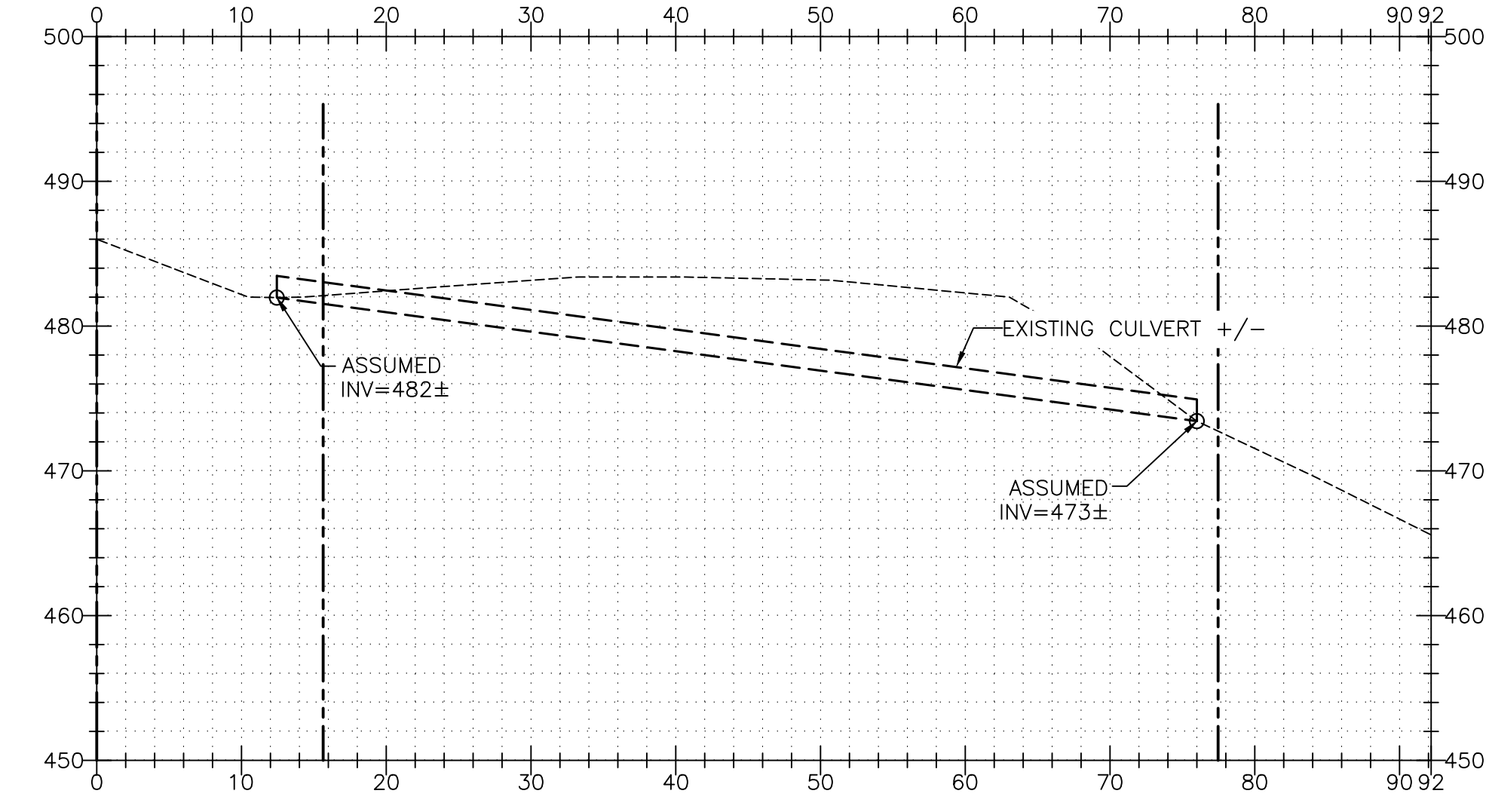
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C-07 SCALE: 1"=10'



