Carmony Exploration, LLC

23-4V Access & Beaver Creek Xing

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Glenwood Springs, CO 81601
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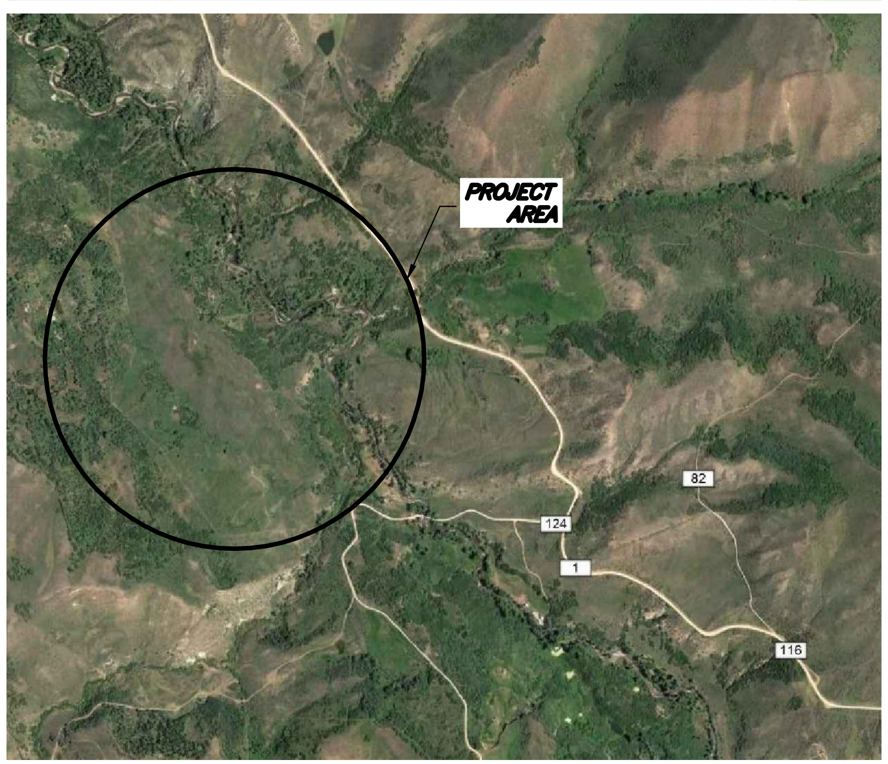

Vicinity Maps

N.T.S.

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Project Engineer

Jeffery S. Simonson, P.E., C.F.M. #26152

Owner/Applicant

Carmony Exploration, LLC

2838 Crater Lake Lane
Lafayette, Colorado 80026-3487

John Carmony

Project Location

Moffatt County and Routt County, Colorado

Latitude: 40.873902
Longitude: -107.318483

Preliminary Set

January 2018

Scope of Work

Access Roads, Earthmoving, Facilities Design, Permitting Design Submittals.

Sheet Index

Carmony Exploration, LLC
23-4V Access & Beaver Creek Xing

#	Revision	Date	By:
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Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	XX
Date:	11.15.17
QC: XX	PE: JSS
File:	23-4VAccess-Cover

Title: Cover Sheet

Dwg No. 00

Of: 43

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Legend

Linetypes

EXISTING	PROPOSED	DESCRIPTION
— T — — —OH— — —	— T ———OH——	OVERHEAD TELEPHONE LINE
— — — T — — — T -	— T ——— T ——	UNDERGROUND TELEPHONE LINE
— — — G — — — G -	— G ——— G ——	LOW PRESSURE GAS LINE
— G — — —HP— — —	— G ———HP——	HIGH PRESSURE GAS LINE
— — —TV — — —TV -	—TV ———TV——	UNDERGROUND CABLE TELEVISION LINE
—TV— — —OH— — —	—TV———OH——	OVERHEAD CABLE TELEVISION LINE
— — — E — — — E -	— E ——— E ——	UNDERGROUND ELECTRICAL LINE
— E — — —OH— — —	— E ———OH——	OVERHEAD ELECTRICAL LINE
——— 12"DR ———	———12"DR———	STORM DRAIN LINE & SIZE
——— — —8"W——		WATER LINE & SIZE
——— — —WS ——	———WS———	WATER SERVICE LINE
——— — —8"S——		SANITARY SEWER LINE & SIZE
——— — —SS ——	———SS———	SANTIARY SEWER SERVICE LINE
— — —FO— — —FO -	———F.O. ———	FIBER OPTIC LINE
——— — —IRR ——	———IRR ———	IRRIGATION LINE
		DRAINAGE SWALE FLOWLINE
——x———x———x——	——x——x——x——	BARBED-WIRE FENCE LINE
		COMBINATION FENCE
——o———o———o——	——o——o——o——	CHAIN LINK FENCE
	—PF——PF—	PLASTIC FENCE
	—SF——SF—	SILT FENCE
18" CMP	24" CMP	CULVERT, SIZE & FES
		EDGE OF PAVEMENT
		EDGE OF WATER
		CENTERLINE
		GUARDRAIL
		ROCK WALL
		CONTOURS
		RIGHT-OF-WAY
		VEGETATION
	—LDA——LDA—	LIMITS OF DISTURBED AREA
		RAILROAD TRACKS
		TOP OF CUT
		TOP OF FILL
		EASEMENT
		BUILDING ENVELOPE

Symbols

EXISTING	PROPOSED	DESCRIPTION
		DECIDUOUS TREE
		CONIFEROUS TREE
		MONUMENT MARKER
		CONTROL POINT
T	T	TELEPHONE PEDESTAL
C	C	CABLE PEDESTAL
ET	ET	ELECTRIC TRANSFORMER
EP	EP	ELECTRIC PEDESTAL
EV	EV	ELECTRIC VAULT
		ELECTRIC SERVICE T-POST
EM	EM	ELECTRIC METER
HV AC		HEATING/AIR CONDITIONING UNIT
G	G	GAS MARKER
GM	GM	GAS METER
GV	GV	GAS VALVE
G	G	GAS WELL
T D S W E		MANHOLES-TELE/DRAINAGE/SEWER/ WATER/ELEC PER PLAN REFERENCE
		CURB INLET
		STORM DRAIN INLET
		CLEAN-OUT
		WATER VALVE
		FIRE HYDRANT
		WATER SHUT-OFF VALVE
WM	WM	WATER METER
		WATER SPIGOT
W	W	WELL
IRR	IRR	IRRIGATION VALVE
icv	icv	IRRIGATION CONTROL VALVE
icb	icb	IRRIGATION CONTROL BOX
		IRRIGATION HEADGATE
IR	IR	IRRIGATION MANHOLE
SH	SH	IRRIGATION SPRINKLER HEAD
		PVC PIPE
		UTILITY POLE
		GUY WIRE
		STREET LIGHT POLE
		FLOOD LIGHT

Symbols

EXISTING	PROPOSED	DESCRIPTION
		SIGN
		MAILBOX
		BOLLARD
F.O		FIBER OPTIC LINE MARKER
	42.77FL	FINISHED SPOT ELEV. W/ DESCRIPTION
		NEW FLARED END SECTION (HDPE)
		NEW FLARED END SECTION (CMP)
SB		SOIL BORING LOCATION
TP		TEST PIT LOCATION
		EROSION CONTROL LOG
R	R	LARGE ROCK/BOULDER
		"T" POST
		SATELLITE DISH
	T	TRANSITION FROM SPILL TO CATCH GUTTER
		MINIMUM 4" TOP SOIL OR SPECIFIED ALTERNATIVE

Hatching

EXISTING	PROPOSED	DESCRIPTION
		ASPHALT MILLING
Asph.		ASPHALT
Conc.		CONCRETE SURFACING (PLAN VIEW)
Conc.		CONCRETE SURFACING (SECTION VIEW)
Grav.		GRAVEL SURFACING
		RIPRAP/RIVER ROCK
		RE-ESTABLISH NATIVE VEGETATION
		WOOD DECK
		FLAGSTONE
		UNDISTURBED SOIL
		RECOMPACTED SOIL

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Legend and Abbreviations

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GENERAL NOTES:

1. LIMITS OF CONSTRUCTION SHALL BE 5' BEYOND GRADING LIMITS, BASE OF FILL SLOPES OR TOP OF CUT SLOPES, AND 20' EITHER SIDE OF THE CENTERLINE OF UTILITY INSTALLATIONS, BUT NOT BEYOND FENCE LINE OR RIGHT-OF-WAY LINES. PROJECT LIMITS SHALL ADDITIONALLY INCLUDE ANY DESIGNATED BORROW AREAS, EXCAVATION DISPOSAL AREAS OR MATERIAL OR TOPSOIL STOCKPILE AREAS. RESPECT ALL TREE/VEGETATION PRESERVATION ZONES (PER SPECS).
2. TRAFFIC CONTROL REQUIREMENTS:
   - PROVIDE SAFETY CONES, FLAG PERSONS, VERTICAL PANELS WITH BEACONS, SIGNAGE AND BARRICADES AS NECESSARY TO PROTECT PUBLIC AND WORK SITE.
   - PROVIDE SIGNAGE AS REQUIRED BY OWNER AND LOCAL GOVERNMENT WITH JURISDICTION OVER ADJACENT ROADS.
3. THE CONTRACTOR SHALL CERTIFY THAT ALL AGGREGATES USED ON THIS PROJECT ARE FREE FROM HAZARDOUS COMPONENTS IN EXCESS OF THE THRESHOLD CONCENTRATIONS ESTABLISHED BY THE E.P.A.
4. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH APPLICABLE SECTIONS OF THE SITE SUBSOIL STUDY. CONTRACTOR TO NOTE REQUIREMENTS FOR EXCAVATION, BACKFILL AND SUPPORT MATERIALS.
5. INVERT ELEVATIONS ARE TO END OF PIPE NOT END OF ENDWALL.
6. THROUGHOUT ALL PHASES OF CONSTRUCTION, UNTIL THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL KEEP THE WORK SITE CLEAN AND FREE FROM RUBBISH AND DEBRIS. THE CONTRACTOR SHALL ALSO ABATE DUST NUISANCE AS NECESSARY BY CLEANING, SWEEPING AND SPRINKLING WITH WATER OR OTHER MEANS AS NECESSARY. THE CONTRACTOR SHALL HAVE TWENTY-FOUR (24) HOURS AFTER THE DEPOSIT OF ANY EARTH, GRAVEL OR OTHER EXCAVATED MATERIAL TO REMOVE SUCH DEPOSIT. IN THE EVENT THAT THE EARTH, GRAVEL OR OTHER EXCAVATED MATERIAL IS NOT REMOVED, THE ENGINEER SHALL CAUSE SUCH REMOVAL AND THE COST INCURRED SHALL BE DEDUCTED FROM THE BOND. DUST CONTROL WILL ONLY BE REQUIRED IF ADJACENT PROPERTY OWNERS ARE ADVERSELY AFFECTED OR IF DUST ADVERSELY AFFECTS MAINTENANCE OF TRAFFIC DURING THE PROJECT SUCH THAT, IN THE OPINION OF ENGINEER, A WATERING PROGRAM IS APPROPRIATE. IT IS ANTICIPATED DUST CONTROL WILL BE REQUIRED ON THIS PROJECT.
7. ANGULAR RIPRAP WITH A MINIMUM D50=6" IS TO BE USED, INSTALLED TO A MIN. DEPTH OF 18".
8. ALL IMPORTED AND NATIVE FILL/BASE MATERIAL IS TO BE COMPACTED TO 95% STANDARD PROCTOR.
9. CONCRETE BOX CULVERT IS TO BE INSTALLED ACCORDING TO MANUFACTURER SPECIFICATIONS, INCLUDING BEDDING, & STRUCTURE BACKFILL MATERIAL.
10. WING WALLS, AND HEAD WALLS TO BE IN ACCORDANCE WITH CDOT M&S STANDARD PLANS.
11. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A CDPS FROM THE CDPHE.

GENERAL UTILITY NOTES:

1. THE APPROXIMATE LOCATION OF ALL KNOWN UTILITIES (WATER, SEWER, GAS, PHONE, ELECTRIC, CABLE, ETC.) ARE SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL CONTACT ALL UTILITY OWNERS TO VERIFY BOTH LOCATION AND DEPTH OF UTILITIES BEFORE ANY WORK BEGINS. CONTRACTOR SHALL BEAR THE RESPONSIBILITY FOR THE PROTECTION OF UTILITIES DURING CONSTRUCTION. NO ADDITIONAL PAYMENT WILL BE MADE FOR UTILITIES LOCATED BUT NOT SHOWN IN DRAWINGS.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR RESTORING ANY DISTURBED AREAS IN ACCORDANCE WITH SPECIFICATIONS.
3. FOLLOW ALL CDPHE (COLORADO DEPARTMENT OF HEALTH & ENVIRONMENT) REGULATIONS FOR WATER AND SEWER LINE CROSSINGS & COA SEPARATION REQUIREMENTS.

LANDSCAPE NOTES:

1. ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES (INCLUDING STAGING AREAS) NOT CALLED OUT IN THIS PLAN ARE TO BE TOP SOILED 4" MIN. AND SEEDED.
2. CHECK DAMS ARE TO BE CONSTRUCTED USING STRAW WATTLES INSTALLED ACCORDING TO DETAIL.
3. SOIL EROSION BLANKETS ARE TO BE SINGLE LAYER (TOP ONLY) UV DEGRADABLE PLASTIC MESH.
4. ALL STRAW WATTLES INCLUDING CHECK DAMS ARE TEMPORARY EROSION CONTROL MEASURES THAT ARE TO BE REMOVED WHEN 70% RE-VEGETATION IS COMPLETE.
5. EROSION CONTROL DEVICES ARE TO BE INSTALLED AS AREAS OF CONSTRUCTION THEY ARE INTENDED TO PROTECT ARE COMPLETED.
6. SEED MIX IS TO BE APPROVED BLM/FOREST SERVICE SEED MIX FOR LOCATION ELEVATION AND CLIMATE.
7. SOIL EROSION BLANKET IS TO BE INSTALLED ACCORDING TO MANUFACTURERS SPECIFICATIONS.
8. ALL SOIL EROSION BLANKET AREAS ARE TO BE TOP SOILED & SEEDED PRIOR TO INSTALLATION OF BLANKET.
9. ALL AREAS DISTURBED BY ROAD OR UTILITY CONSTRUCTION OR OVER-LOT GRADING SHALL BE REVEGETATED WITH DRYLAND SEED MIXTURE. PROVIDE FRESH, CLEAN, NEW-CROP SEED COMPLYING WITH TOLERANCE FOR PURITY AND GERMINATION ESTABLISHED BY OFFICIAL SEED ANALYSIS OF NORTH AMERICA. PROVIDE SEED OF GRASS SPECIES, PROPORTIONS AND MINIMUM PERCENTAGES OF PURITY, GERMINATION, AND MAXIMUM PERCENTAGE OF WEED SEED, AS SPECIFIED.
10. FOR DRYLAND SEEDED AREAS, PROVIDE FERTILIZER WITH COMMERCIAL TYPE MIXTURE OF 16-16-8 OR SIMILAR RATION, NOT LESS THAN 15 LBS PER ACRE FOR NITROGEN RATE.
11. MULCH ALL SEEDED AREAS WITH CONWEB LONG FIBER MULCH, HAY OR STRAW. MATERIAL FOR STRAW MULCHING SHALL CONSIST OF STRAW OR OATS, BARLEY, WHEAT OR RYE AND SHALL NOT CONTAIN SEED OF NOXIOUS WEEDS. CLEAN FIELD HAY MAY BE SUBSTITUTED FOR STRAW WHEN APPROVED BY THE ENGINEER. STRAW OR HAY IN SUCH AN ADVANCED STAGE OR DECOMPOSITION AS TO SMOTHER OR RETARD THE NORMAL GROWTH OF GRASS WILL NOT BE ACCEPTED. CONWEB FIBER MULCH, PREVIOUSLY SPECIFIED, SHALL BE APPLIED AT A RATE OF 1500 LBS./ACRE. HAY OR STRAW SHALL BE APPLIED IN A UNIFORM MANNER AT A RATE OF 1.5 TONS/ACRE.
12. PROVIDE EROSION CONTROL BLANKET ON ALL SLOPES OF 2:1 OR STEEPER.
13. PRIOR TO REVEGETATION, PLANTING OR TOPSOIL PLACEMENT, ALL CUT OR FILL SLOPES WILL BE CONTOURED TO BLEND WITH ADJACENT TERRAIN. VARIOUS SLOPE MOLDING TECHNIQUES WILL BE USED TO ENHANCE THE AESTHETIC QUALITY OF THE SLOPE, WHILE MAXIMIZING THE REVEGETATION POTENTIAL. ALL CUT AND FILL SLOPES ALSO BEING ROUNDED AT THE TOE TO BLEND WITH THE EXISTING TERRAIN. ADDITIONALLY, WHERE SOILS AND STEEPNESS OF SLOPES PERMIT, TERRACES WILL BE CONSTRUCTED TO AID THE REVEGETATION PROCESS.
14. SEEDING SHALL BE DONE BY HYDROSEEDING, DRILLING, OR HAND BROADCASTING. HYDROSEED SHALL BE APPLIED IN A WATER AND LIGHT MULCH SLURRY AFTER WHICH MULCH WILL BE APPLIED TO COVER THE SEED. ANY AREAS THAT CANNOT BE REACHED BY HYDROSEEDING OR DRILL SEEDING SHALL BE HAND BROADCAST. AREAS SEEDED BY HAND BROADCASTING SHALL BE LIGHTLY RAKED.
15. DRYLAND SEEDING SHALL BE PERFORMED AS SOON AS PRACTICAL AFTER COMPLETING OF CONSTRUCTION, WITHIN THE APPROPRIATE SEASON. SEEDING SHALL BE PERFORMED AFTER SPRING THAW UNTIL JUNE 30TH, OR AFTER SEPTEMBER 1 UNTIL CONSISTENT GROUND FREEZE.