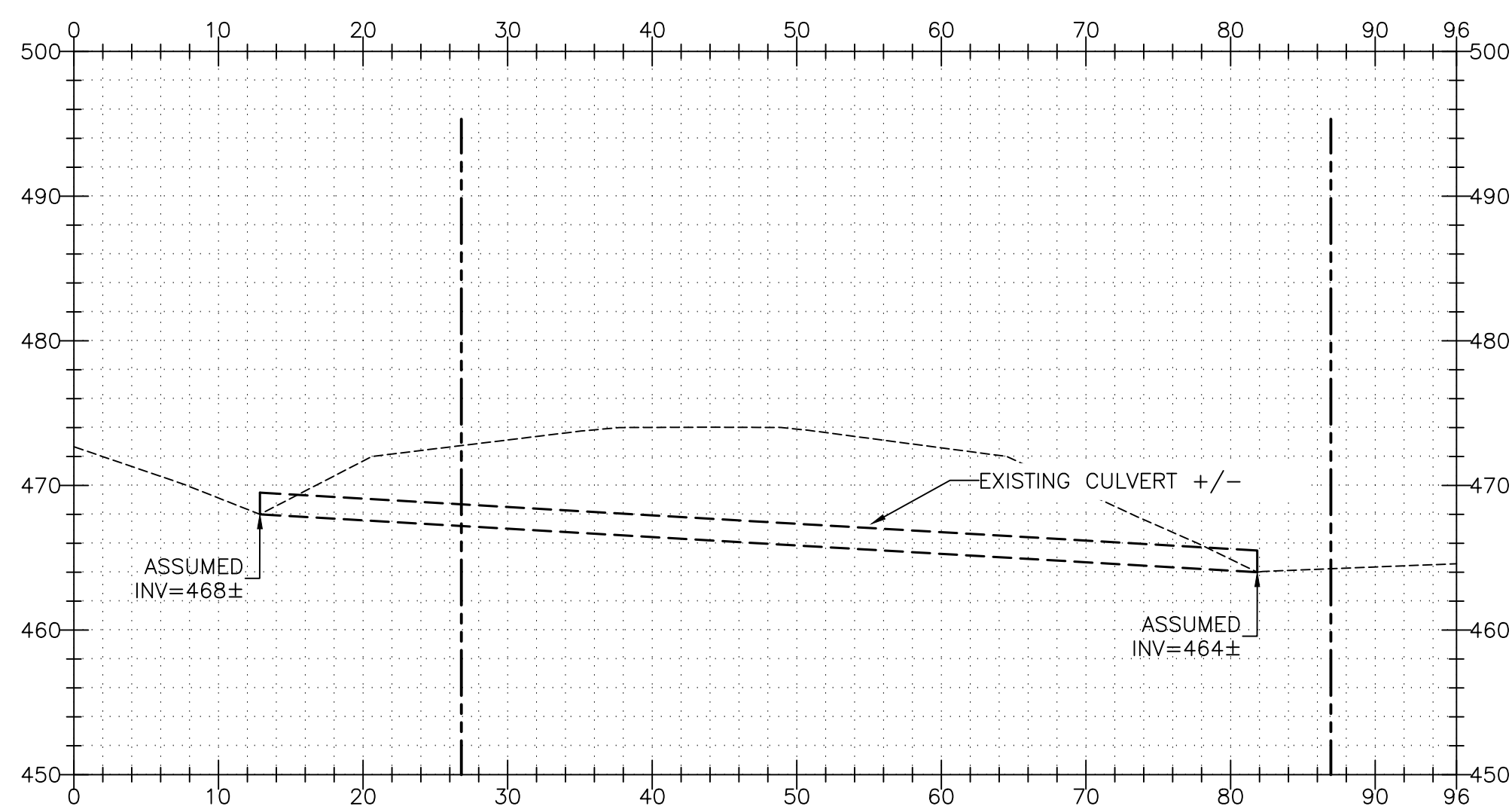
B CULVERT 2 SECTION
C-07 SCALE: 1"=10'



C CULVERT 3 SECTION
C-07 SCALE: 1"=10'



D CULVERT 4 SECTION
C-07 SCALE: 1"=10'



E CULVERT 5 SECTION
C-07 SCALE: 1"=10'