SEED LIST	LBS./ACRE
ALKALI SACATON	0.5 LBS.
INDIAN RICEGRASS "NESPAR"	1.0 LBS.
THICKSPIKE WHEATGRASS	2.0 LBS.
SANDDROP SEED	0.5 LBS
CRESTED WHEATGRASS	4.0 LBS
RUSSIAN WILDRYE	4.0 LBS

16. HYDROSEEDING WILL OCCUR WHERE THERE ARE HAZARDOUS DISTURBED SLOPES AND AREAS OF DISTURBANCE WITH 15% SLOPES OR GREATER.
17. SEEDING MATERIAL TO BE USED FOR RECLAMATION:
    SEEDING RATE: 2 LBS PER 1000 SQUARE FEET (OR 25 LBS PER ACRE)

%	SPECIES	COMMON NAME
17	ORYZOPSIS HYMENOIDES	INDIAN RICEGRASS
16	FESTUCA IDAHOENSIS	IDAHO FESCUE
10	CHRYSOTHAMNUS NAUSEOUSUS	RABBITBRUSH
10	PSEUDOREGNERIA SPICATA INERME	BEARDLESS BLUEBUNCH WHEATGRASS
10	PSEUDOREGNERIA SPICATA	BLUEBUNCH WHEATGRASS
10	PASCOPYRUM SMITHII	WESTERN WHEATGRASS
6	LEYMUS CINEREUS	BASIN WILDRYE
5	ARTEMESIA TRIDENTATA	MOUNTAIN SAGE
5	POA SECUNDA	SANDBERG'S BLUEGRASS
4	BOUTELOUS CURTIPENDULA	SIDE-OATS GRAMA
2	STIPA COMATA	NEEDLE AND THREAD
2	BOUTELOUA GRACILIS	BLUE GRAMA
2	HILARIA JAMESII	GALLETA
1	ELYMUS ELYMOIDES	BOTTLEBRUSH SQUIRRELTAIL

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Title: General Notes

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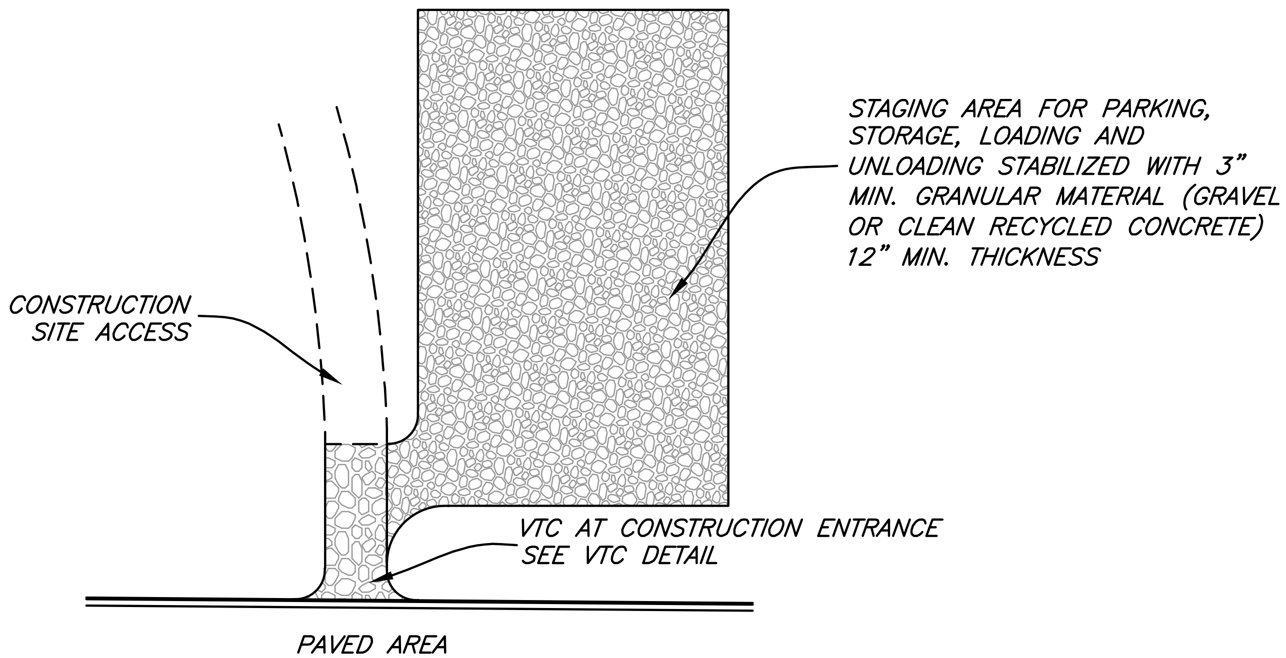

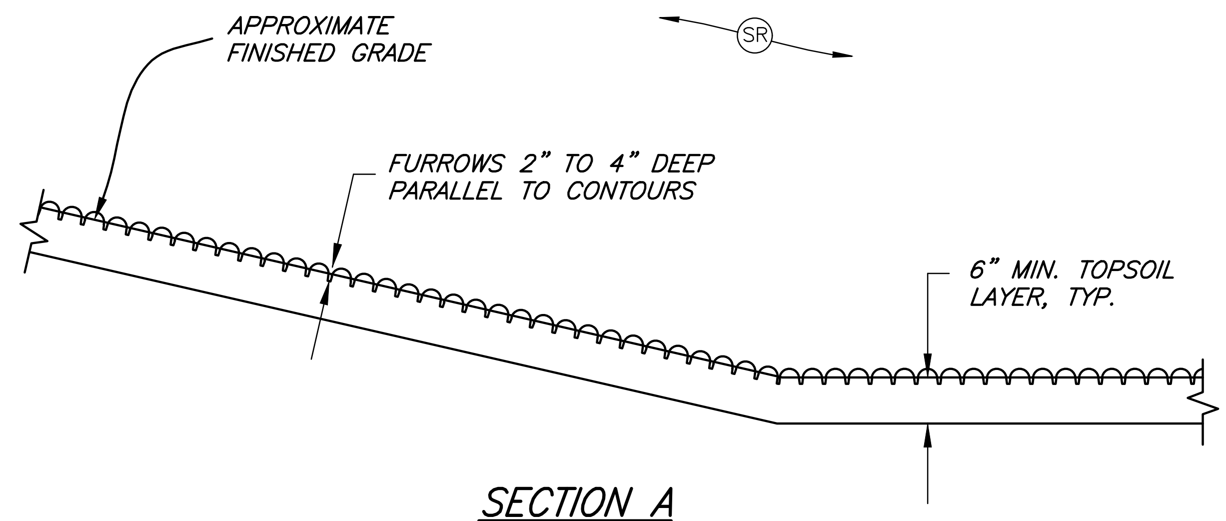

SECTION A

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR GENERAL LOCATION OF STAGING AREA. CONTRACTOR MAY MODIFY LOCATION AND SIZE OF STABILIZED STAGING AREA WITH APPROVAL FROM LOCAL JURISDICTION.
2. STABILIZED STAGING AREA SHALL BE LARGE ENOUGH TO FULLY CONTAIN PARKING, STORAGE, AND UNLOADING AND LOADING OPERATIONS.
3. IF REQUIRED BY THE LOCAL JURISDICTION, SITE ACCESS ROADS SHALL BE STABILIZED IN THE SAME MANNER AS THE STAGING AREA.
4. STAGING AREA SHALL BE STABILIZED PRIOR TO ANY OTHER OPERATIONS ON THE SITE.
5. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM OF 3" OF GRANULAR MATERIAL (GRAVEL OR CLEAN RECYCLED CONCRETE).

STABILIZED STAGING AREA MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT THE STABILIZED STAGING AREA WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
2. SWMP MANAGER SHALL PROVIDE ADDITIONAL THICKNESS OF GRANULAR MATERIAL IF ANY RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.
3. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING AND LOADING OPERATIONS.
4. ANY ACCUMULATED DIRT OR MUD SHALL BE REMOVED FROM THE SURFACE OF THE STABILIZED STAGING AREA.
5. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA TOPSOILED, DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED.

STABILIZED STAGING AREA (SSA)
NOT TO SCALE

SURFACE ROUGHENING INSTALLATION NOTES

1. SURFACE ROUGHENING SHALL BE PROVIDED ON ALL FINISHED GRADES (SLOPES AND "FLAT" AREAS) WITHIN 2 DAYS OF COMPLETION OF FINISHED GRADE (FOR AREAS NOT RECEIVING TOPSOIL) OR WITHIN 2 DAYS OF TOPSOIL PLACEMENT.
2. AREAS WHERE BUILDING FOUNDATIONS, PAVEMENT, OR SOD IS TO BE PLACED WITHIN 7-DAYS OF FINISHED GRADING DO NOT NEED TO BE SURFACE ROUGHENED.
3. DISTURBED SURFACES SHALL BE ROUGHENED USING RIPPING OR TILLING EQUIPMENT ON THE CONTOUR OR TRACKING UP AND DOWN A SLOPE USING EQUIPMENT TREADS.

SURFACE ROUGHENING MAINTENANCE NOTES

1. THE SWMP MANAGER SHALL INSPECT THE SURFACE ROUGHENING WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
2. VEHICLES AND EQUIPMENT SHALL GENERALLY BE CONFINED TO ACCESS DRIVES AND SHALL NOT BE DRIVEN OVER AREAS THAT HAVE BEEN SURFACE ROUGHENED.
3. IN NON-TURF GRASS FINISHED AREAS, SEEDING AND MULCHING SHALL TAKE PLACE DIRECTLY OVER SURFACE ROUGHENED AREAS WITHOUT FIRST SMOOTHING OUT THE SURFACE.
4. IN AREAS NOT SEEDED AND MULCHED AFTER SURFACE ROUGHENING, SURFACES SHALL BE RE-ROUGHENED AS NECESSARY TO MAINTAIN GROOVE DEPTH AND SMOOTH OVER ANY RILL EROSION.

SURFACE ROUGHENING (SR)
NOT TO SCALE

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Title: Stabilized Staging and Surface Roughening Details

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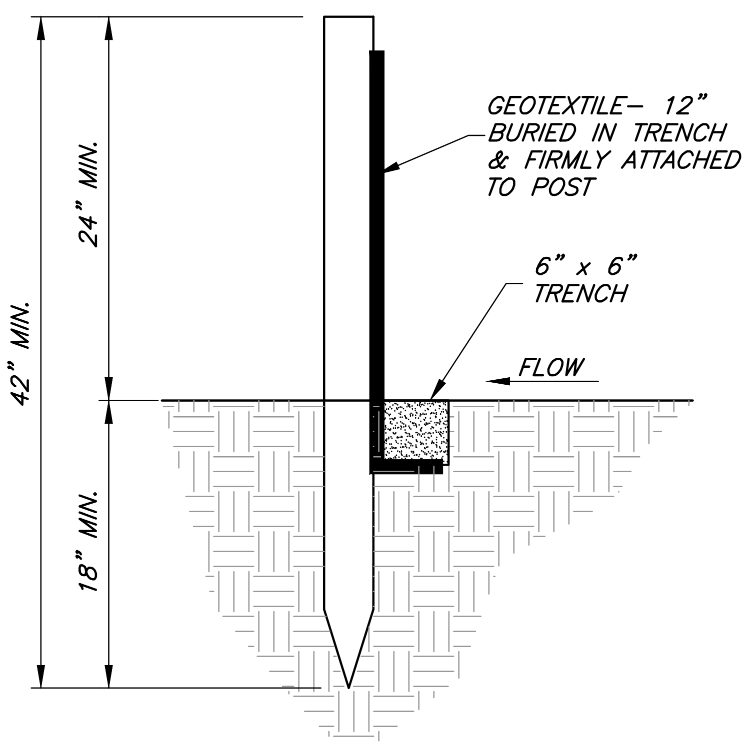
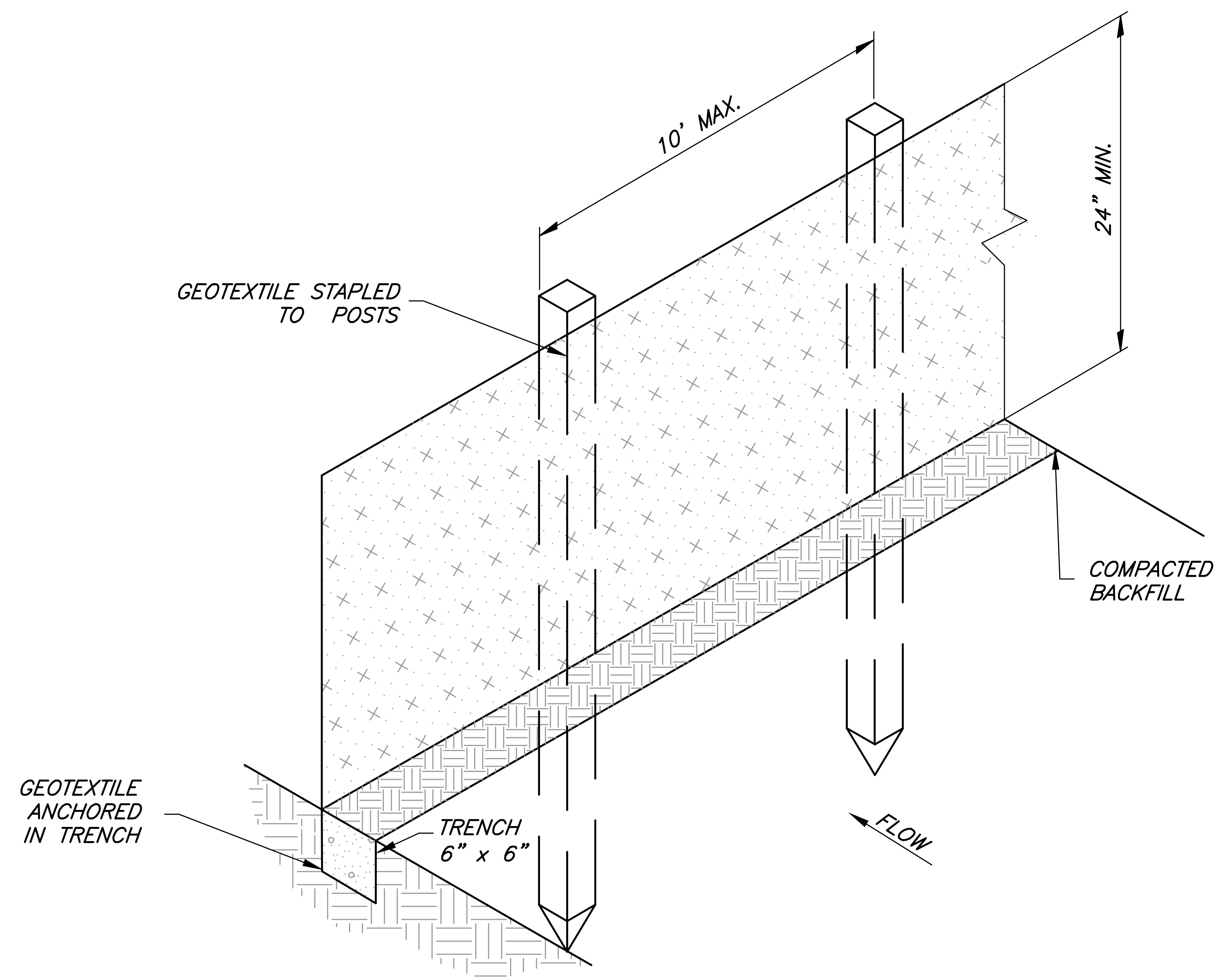
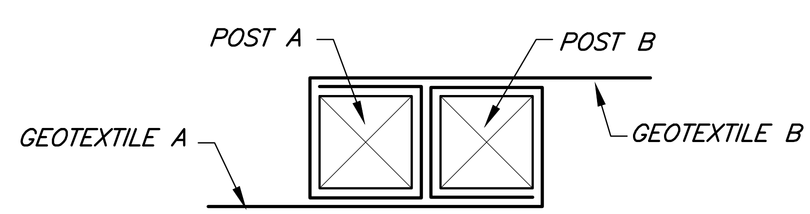




EROSION CONTROL NOTES:

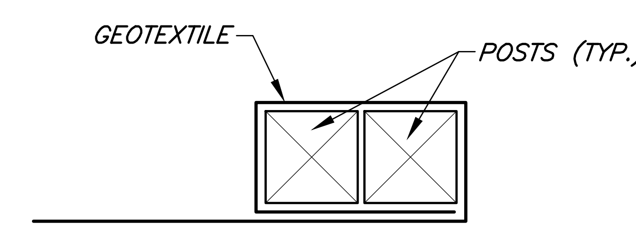
1. GEOTEXTILE SHALL BE ATTACHED TO WOOD POSTS WITH THREE OR MORE STAPLES PER POST.
2. STAPLES SHALL BE ½"
3. WOOD POST SHALL BE 1 ½" X 1 ½" NOMINAL.
4. REFER TO CDOT M–208–1



FOLD GEOTEXTILE AROUND EACH POST ONE FULL TURN. SECURE GEOTEXTILE TO POST WITH THREE STAPLES MINIMUM.

POSTS SHALL BE TIGHTLY ABUTTTED WITH NO GAPS TO PREVENT POTENTIAL FLOW–THROUGH OF SEDIMENT AT JOINT.

PLAN VIEW
JOINING SECTION DETAIL



GEOTEXTILE SHALL BE FOLDED AROUND TWO POSTS ONE FULL TURN. SECURE GEOTEXTILE TO POST WITH THREE STAPLES MINIMUM.

PLAN VIEW
END SECTION DETAIL

SEDIMENT FENCE DETAIL
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Silt Fence Details

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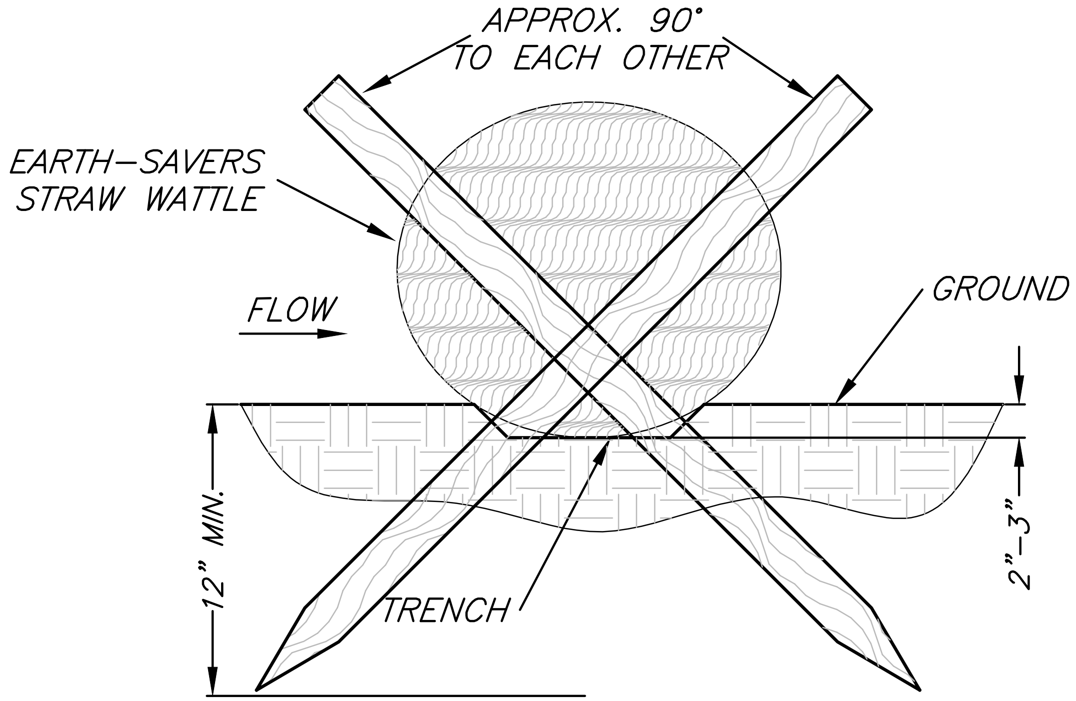

STRAW WATTLE INSTALLATION DETAIL

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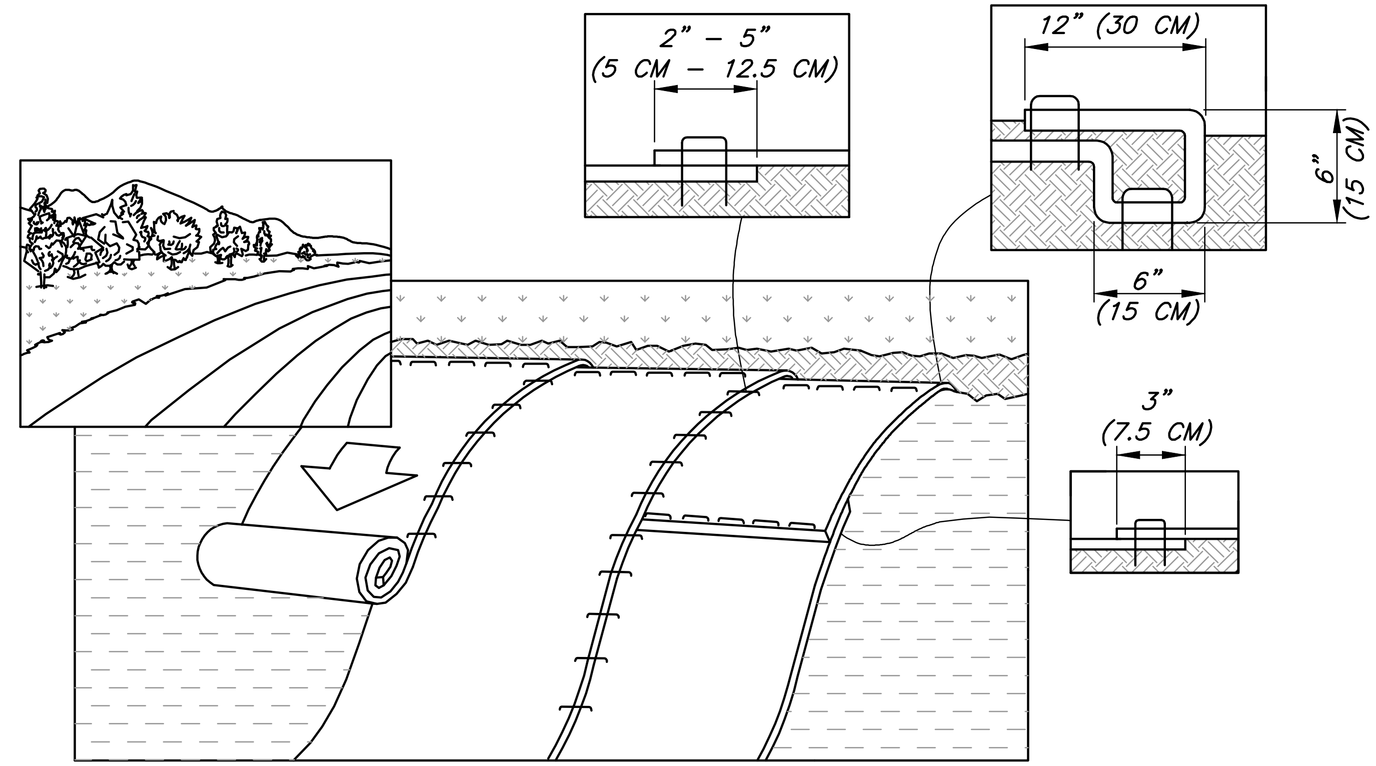

SLOPE INSTALLATION DETAIL

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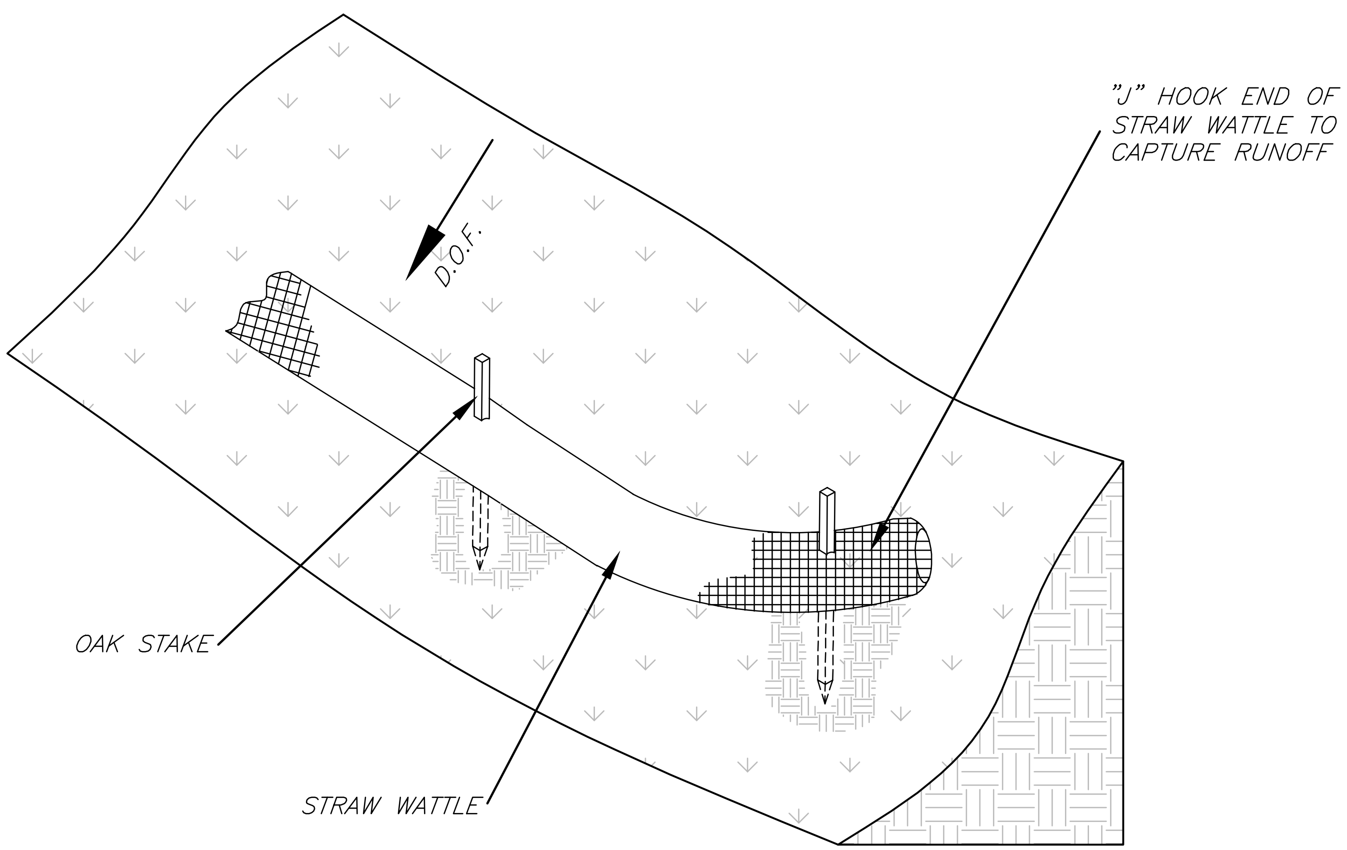

END OF STRAW WATTLE INSTALLATION DETAIL

N.T.S.

SLOPE INSTALLATION NOTES:

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP'S), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.

2, WHEN USING CELL–O–SEED, DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.

3. BEGIN AT TOP OF THE SLOPE BY ANCHORING THE RECP'S IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP'S EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP'S.

4. ROLL THE RECP'S DOWN OR HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.

5. THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY 2"–5" (5 CM – 12.5 CM) OVERLAP DEPENDING ON RECP'S TYPE.

6. CONSECUTIVE RECP'S SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP'S WIDTH.

7. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLES/STAKES LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.

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23-4V Access & Beaver Creek Xing

#	Revision	Date	By:
1			

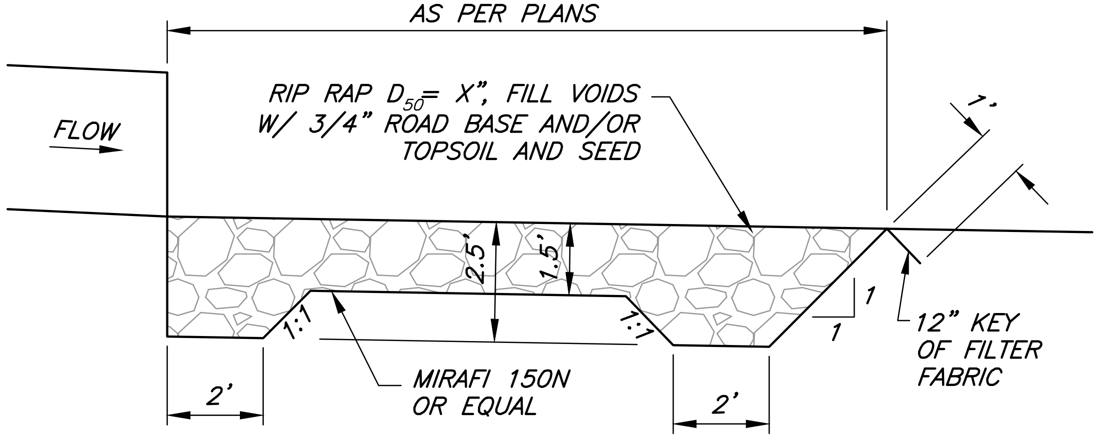
Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	XX
Date:	11.15.17
QC: XX	PE: JSS
File:	23-4VAccess-Cover

Title: Slope Installation and Straw Wattle Details

Dwg No. 5

Of: 43



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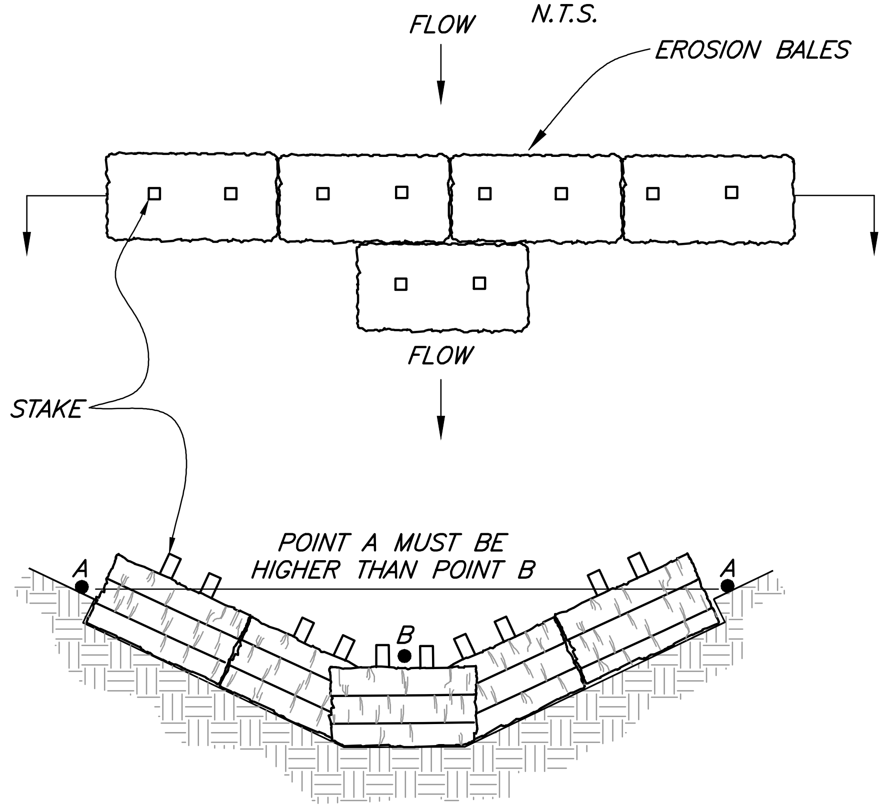
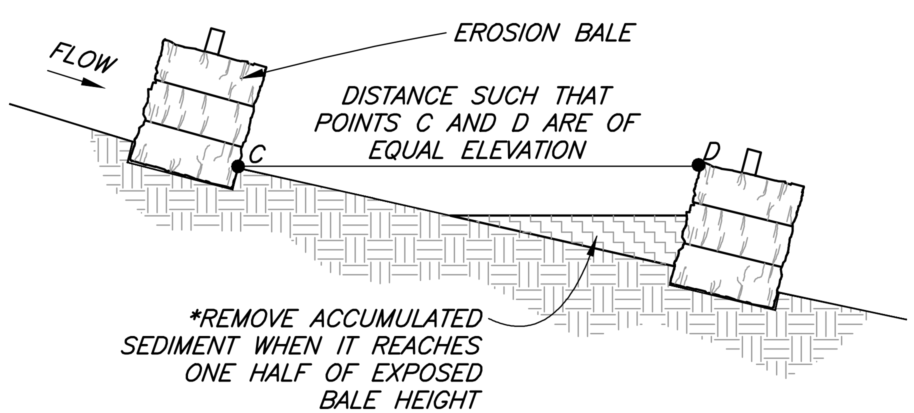


CROSS-SECTION AA



EROSION BALE PLACEMENT IN CHANNELIZED DITCH

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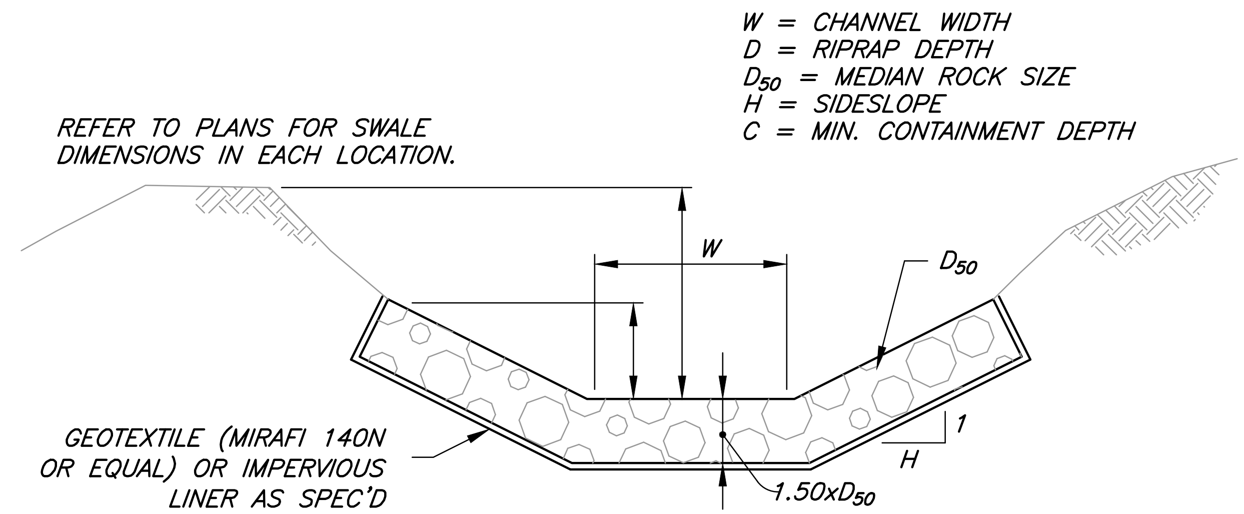


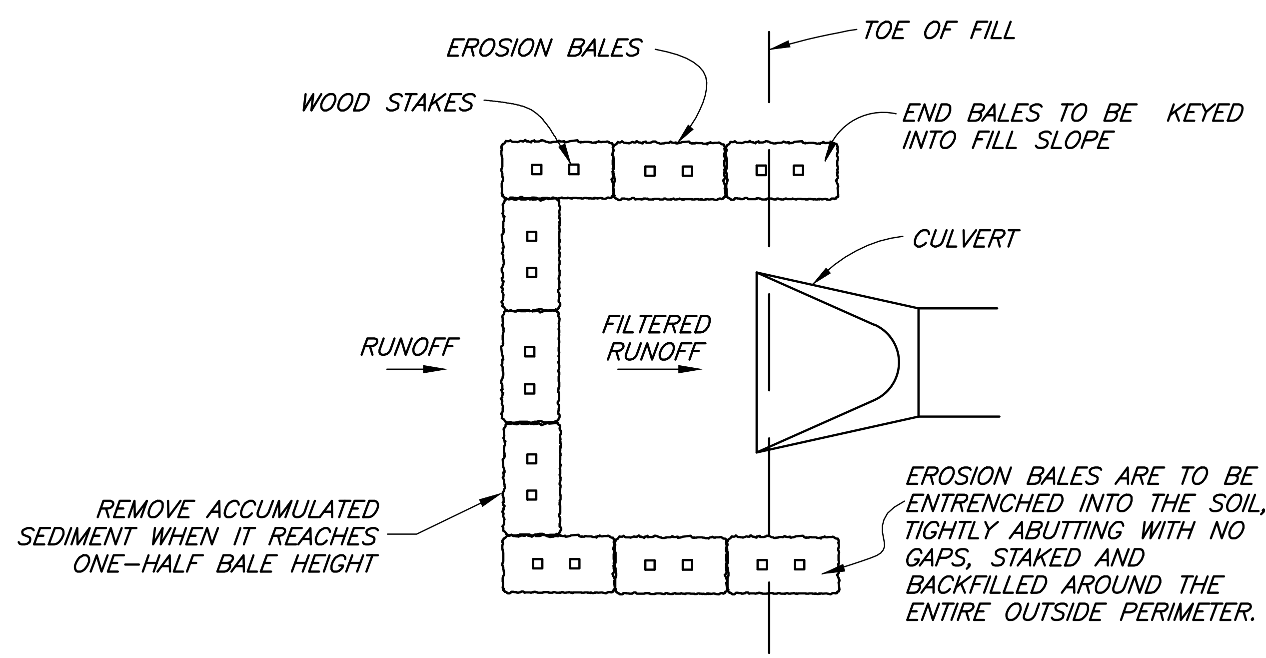
RIPRAP SWALE

NOT TO SCALE

NOTE:

GEOTEXTILE TO BE INSTALLED PER EROSION CONTROL NETTING DETAILS.

REFER TO SPECS FOR RIPRAP MATERIAL, GRADATION AND INSTALLATION REQ'TS.



CULVERT EROSION BALE INLET PROTECTION

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#	Revision	Date	By:
1			

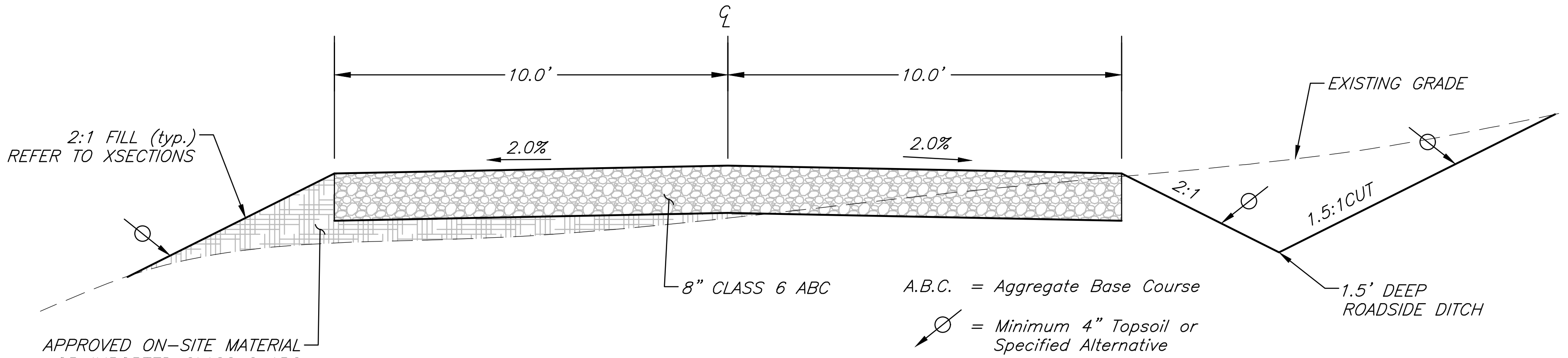
Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	XX
Date:	11.15.17
QC: XX	PE: JSS
File:	23-4VAccess-Cover

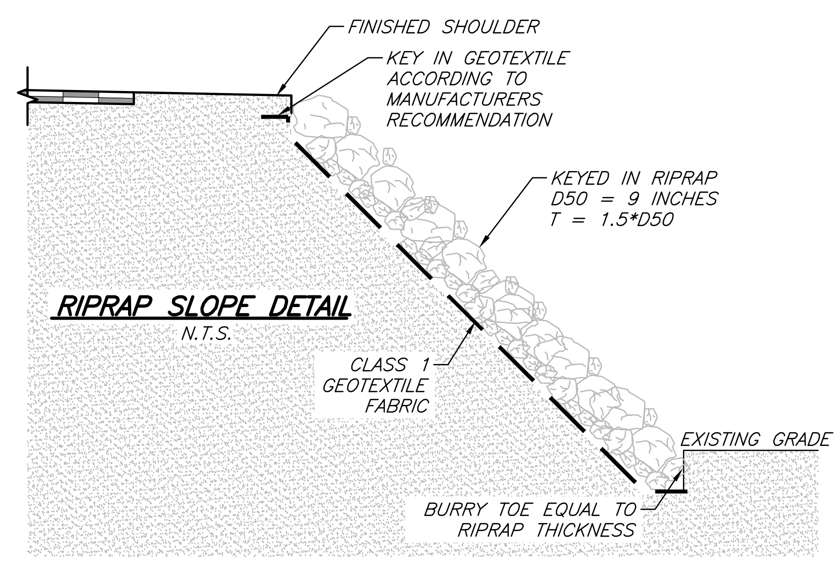
Title:
Riprap Swale and Erosion Bale Details

Dwg No.
6

Of: 43



TYPICAL ROAD SECTION



RIPRAP SLOPE DETAIL
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Job No.	2013-379.001
Drawn by:	XX
Date:	11.15.17
QC: XX	PE: JSS
File:	23-4VAccess-Cover

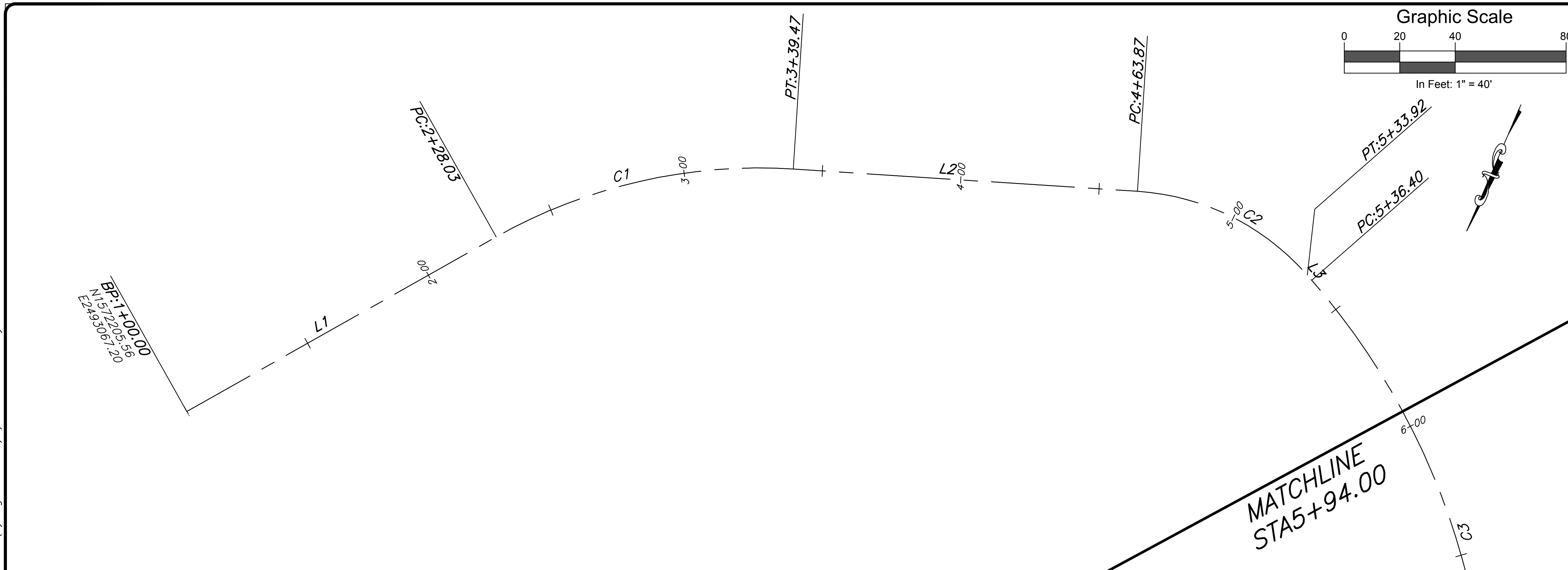
Title:

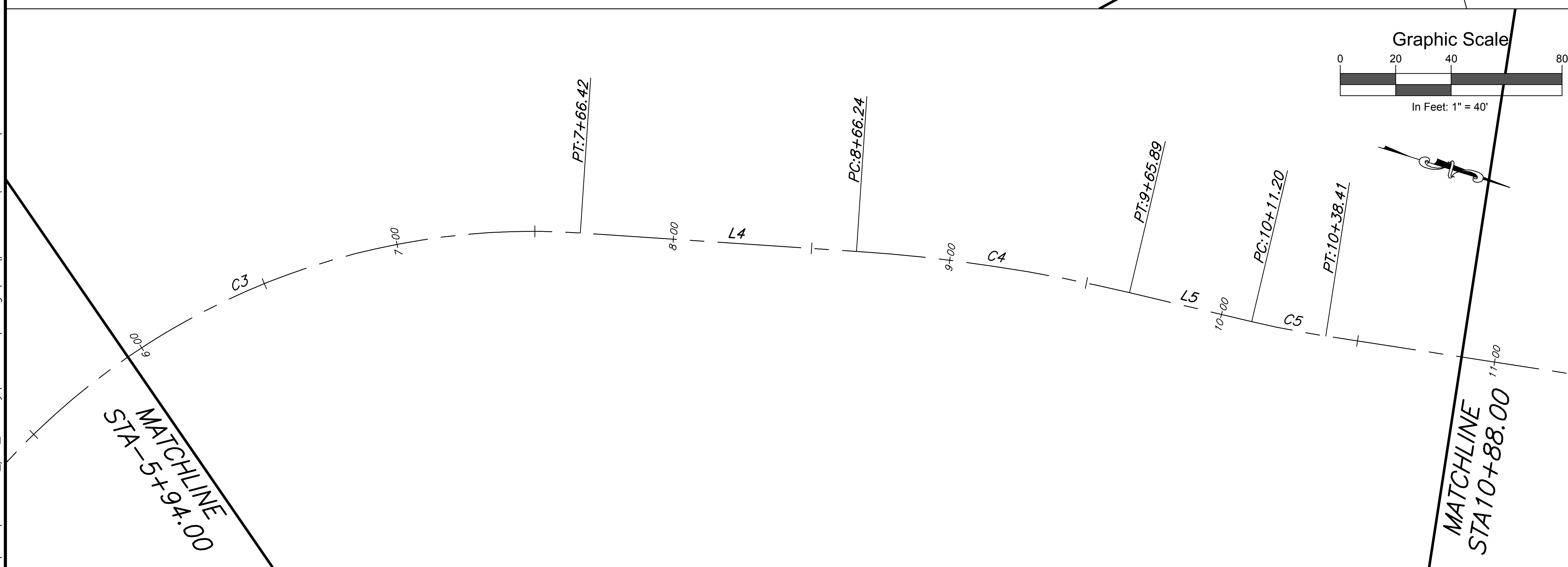
Access Road Section

Dwg No.

7

Of: 43





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#	Revision	Date	By:
1			

Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	SK
Date:	11.15.17
QC: AE	PE: JSS
File:	VFG - 23-4VGeo PlanPlan - (1)

Title:

Geometry Plans 1

Dwg No.

9

Of: 43

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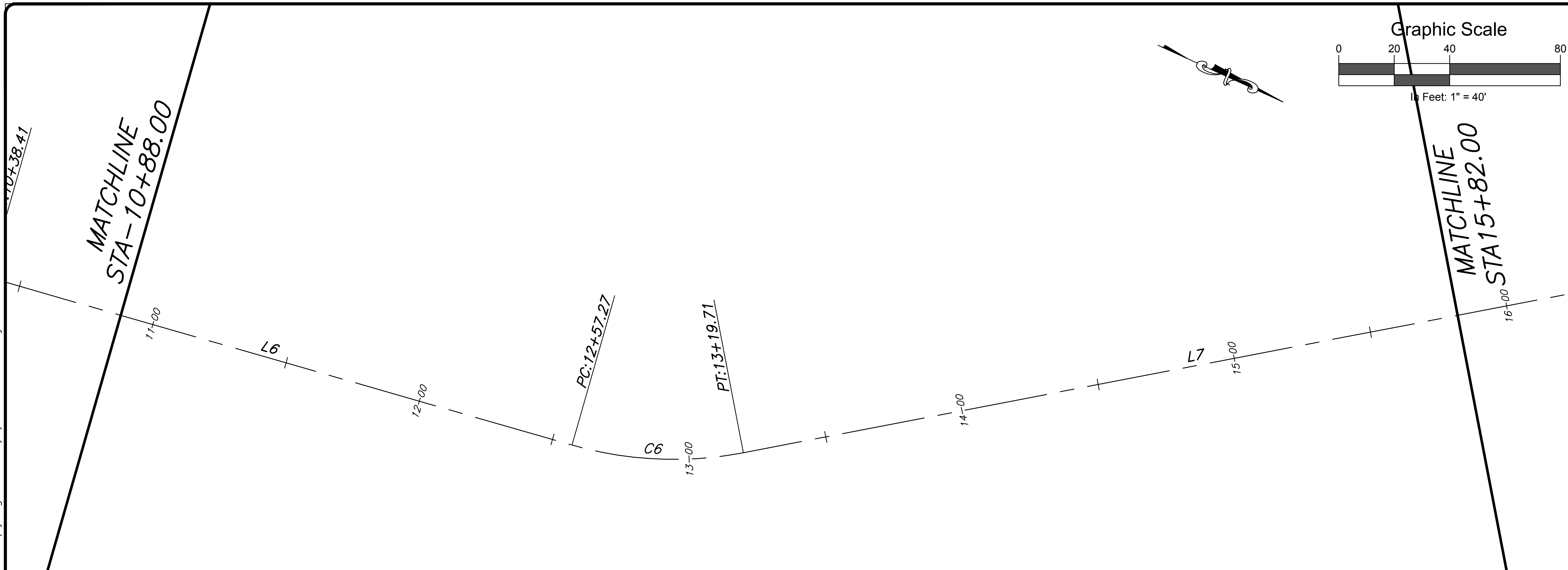

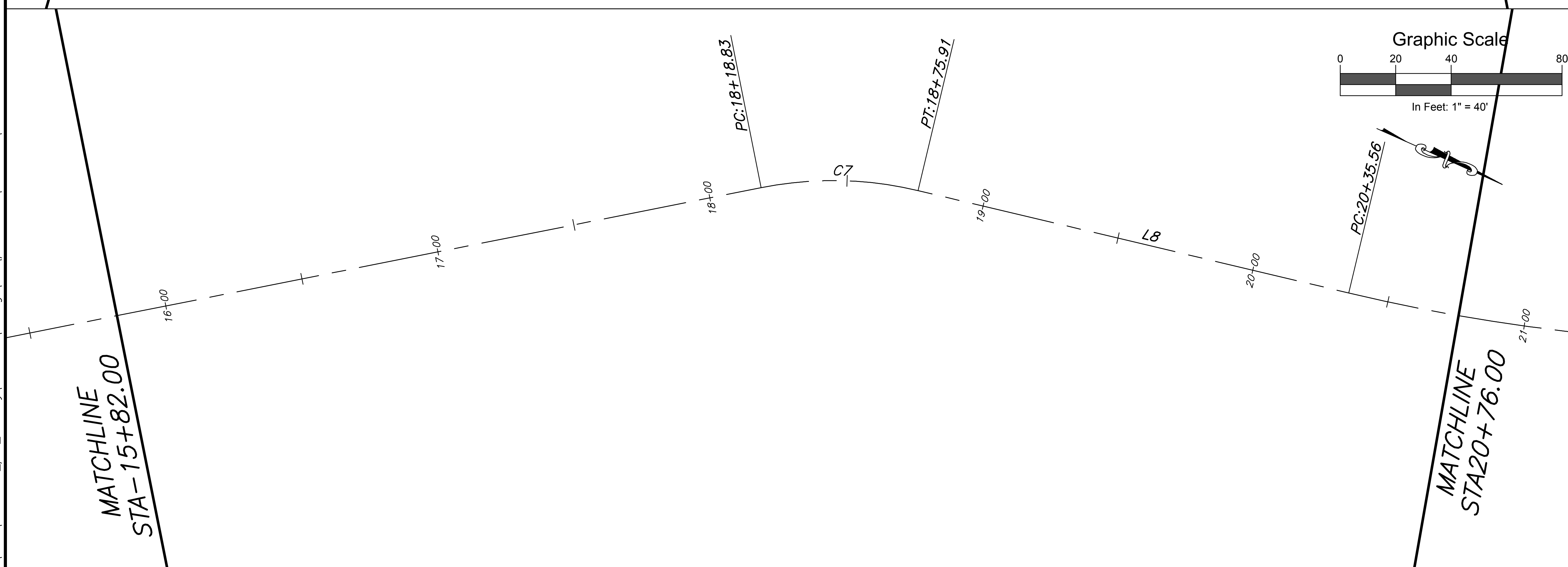

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Job No.	2013-379.001
Drawn by:	SK
Date:	11.15.17
QC: AE	PE: JSS
File:	VFG - 23-4VGeo PlanPlan - (1)

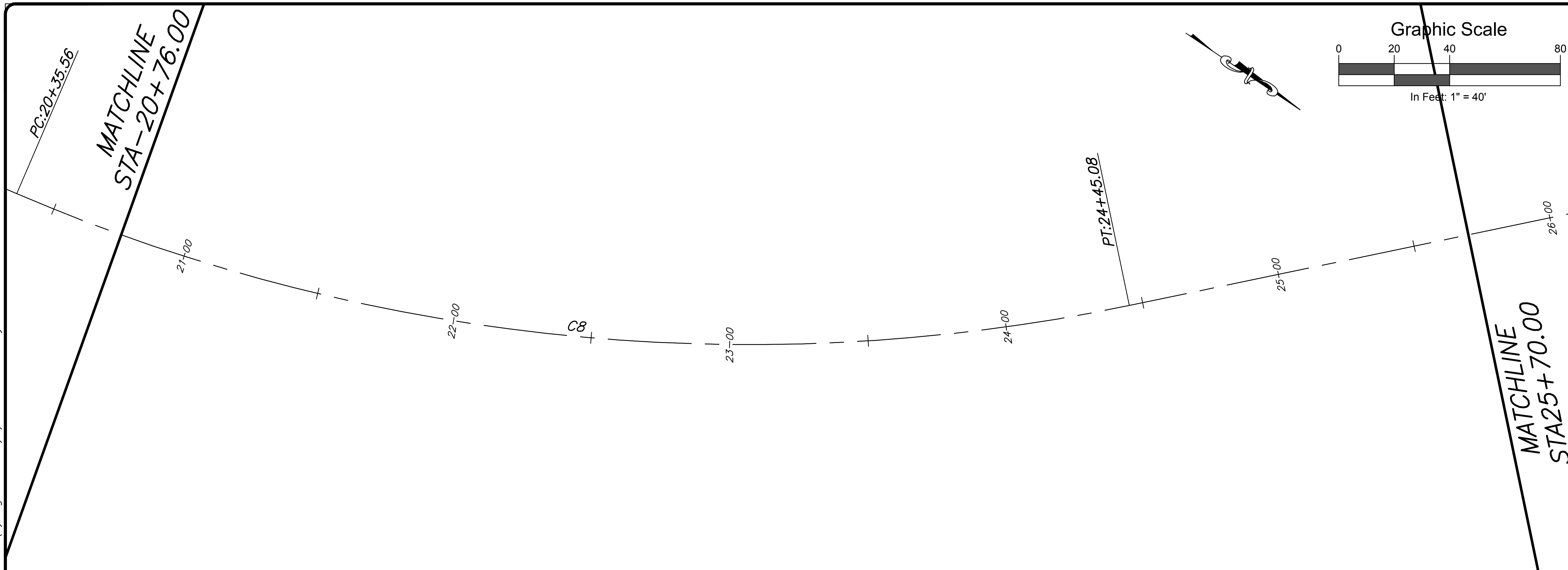
Title:

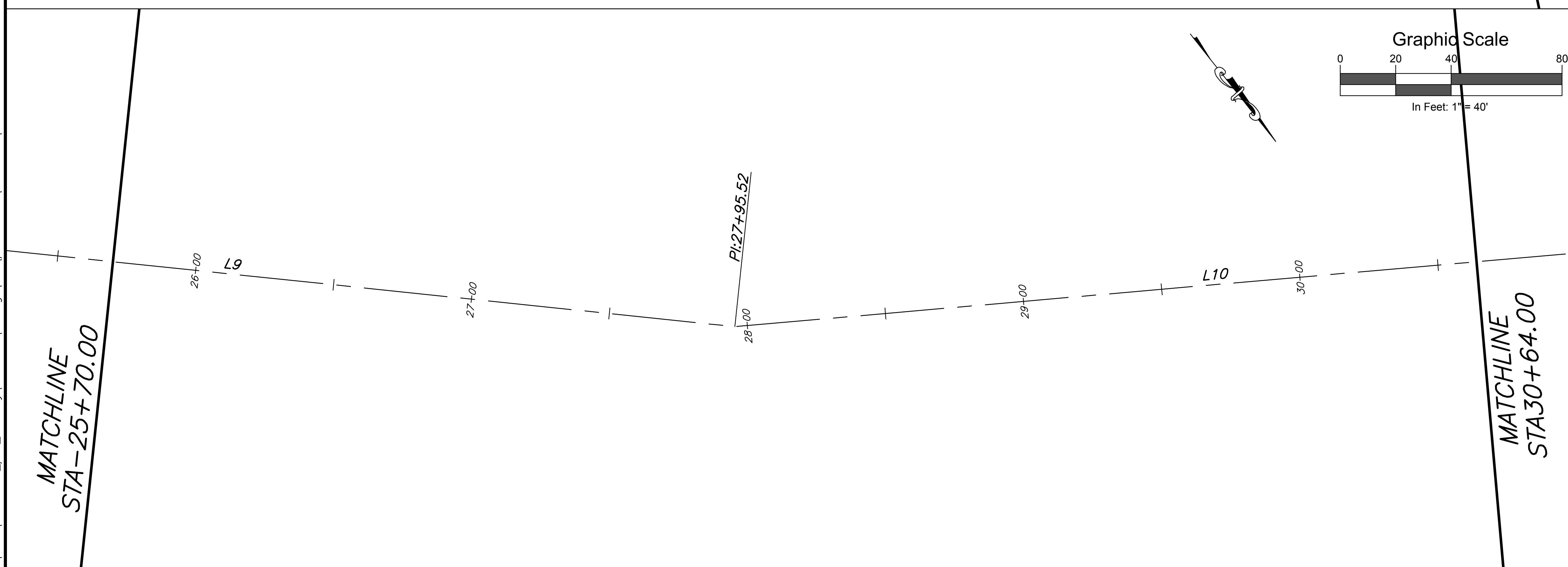
Geometry Plans 2

Dwg No.

10

Of : 43





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Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	SK
Date:	11.15.17
QC: AE	PE: JSS
File:	VFG - 23-4VGeo PlanPlan - (1)

Title:

Geometry Plans 3

Dwg No.

11

Of : 43

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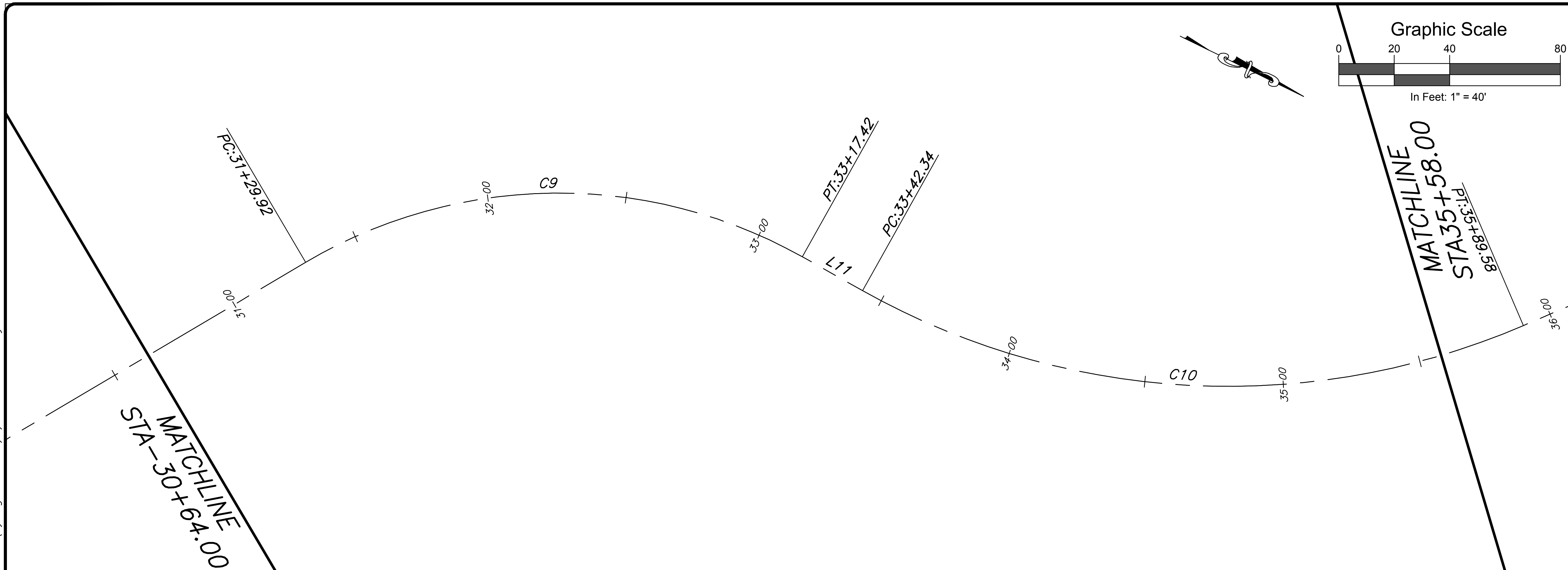