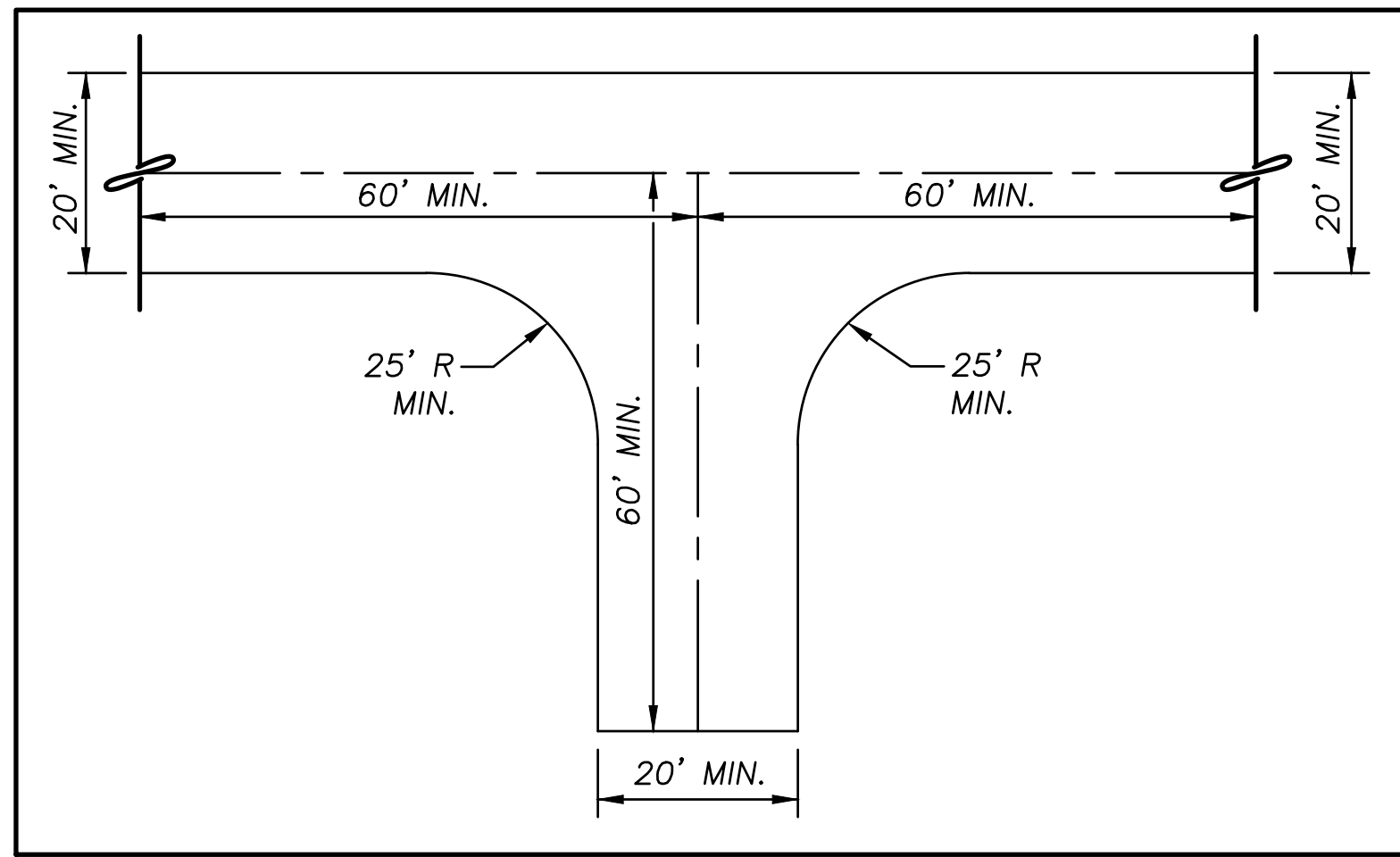


TYBREN HEIGHTS ROAD AS BUILTS GRADING PLAN
 (CITY OF KELSO, WASHINGTON)
 CULVERT SECTIONS

PROJECT: 19-20	DRAWN: AVA	CHECKED: AF	DATE: 2020-31-01	NAME:
REVISIONS:				
1/31/20				

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FILE: C-IV-08 CULVERT SECTIONS SAVE DATE: 1/31/2020 7:49:31 AM PLOT DATE: 1/31/2020 7:51:48 AM