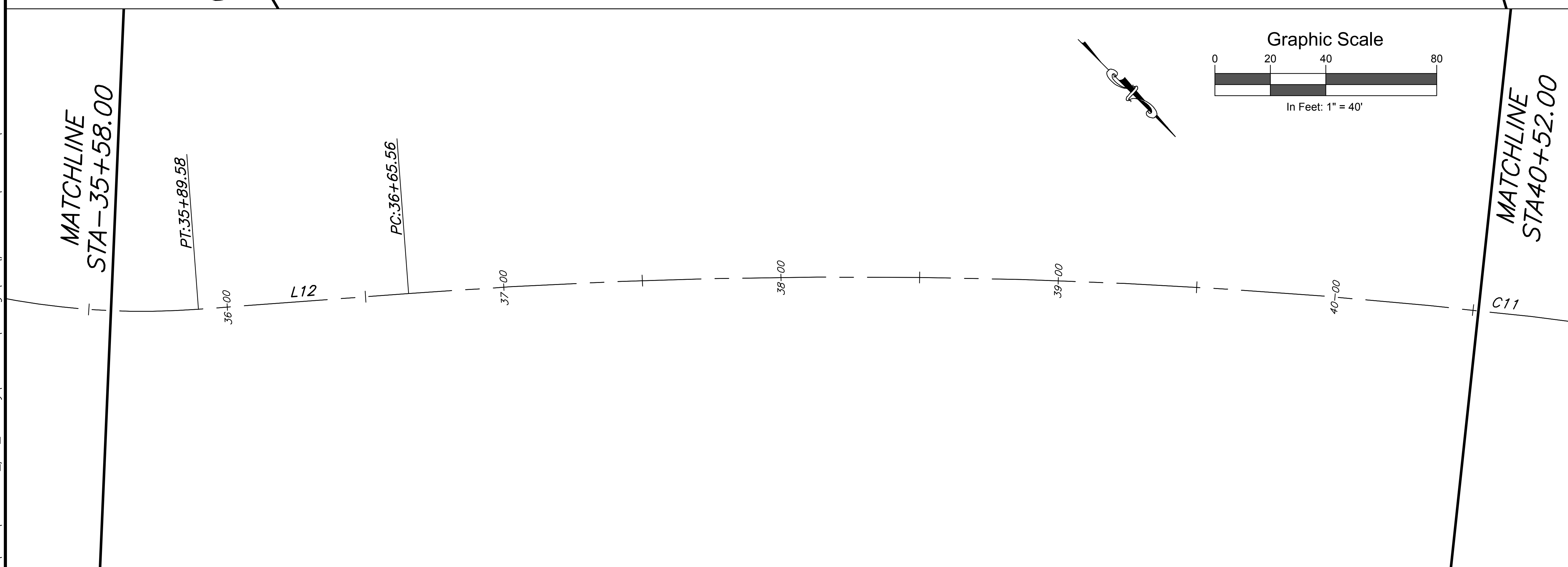

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1			

Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	SK
Date:	11.15.17
QC: AE	PE: JSS
File:	VFG - 23-4VGeo PlanPlan - (1)

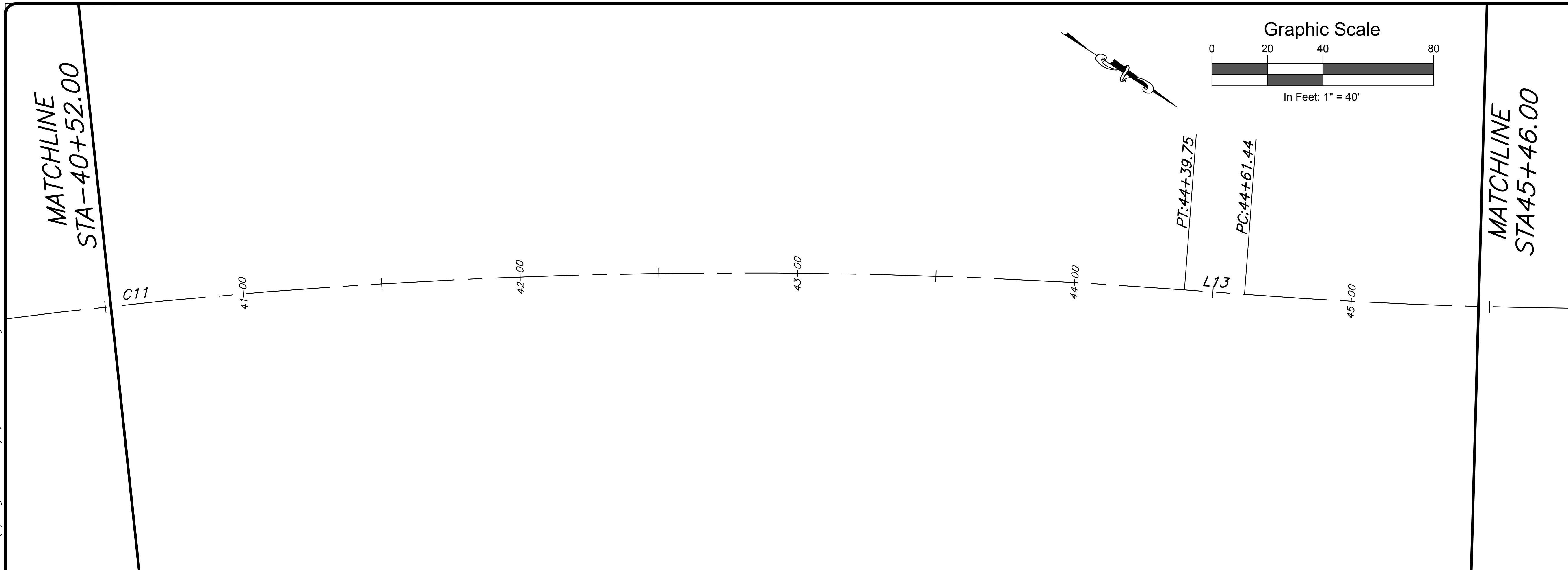
Title:

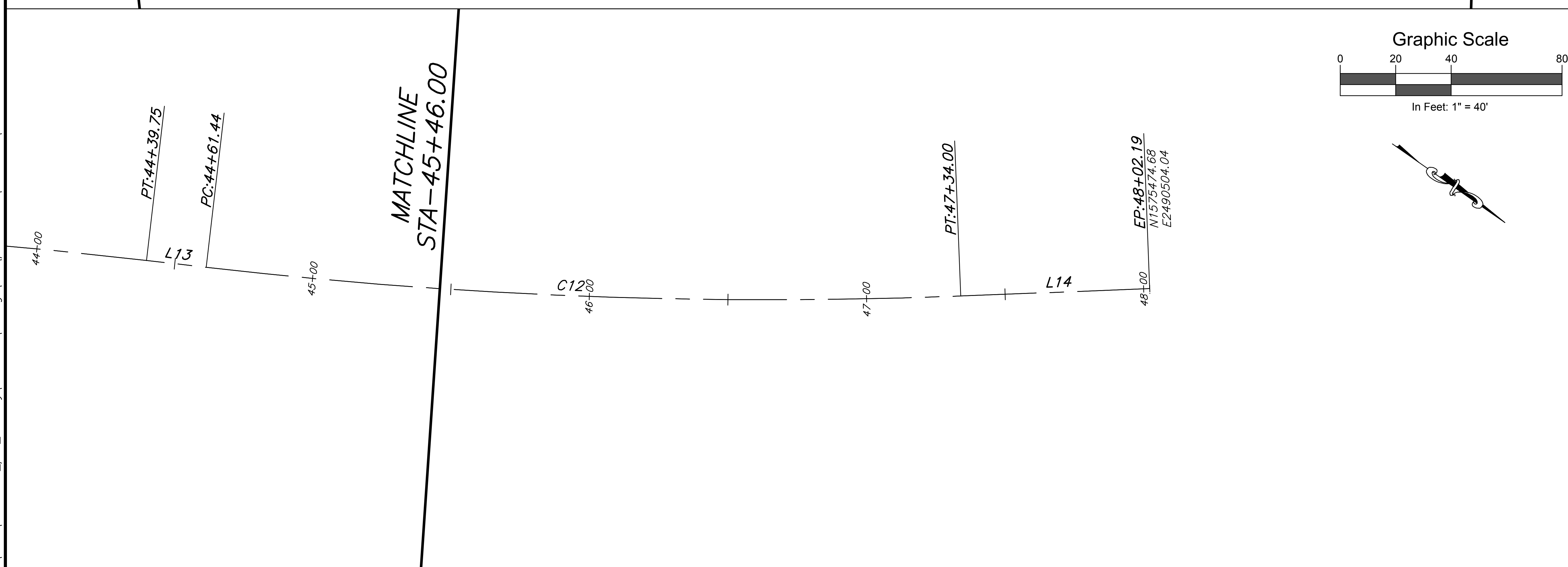
Geometry Plans 4

Dwg No.

12

Of : 43





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1			

Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	SK
Date:	11.15.17
QC: AE	PE: JSS
File:	VFG - 23-4VGeo PlanPlan - (1)

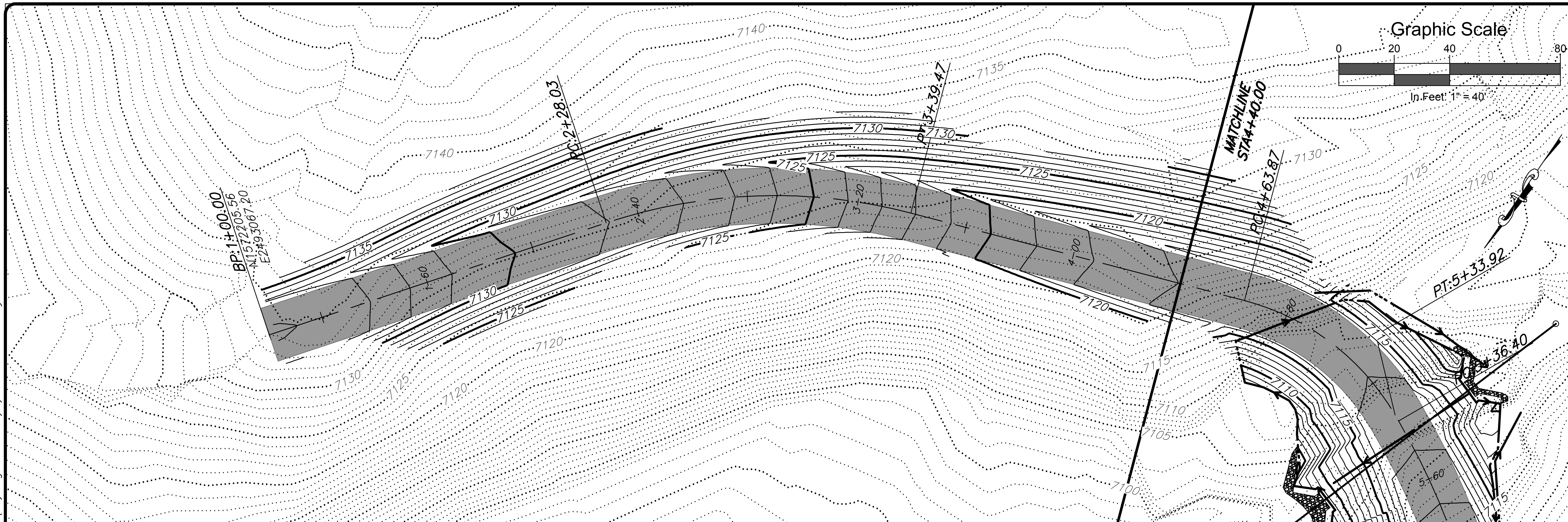
Title:

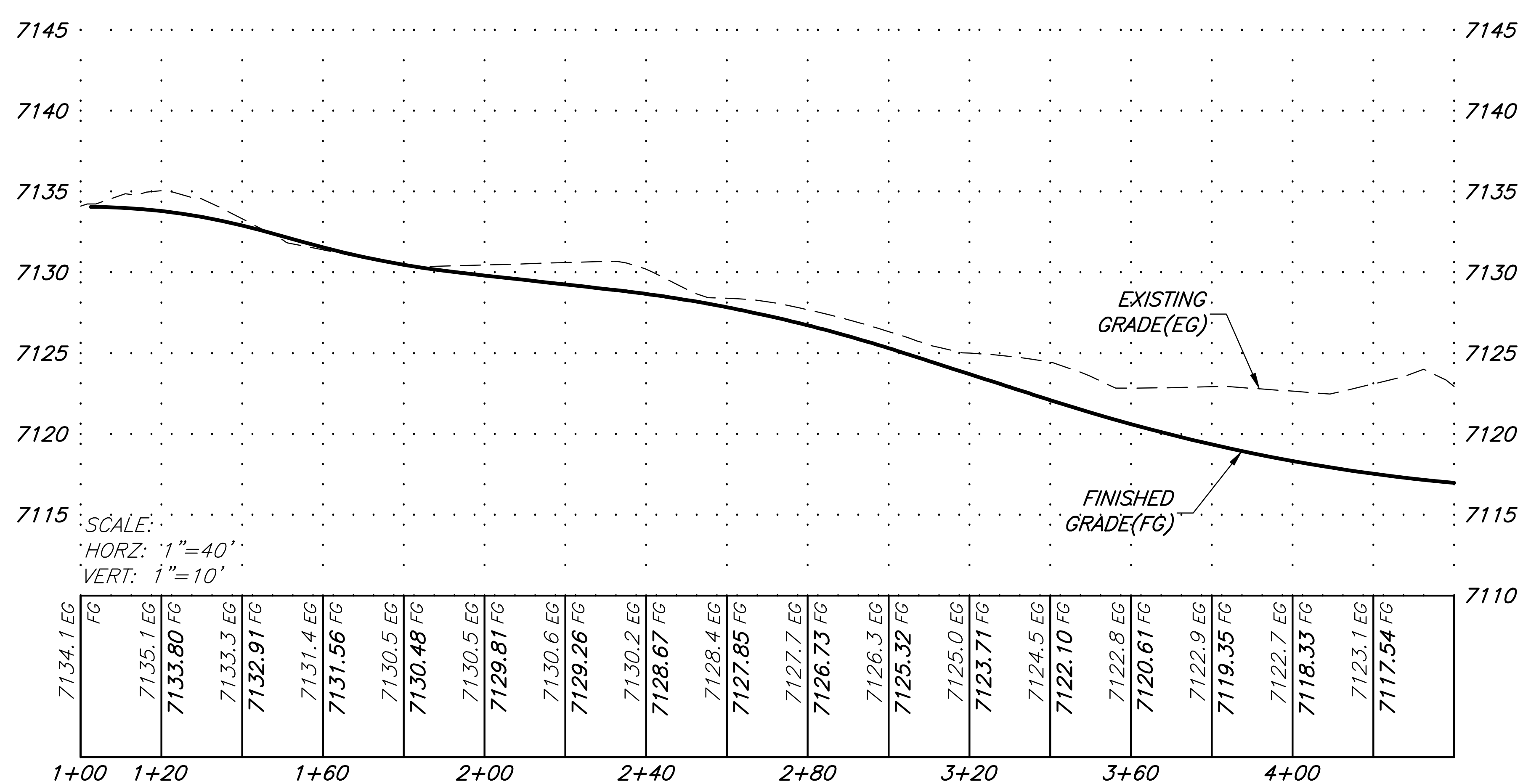
Geometry Plans 5

Dwg No.

13

Of: 43





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#	Revision	Date	By:
1			

Project Milestone: Preliminary Not For Construction

Job No. 2013-379.001
Drawn by: XX
Date: 11.15.17
QC: XX PE: JSS
File: 23-4VAccessRd Plan & Profile - (16)

Title: 23-4V-P&P 1

Dwg No. 15

Of: 43

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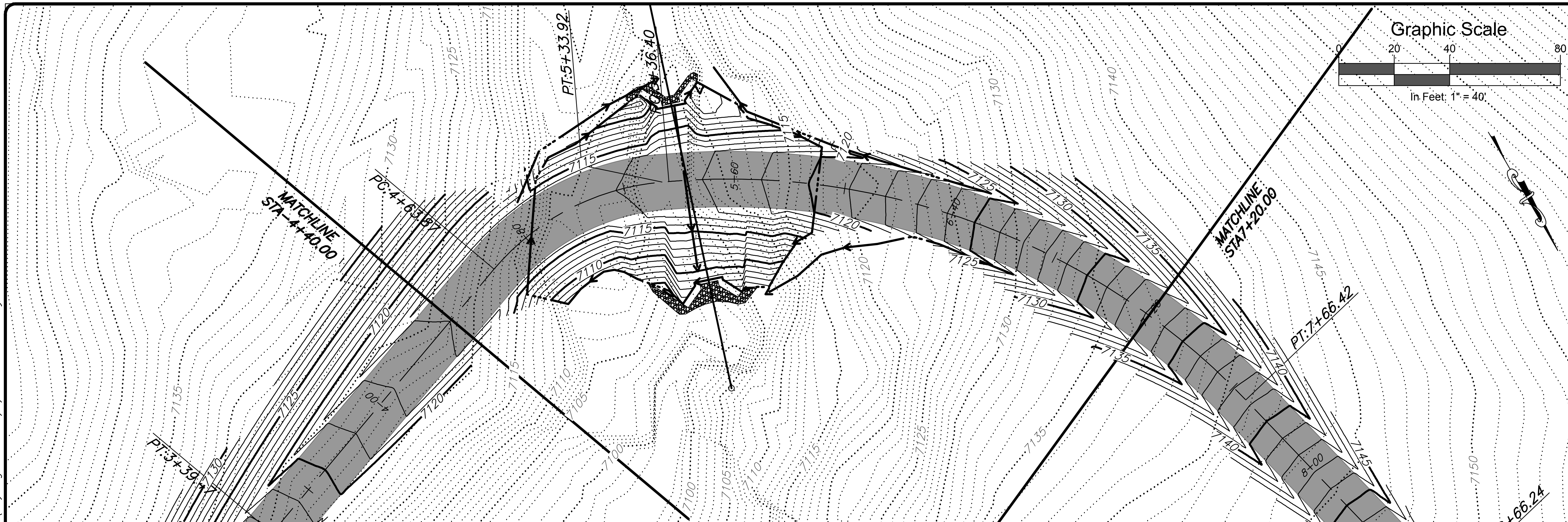

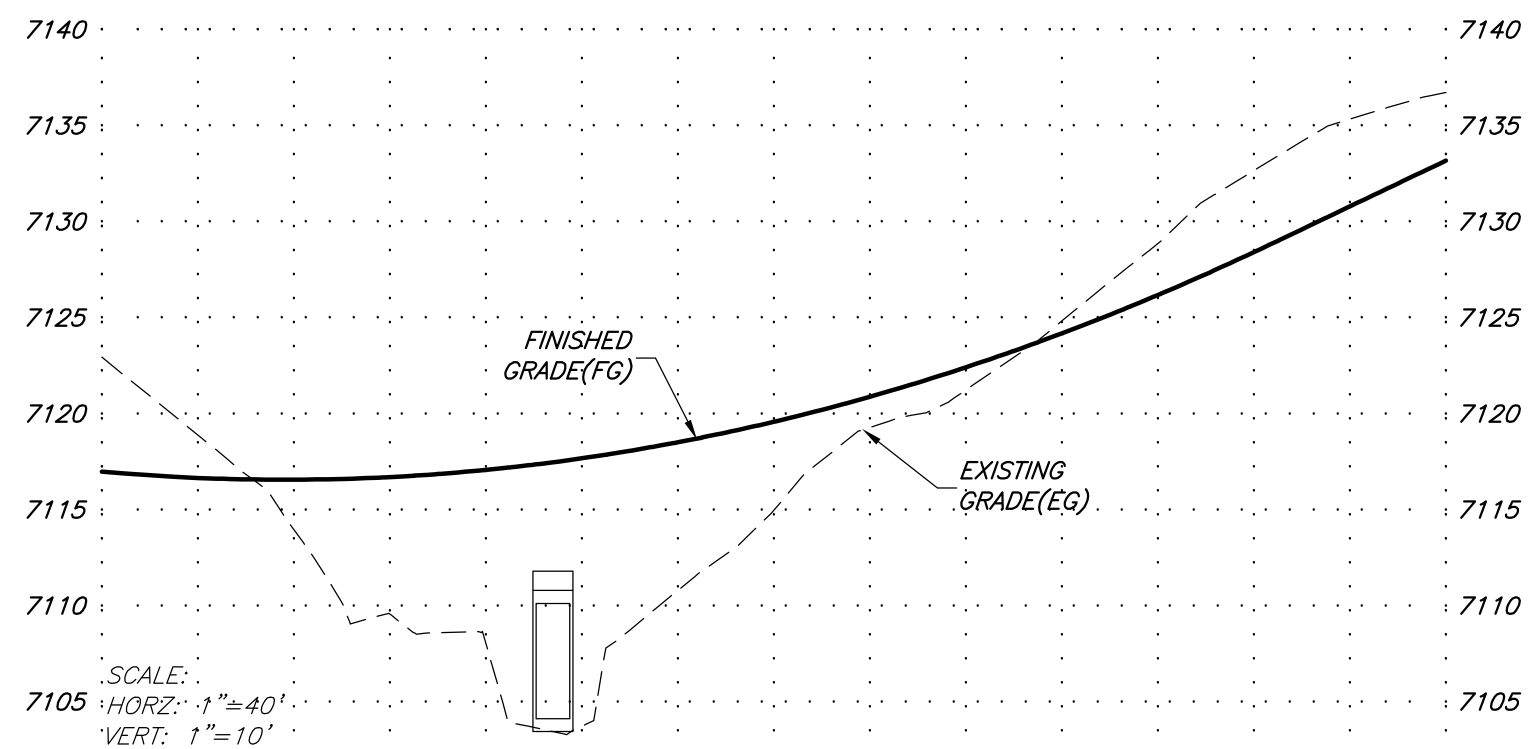

EG	FG
7117.0	7116.98
7116.7	7116.65
7116.6	7116.56
7116.7	7116.70
7117.1	7117.07
7117.7	7117.67
7118.5	7118.51
7119.6	7119.57
7120.9	7120.88
7122.4	7122.41
7124.2	7124.17
7126.2	7126.17
7128.4	7128.40
7130.8	7130.79

4+40 4+80 5+20 5+60 6+00 6+40 6+80

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#	Revision	Date	By:
1			

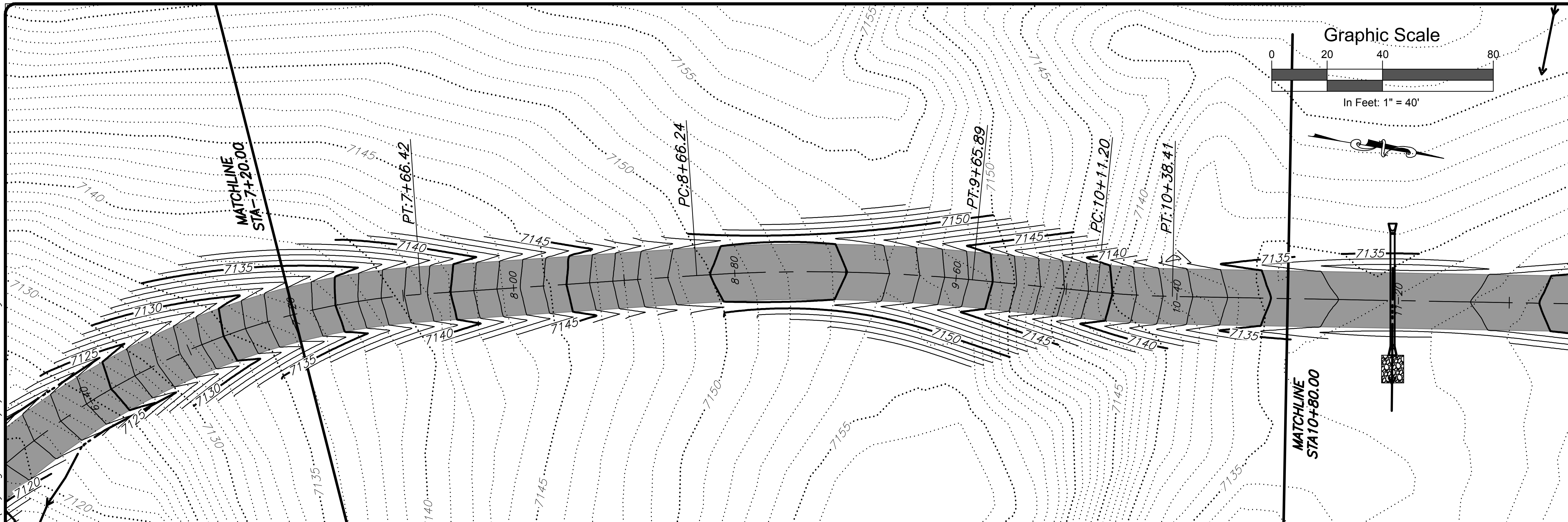
Project Milestone: Preliminary Not For Construction

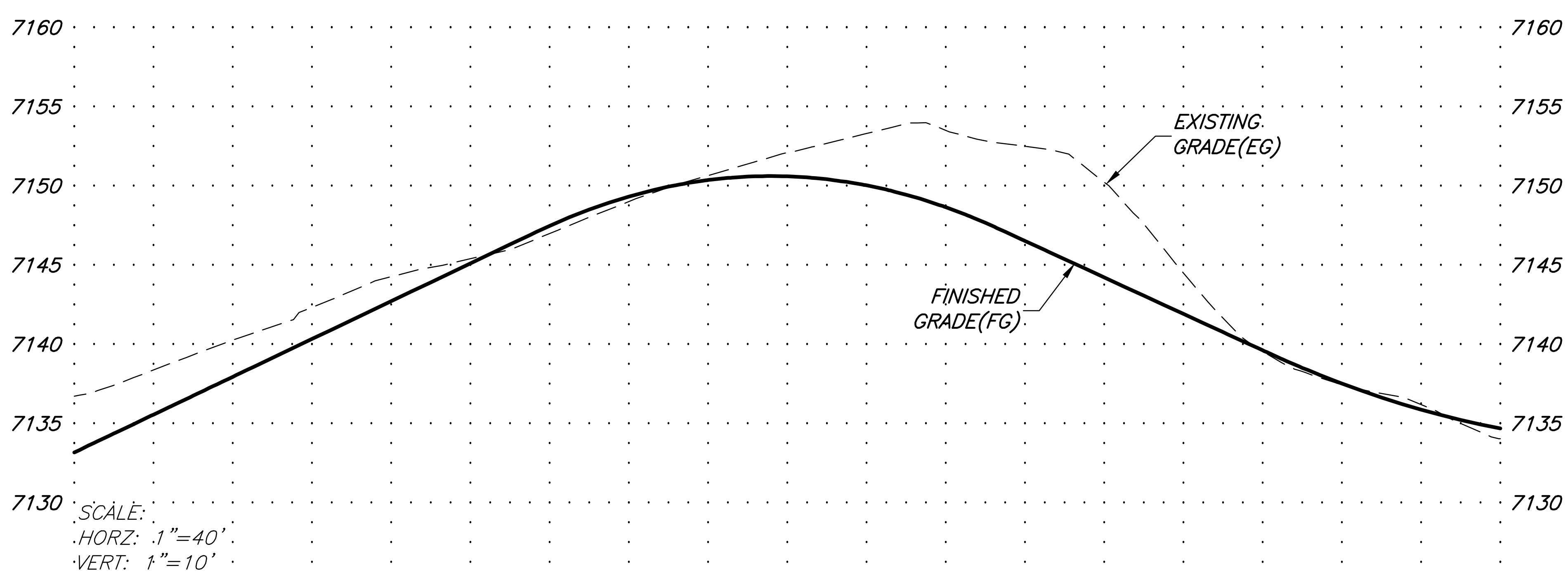
Job No.	2013-379.001
Drawn by:	XX
Date:	11.15.17
QC: XX	PE: JSS
File:	23-4VAccessRd Plan & Profile - (16)

Title:
23-4V-P&P 2

Dwg No.
16

Of: 43





Station	EG	FG
7+20	7133.2	7133.17
	7135.6	7135.56
7+60	7137.9	7137.95
	7140.3	7140.33
8+00	7142.7	7142.72
	7145.1	7145.10
8+40	7147.5	7147.48
	7149.3	7149.32
8+80	7150.4	7150.36
	7150.6	7150.60
9+20	7150.0	7150.03
	7148.7	7148.65
9+60	7146.5	7146.52
	7144.2	7144.22
10+00	7141.9	7141.92
	7139.6	7139.62
10+40	7137.5	7137.52
	7135.9	7135.88

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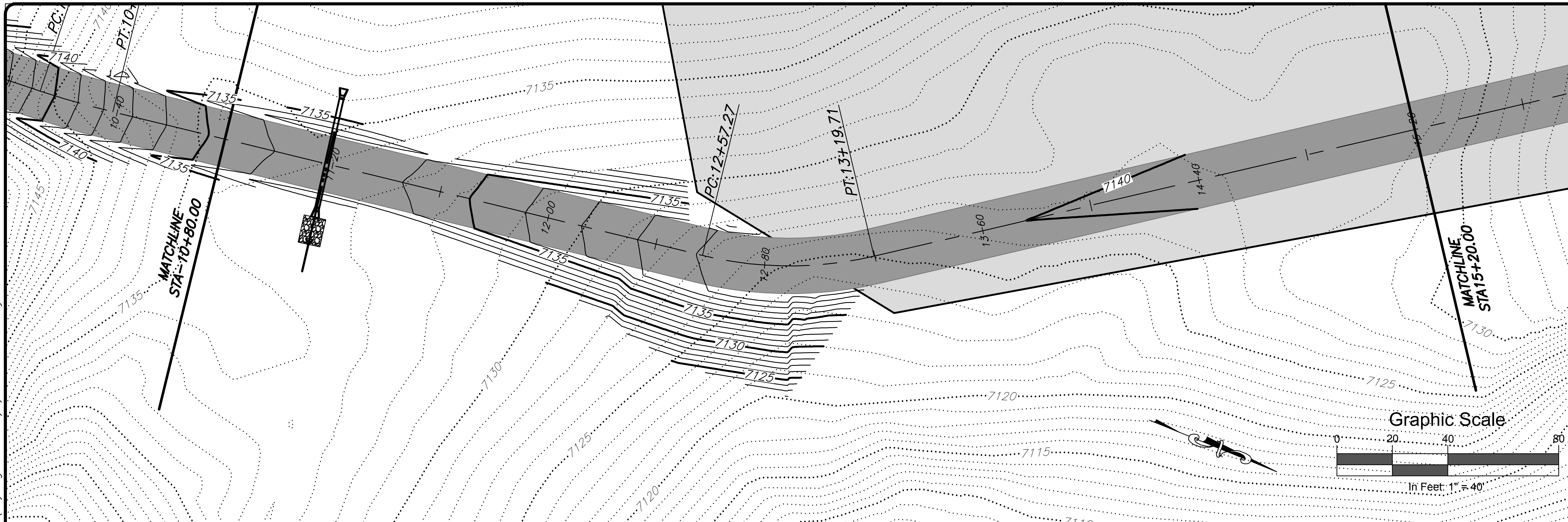
1			

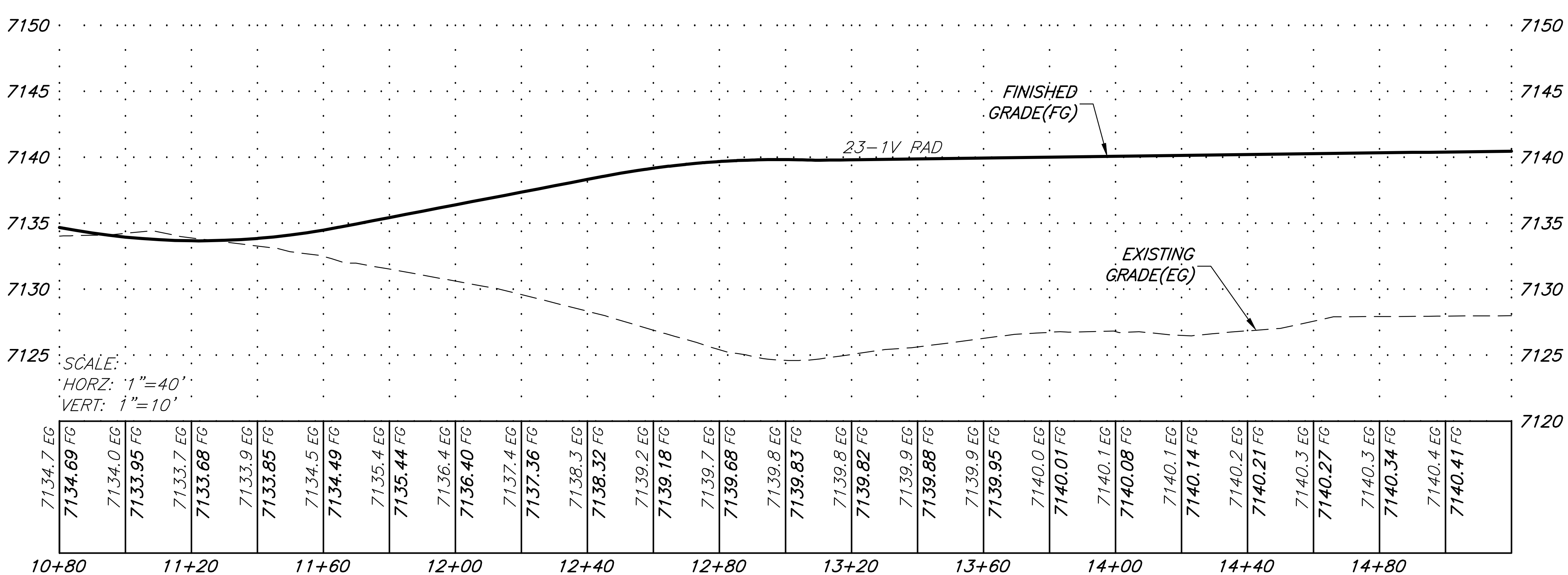
Project Milestone: Preliminary Not For Construction

Job No. 2013-379.001
Drawn by: XX
Date: 11.15.17
QC: XX | PE: JSS
File: 23-4VAccessRd Plan & Profile - (16)

Title:
23-4V-P&P 3

Dwg No.
17
Of: 43





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1			

Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	XX
Date:	11.15.17
QC: XX	PE: JSS
File:	23-4VAccessRd Plan & Profile - (16)

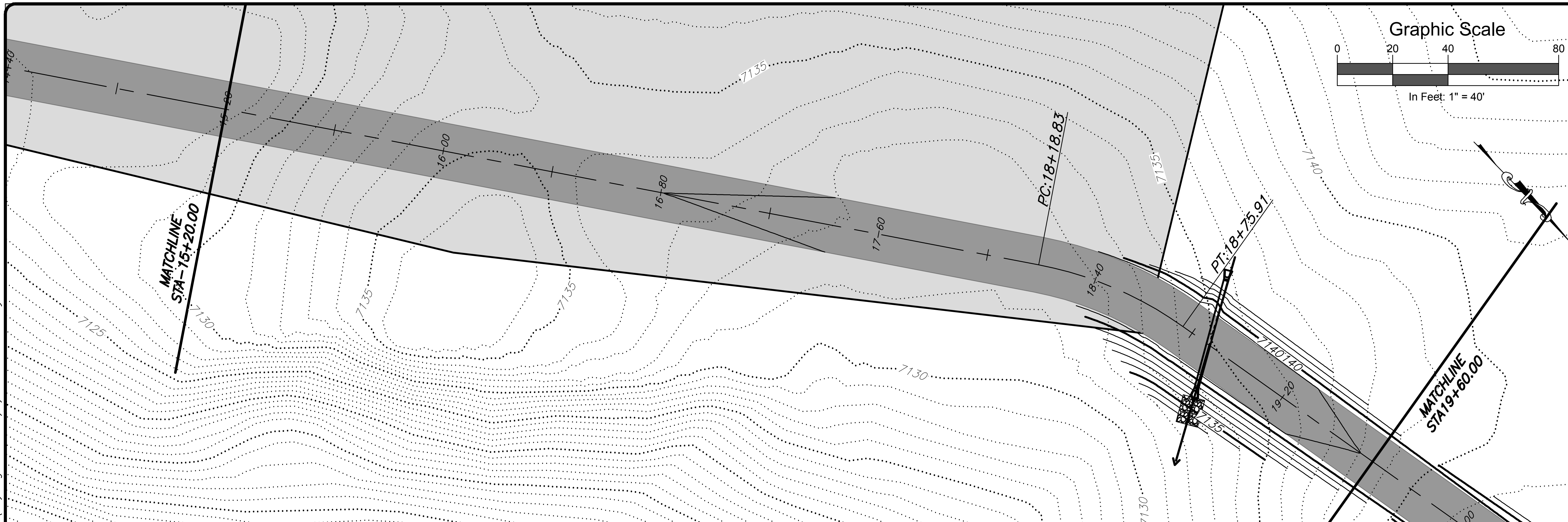
Title:

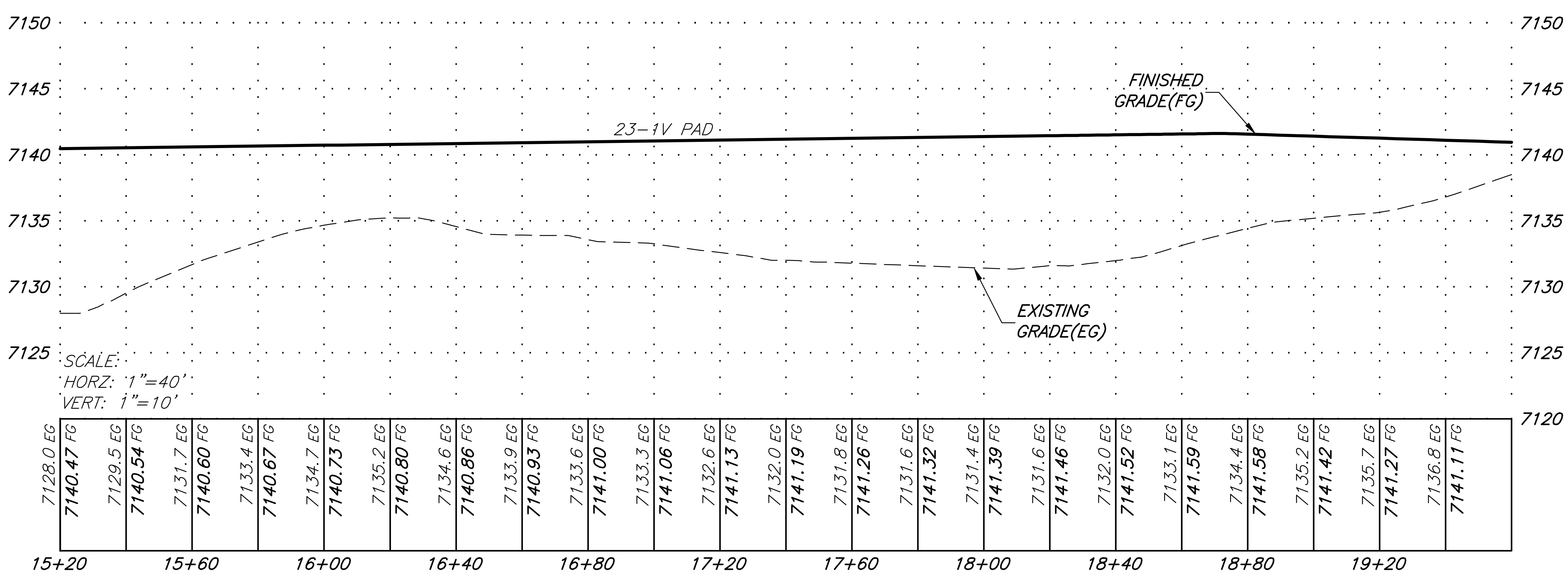
23-4V-P&P 4

Dwg No.

18

Of: 43





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1			

Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	XX
Date:	11.15.17
QC: XX	PE: JSS
File:	23-4VAccessRd Plan & Profile - (16)

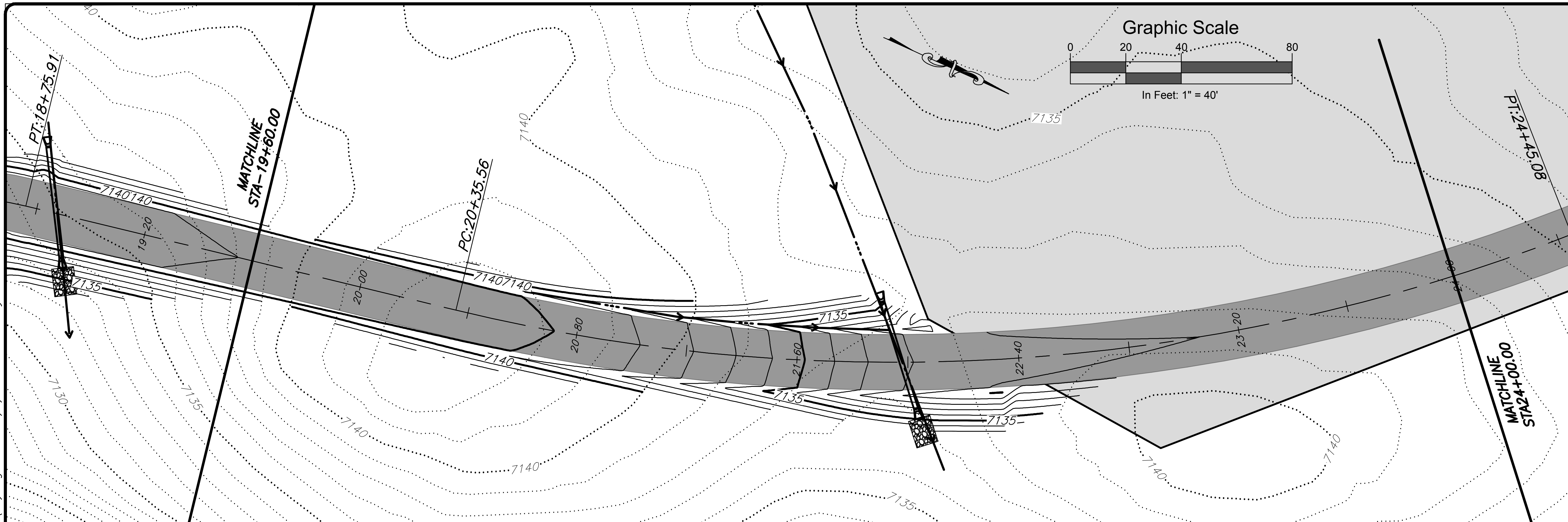
Title:

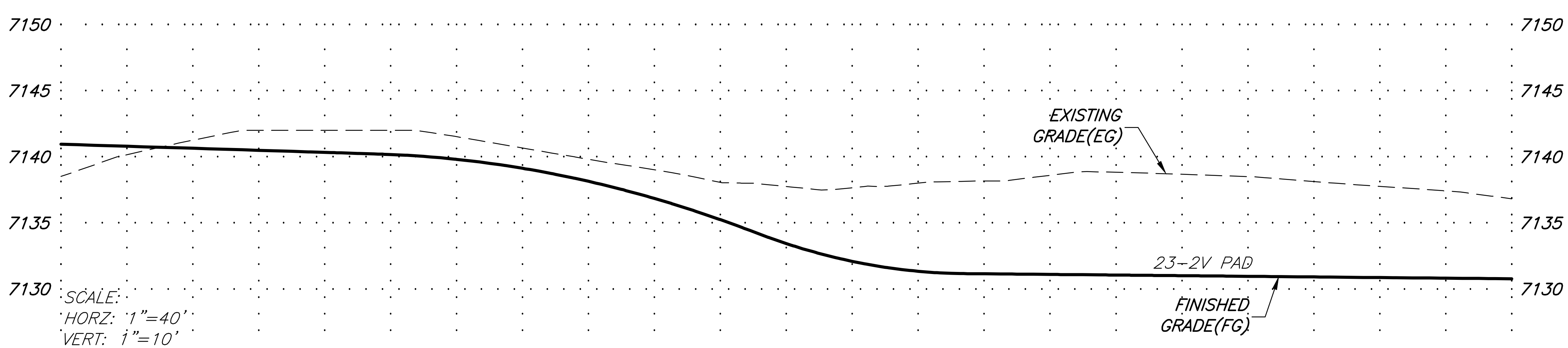
23-4V-P&P 5

Dwg No.