TYP. EMERGENCY TURNAROUND
SCALE: NTS

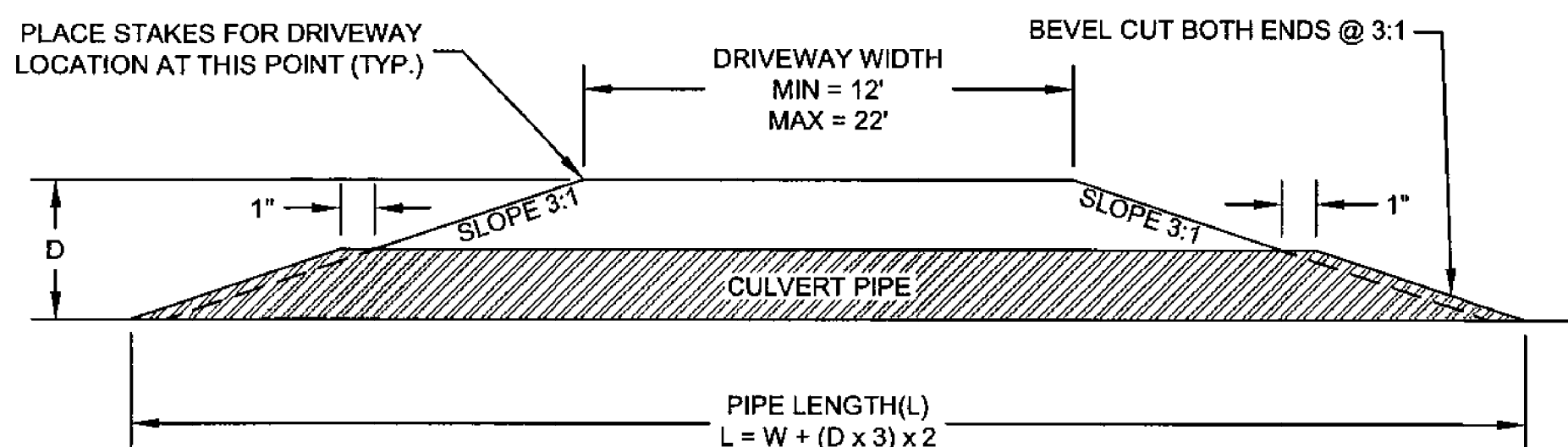
B
C-08

GENERAL EROSION PREVENTION & SEDIMENT CONTROL NOTES

- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND IN WORKING CONDITION PRIOR TO ANY LAND DISTURBING ACTIVITY CAUSED BY CLEARING OR GRADING.
- CONTRACTOR SHALL SITE AND CONSTRUCT EROSION AND SEDIMENT CONTROL MEASURES PER THE REQUIREMENTS OF THE WASHINGTON STATE DEPARTMENT OF ECOLOGY STORMWATER MANUAL FOR WESTERN WASHINGTON, WHERE COWLITZ COUNTY ORDINANCE SHALL TAKE PRECEDENCE.
- MATERIAL STOCKPILES ARE TO BE PROTECTED BY THE FOLLOWING MEANS:
 - TEMPORARY: COVER PILES WITH TARPS OR PLASTIC SHEETING WEIGHTED WITH CONCRETE BLOCKS, LUMBER OR TIRES.
 - PERMANENT: COVER PILES WITH TARPS OR PLASTIC, OR RESEED. PERIMETER AREAS AROUND PILES ARE TO BE SURROUNDED WITH EROSION CONTROL FILTER FABRIC FENCES UNTIL SOIL SURFACE IS STABILIZED WITH RESEEDING.
- IF THE INSPECTOR/ENGINEER HAS EVIDENCE OF POOR CONSTRUCTION PRACTICES OR IMPROPER EROSION PREVENTION BMPs, WORK SHALL BE CEASED UNTIL PROPER MEASURES HAVE BEEN TAKEN AND APPROVED. IF THE BMPs APPLIED TO A SITE ARE INSUFFICIENT TO PREVENT SEDIMENT FROM REACHING WATER BODIES, ADJACENT PROPERTIES, OR PUBLIC RIGHT-OF-WAY, THEN THE COUNTY AND/OR INSPECTOR SHALL REQUIRE ADDITIONAL BMPs.
- SEDIMENT CONTROL BMPs SHALL BE INSPECTED WEEKLY AND AFTER ANY STORM EVENT PRODUCING RUNOFF BY STRATA DESIGN OR CONTRACTORS DESIGNATED EROSION CONTROL SPECIALIST. CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING AND COORDINATION FOR INSPECTIONS.
- EXPOSED SURFACES THAT WILL NOT BE BROUGHT TO FINAL GRADE OR GIVEN A PERMANENT COVER TREATMENT WITHIN 5 DAYS OF THE EXPOSURE SHALL HAVE SEED MIX AND MULCH PLACED TO STABILIZE THE SOIL AND REDUCE EROSION SEDIMENTATION. SEEDED AREAS SHALL BE CHECKED REGULARLY TO ASSURE A GOOD STAND OF GRASS IS BEING MAINTAINED. AREAS THAT FAIL TO ESTABLISH VEGETATION COVER ADEQUATE TO PREVENT EROSION WILL BE RESEDED AS SOON AS SUCH AREAS ARE IDENTIFIED.
- APPLY AN APPROVED TEMPORARY SEEDING MIXTURE TO THE PREPARED SEED BED AT A RATE OF 120 LBS/ACRE. NOTE: "HYDROSEEDING" APPLICATIONS WITH APPROVED SEED-MULCH-FERTILIZER MIXTURES MAY ALSO BE USED.
- DISTURBED SOIL SURFACES WHICH ARE EXPOSED SHALL BE DRESSED WITH 3-INCH COVER OF STRAW, MULCH, COMPOST, OR WOOD CHIP.
- THE DETAILS PRESENTED IN THIS PLAN SHALL NOT BE IMPLIED TO ADDRESS ALL UNANTICIPATED SITE CONDITIONS (SLOPE SEEPAGE, OFF-SITE WATER INFLOW, ETC.). AMENDMENTS TO THE PLAN SHALL BE MADE UPON ENCOUNTERING SUCH UNANTICIPATED SITE CONDITIONS.

ALL WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE LATEST EDITION OF THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION

CULVERT PIPE INSTALLATION

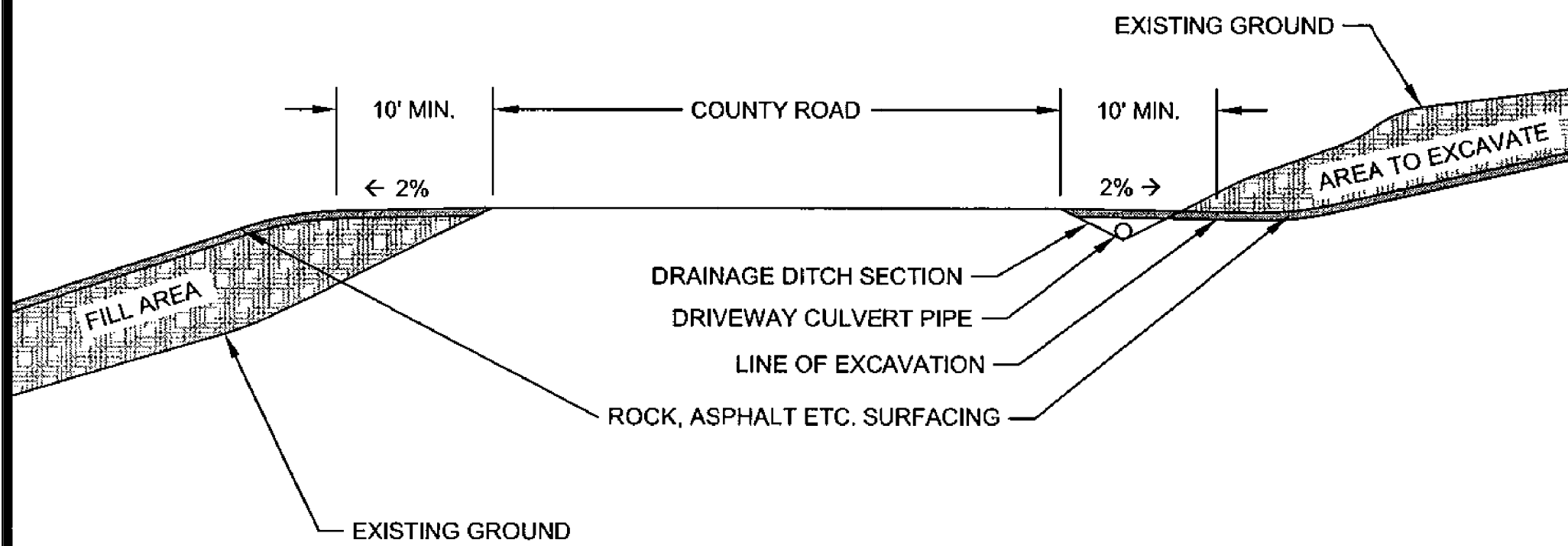


L = LENGTH OF CULVERT
D = DEPTH (DRIVEWAY SURFACE TO BOTTOM OF PIPE)
W = WIDTH OF DRIVEWAY

NOTES:

- Use only new culvert pipe, 12" Min. Dia., 24' min. length, or as specified by County.
- Culvert to be placed along roadside ditch alignment, matching ditch elevations at ends of pipe.
- Acceptable types of culvert pipes are:
 - Corrugated Galvanized Steel - 16 gauge
 - Corrugated Aluminum - 16 gauge
 - High Density Polyethylene (HDPE) - double wall, smooth interior
 - Other materials as approved by the County Engineer