19

Of: 43





Station	EG	FG
19+60	7138.5	7140.96
	7140.2	7140.80
20+00	7141.3	7140.65
	7142.0	7140.49
20+40	7142.0	7140.34
	7142.0	7140.18
20+80	7141.5	7139.81
	7140.7	7139.14
21+20	7139.8	7138.15
	7139.0	7136.86
21+60	7138.1	7135.25
	7137.8	7133.44
22+00	7137.7	7132.09
	7138.0	7131.34
22+40	7138.2	7131.15
	7138.6	7131.11
22+80	7138.8	7131.06
	7138.7	7131.01
23+20	7138.5	7130.97
	7138.1	7130.92
23+60	7137.8	7130.87
	7137.4	7130.82

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#	Revision	Date	By:
1			

Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	XX
Date:	11.15.17
QC: XX	PE: JSS
File:	23-4VAccessRd Plan & Profile - (16)

Title: 23-4V-P&P 6

Dwg No. 20

Of: 43

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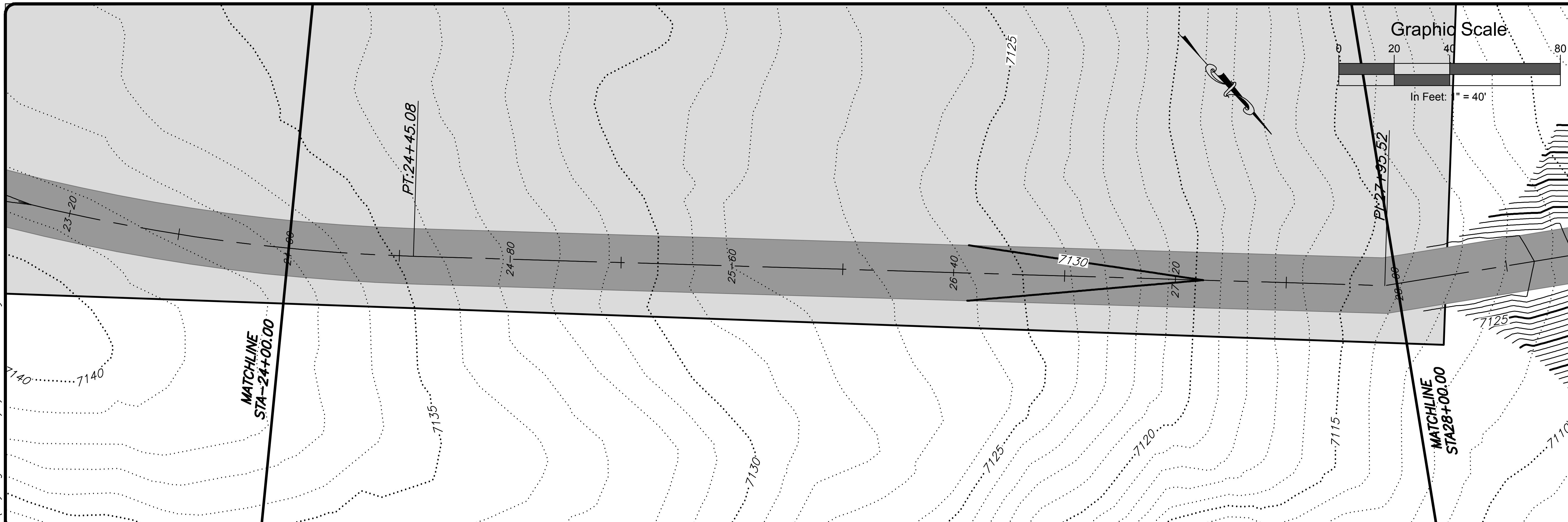

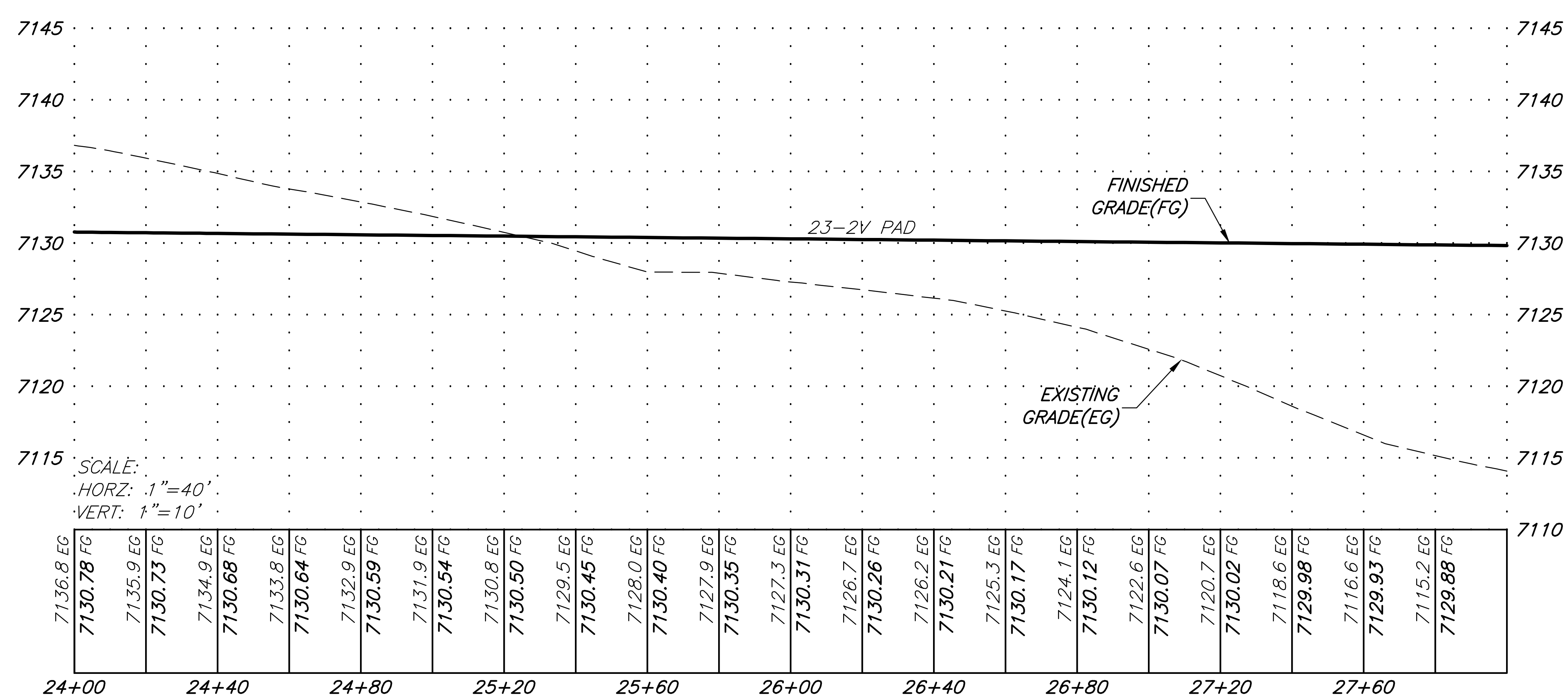

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1			

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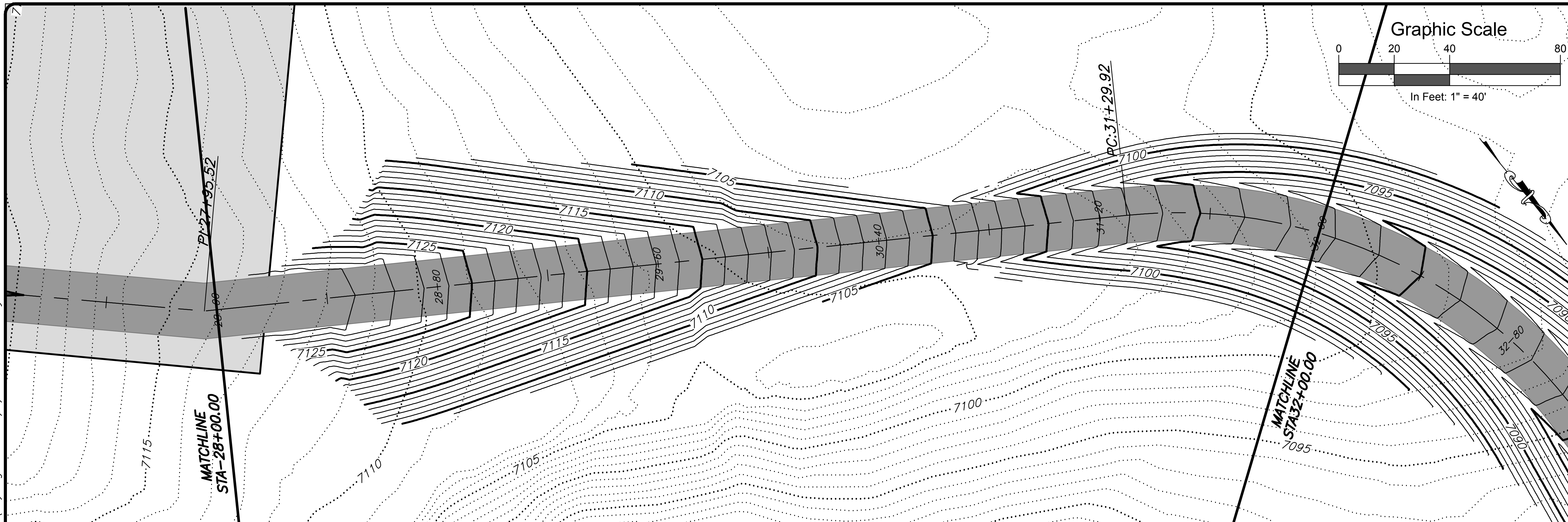
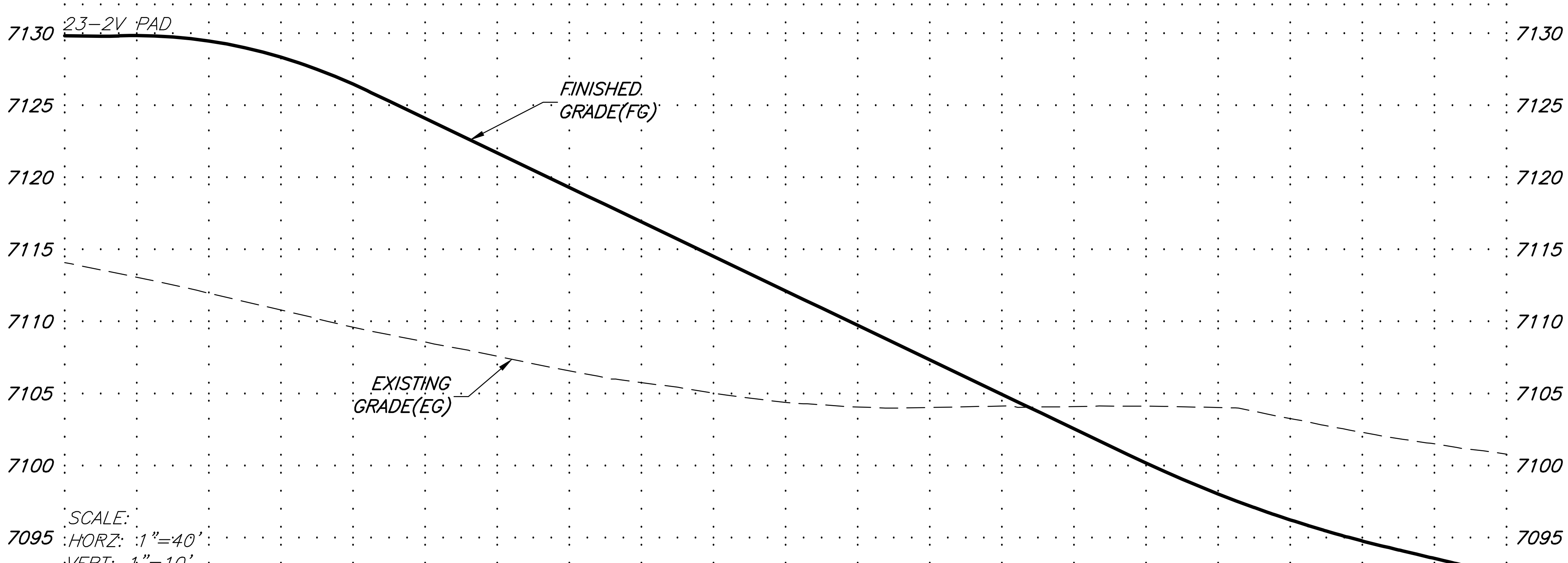
Date: 11.15.17
QC: XX PE: JSS
File: 23-4VAccessRd Plan & Profile - (17)

Title:
23-4V-P&P 7

Dwg No.
21
Of: 43





Station	EG	FG
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	7113.1	7129.85
28+40	7112.0	7129.48
	7110.8	7128.35
28+80	7109.6	7126.48
	7108.6	7124.10
29+20	7107.6	7121.71
	7106.6	7119.31
29+60	7105.8	7116.92
	7105.0	7114.52
30+00	7104.4	7112.13
	7104.1	7109.74
30+40	7104.0	7107.34
	7104.1	7104.95
30+80	7104.1	7102.55
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	7103.3	7096.23
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Carmony Exploration, LLC
23-4V Access & Beaver Creek Xing

#	Revision	Date	By:
1			

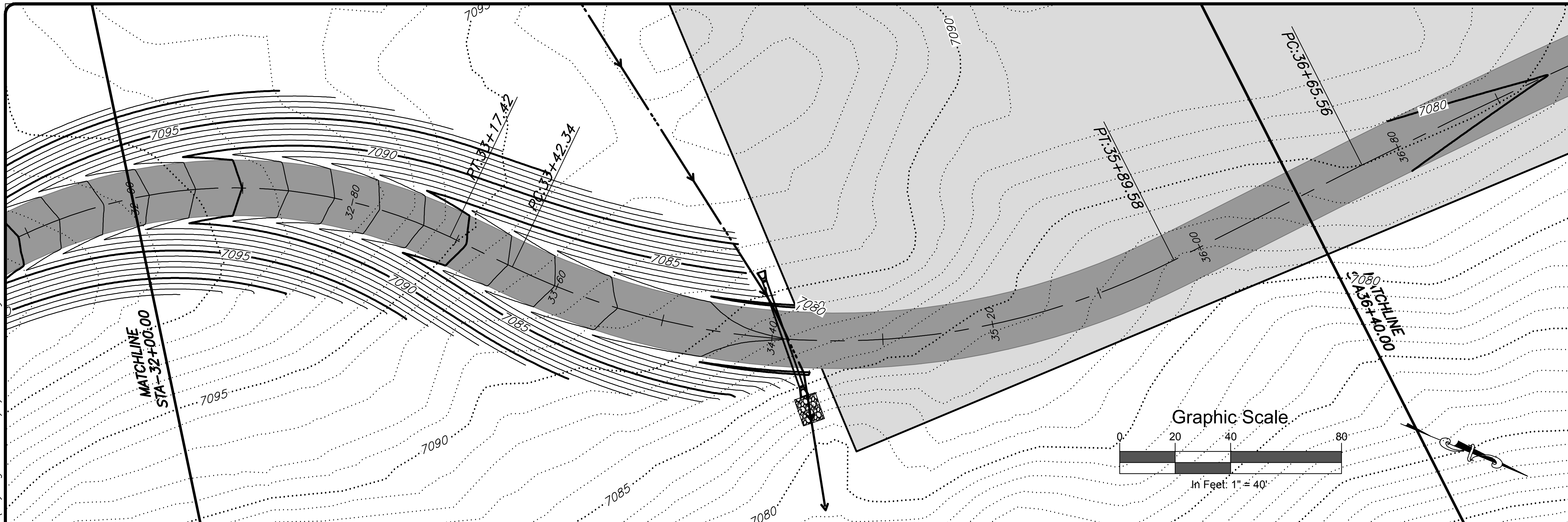
Project Milestone: Preliminary Not For Construction

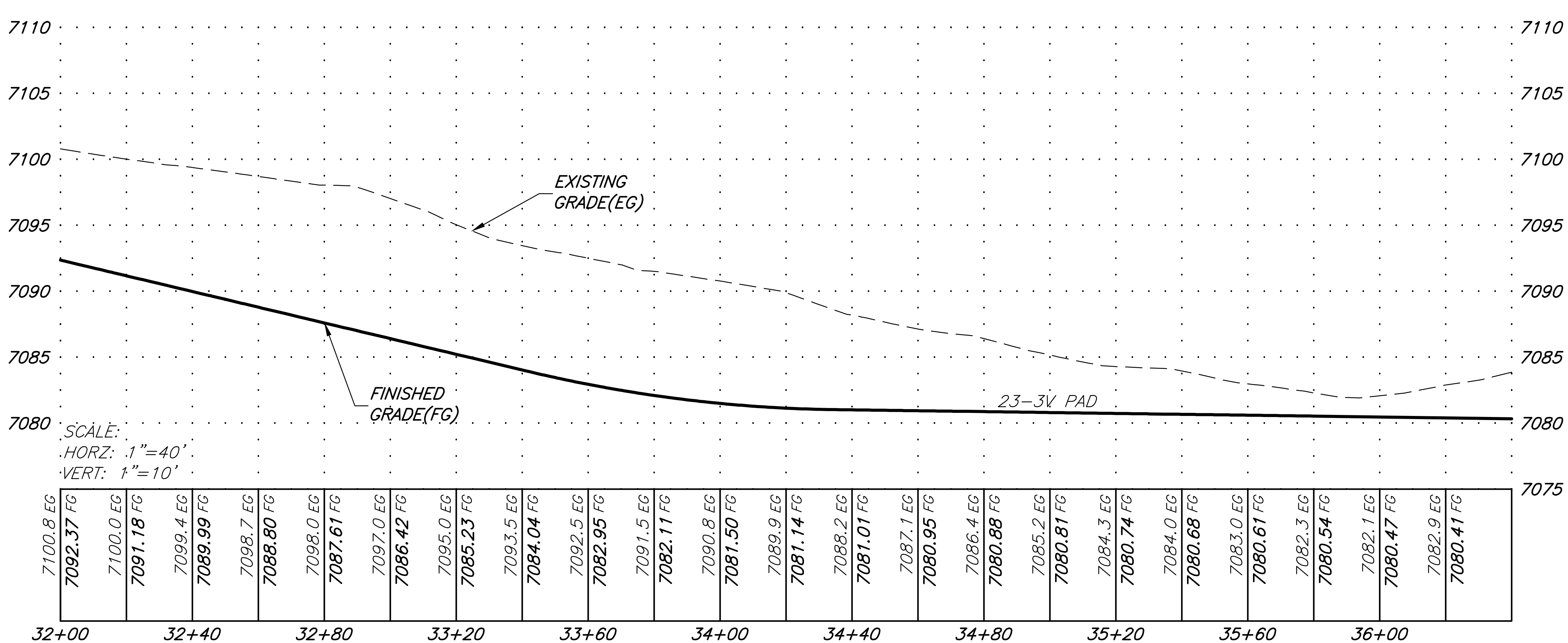
Job No.: 2013-379.001
Drawn by: XX
Date: 11.15.17
QC: XX | PE: JSS
File: 23-4VAccessRd Plan & Profile - (17)