DRIVEWAY GRADES



RGL
DESIGNED BY
SMK 4/22/10
DRAWN BY
APPROVED BY
DATE

**DRIVEWAY APPROACH
DETAIL**

NTS

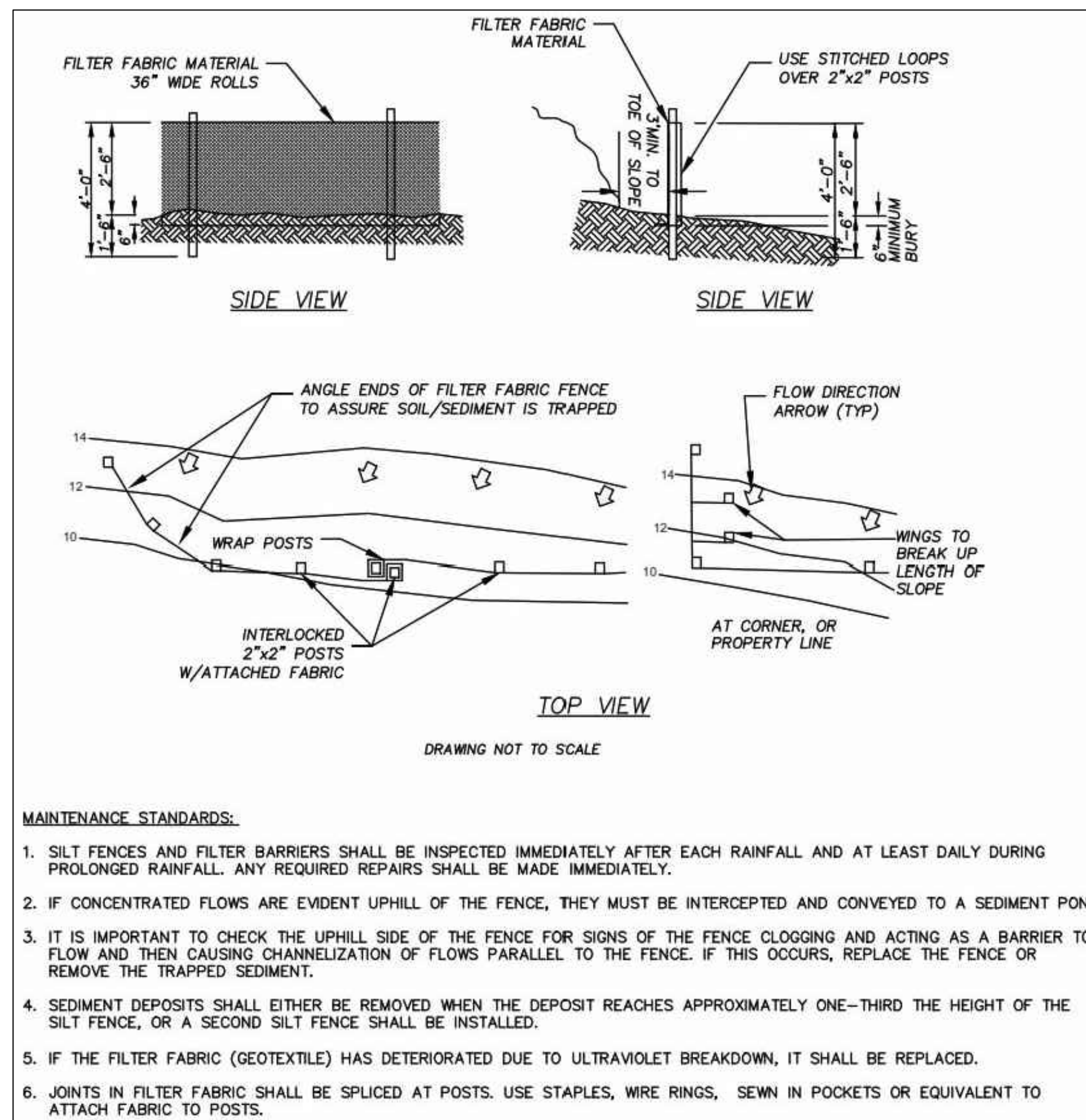


DEPARTMENT
OF PUBLIC
WORKS
1600 - 13TH AVENUE SOUTH
KELSO, WASHINGTON
98826
DRAWING:CC-1320

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DRIVEWAY APPROACH DETAIL
SCALE: NTS

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C-08



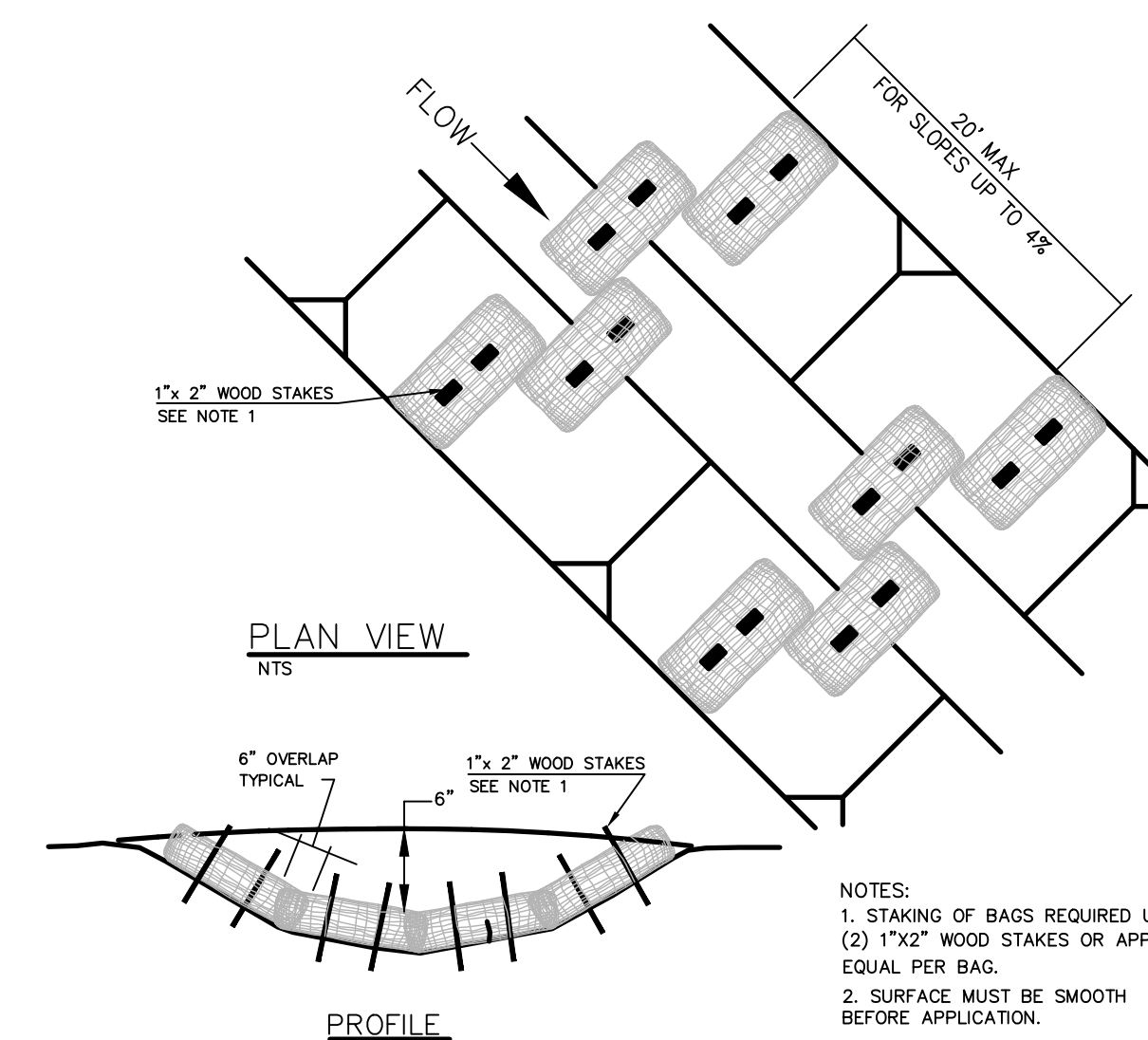
MAINTENANCE STANDARDS:

- SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
- IF CONCENTRATED FLOWS ARE EVIDENT UPHILL OF THE FENCE, THEY MUST BE INTERCEPTED AND CONVEYED TO A SEDIMENT POND.
- IT IS IMPORTANT TO CHECK THE UPHILL SIDE OF THE FENCE FOR SIGNS OF THE FENCE CLOGGING AND ACTING AS A BARRIER TO FLOW AND THEN CAUSING CHANNELIZATION OF FLOWS PARALLEL TO THE FENCE. IF THIS OCCURS, REPLACE THE FENCE OR REMOVE THE TRAPPED SEDIMENT.
- SEDIMENT DEPOSITS SHALL EITHER BE REMOVED WHEN THE DEPOSIT REACHES APPROXIMATELY ONE-THIRD THE HEIGHT OF THE SILT FENCE, OR A SECOND SILT FENCE SHALL BE INSTALLED.
- IF THE FILTER FABRIC (GEOTEXTILE) HAS DETERIORATED DUE TO ULTRAVIOLET BREAKDOWN, IT SHALL BE REPLACED.
- JOINTS IN FILTER FABRIC SHALL BE SPLICED AT POSTS. USE STAPLES, WIRE RINGS, SEWN IN POCKETS OR EQUIVALENT TO ATTACH FABRIC TO POSTS.

SILT FENCES AND FILTER BARRIERS

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BIO-BAG SEDIMENT TRAP

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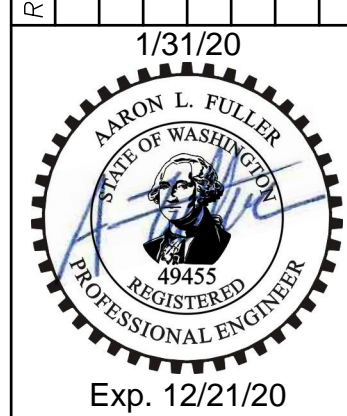
- NOTES:
- STAKING OF BAGS REQUIRED USING (2) 1 1/2" WOOD STAKES OR APPROVED EQUAL PER BAG.
 - SURFACE MUST BE SMOOTH BEFORE APPLICATION.
 - SEE CHECK DAM NOTES STD. PLAN E-2



TYBREN HEIGHTS ROAD AS BUILTS GRADING PLAN
(CITY OF KELSO, WASHINGTON)

DETAILS & EROSION CONTROL NOTES

PROJECT: 19-20	DRAWN: AXA	CHECKED: AF	DATE: 2020-31-01	NAME:
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Preliminary
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