Title: 23-4V-P&P 8

Dwg No. 22

Of: 43





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Carmony Exploration, LLC

23-4V Access & Beaver Creek Xing

#	Revision	Date	By:
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Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	XX
Date:	11.15.17
QC: XX	PE: JSS
File:	23-4VAccessRd Plan & Profile - (17)

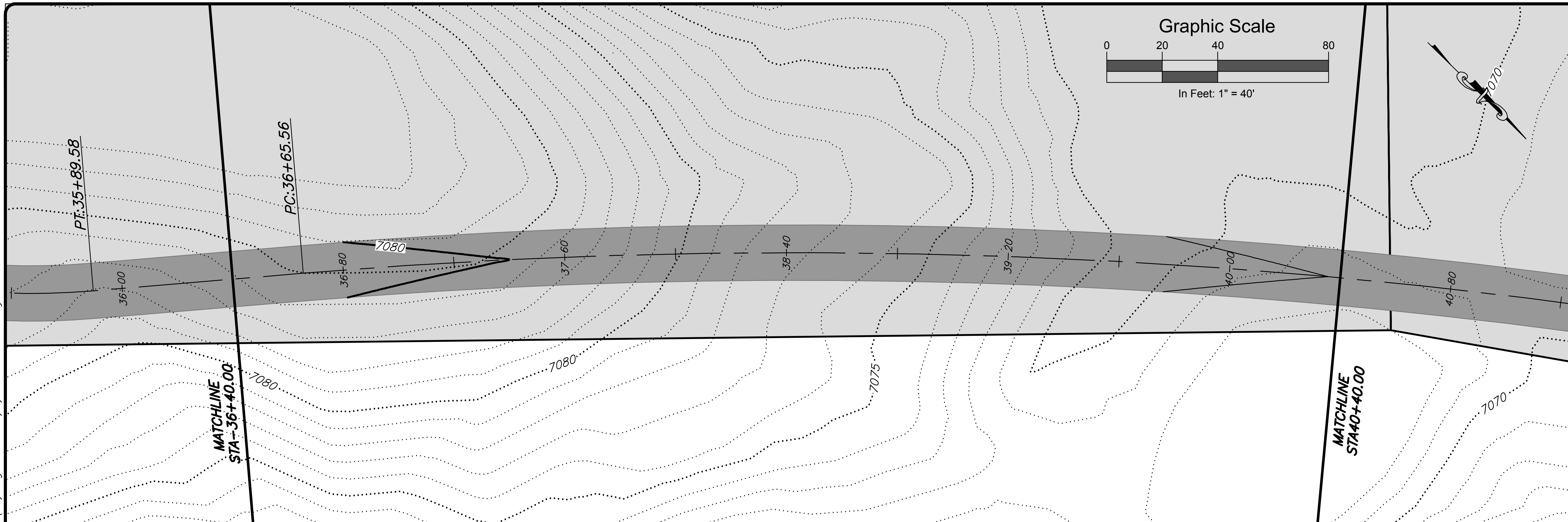
Title:

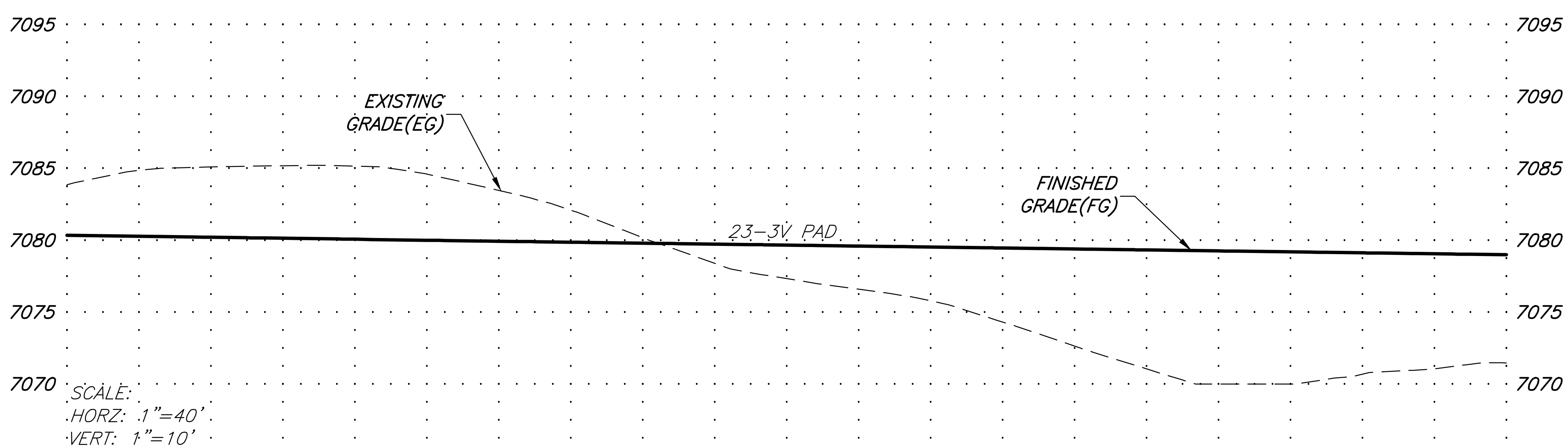
23-4V-P&P 9

Dwg No.

23

Of: 43





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	7085.2	7080.14
37+20	7085.2	7080.07
	7084.6	7080.00
37+60	7083.5	7079.93
	7082.1	7079.86
38+00	7080.2	7079.80
	7078.4	7079.73
38+40	7077.3	7079.66
	7076.6	7079.59
38+80	7075.8	7079.53
	7074.3	7079.46
39+20	7072.6	7079.39
	7071.0	7079.32
39+60	7070.0	7079.26
	7070.0	7079.19
40+00	7070.7	7079.12
	7071.0	7079.05

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23-4V Access & Beaver Creek Xing

#	Revision	Date	By:
1			

Project Milestone: Preliminary Not For Construction

Job No. 2013-379.001
Drawn by: XX
Date: 11.15.17
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Title:

23-4V-P&P 10

Dwg No.

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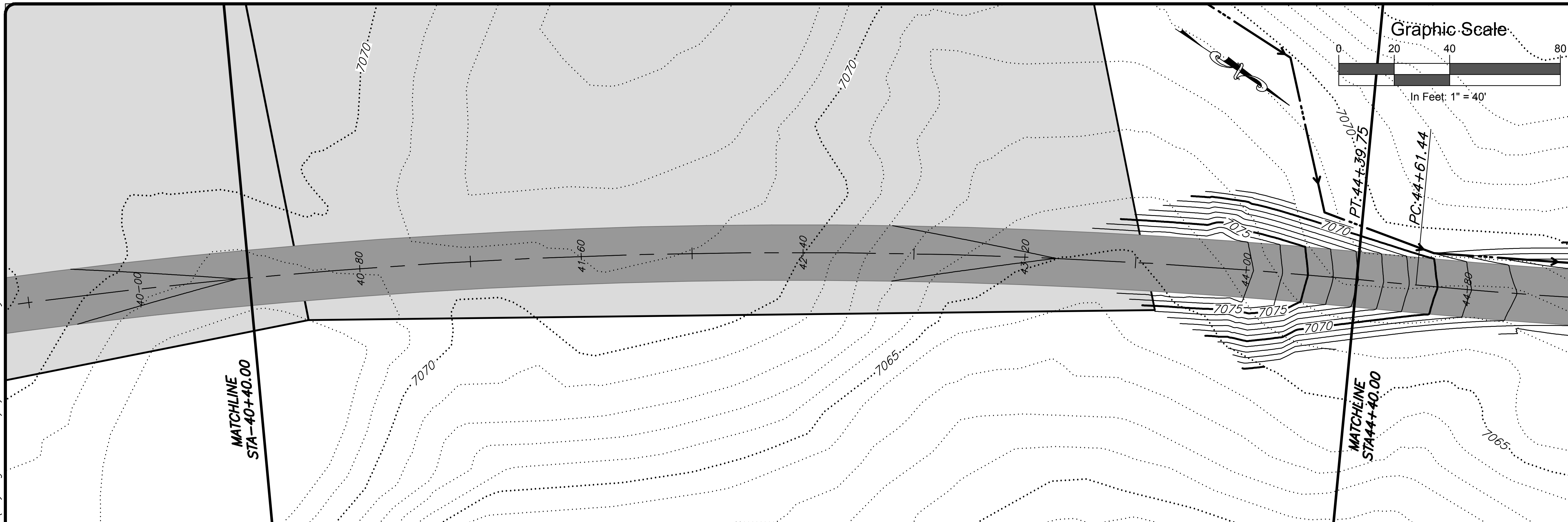
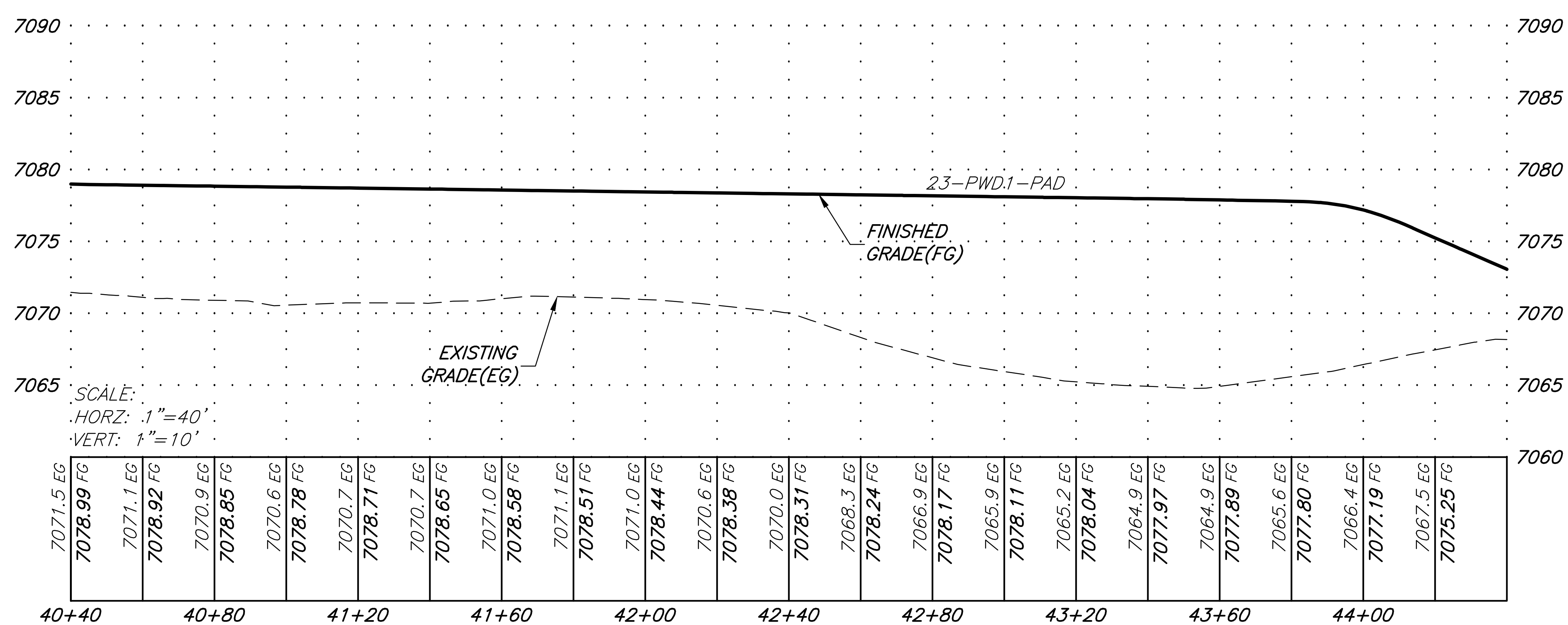
Of: 43





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23-4V Access & Beaver Creek Xing

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Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	XX
Date:	11.15.17
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Title:

23-4V-P&P 11

Dwg No.

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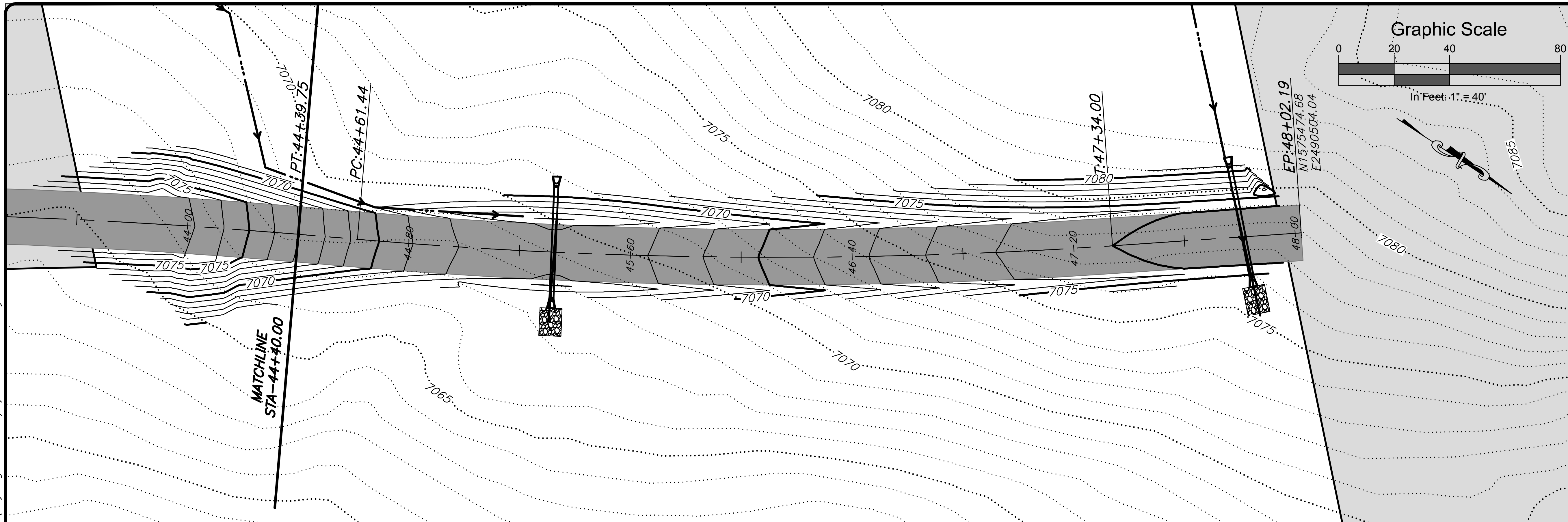
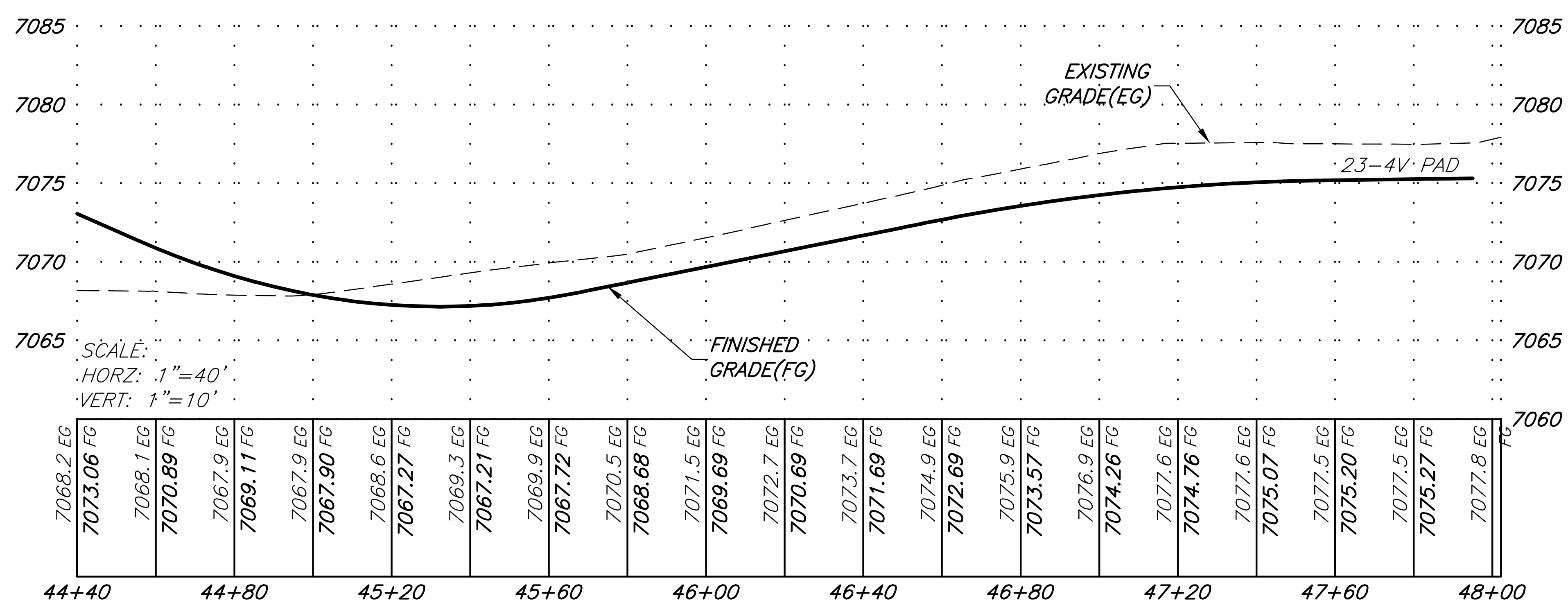
Of: 43





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23-4V Access & Beaver Creek Xing

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Project Milestone: Preliminary Not For Construction

Job No. 2013-379.001
Drawn by: XX
Date: 11.15.17
QC: XX PE: JSS
File: 23-4VAccessRd Plan & Profile - (17)

Title:
23-4V-P&P 12

Dwg No.
26
Of: 43

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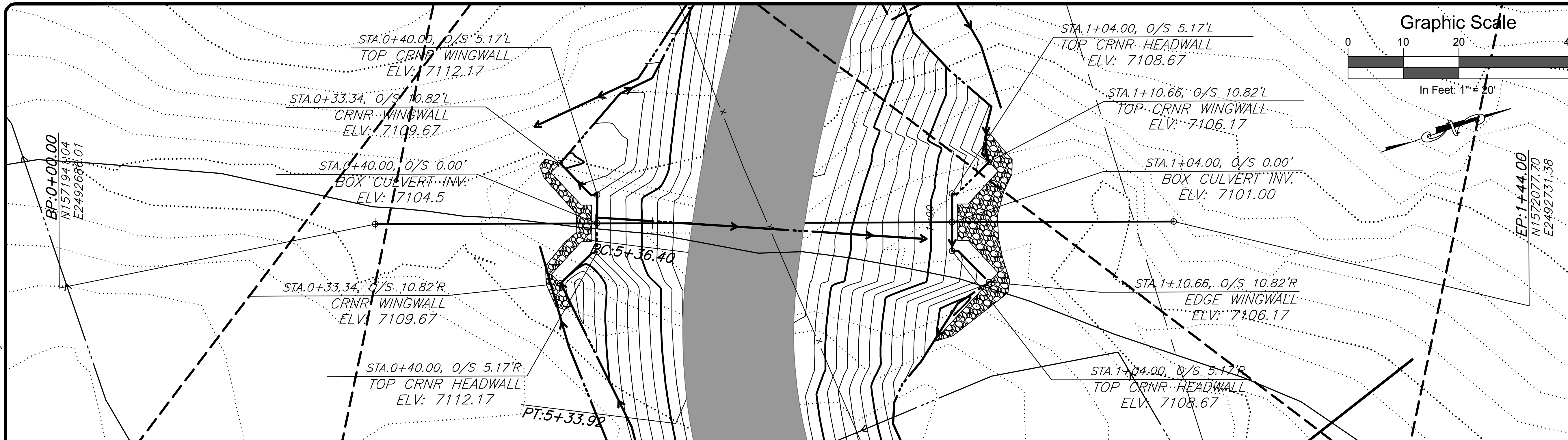

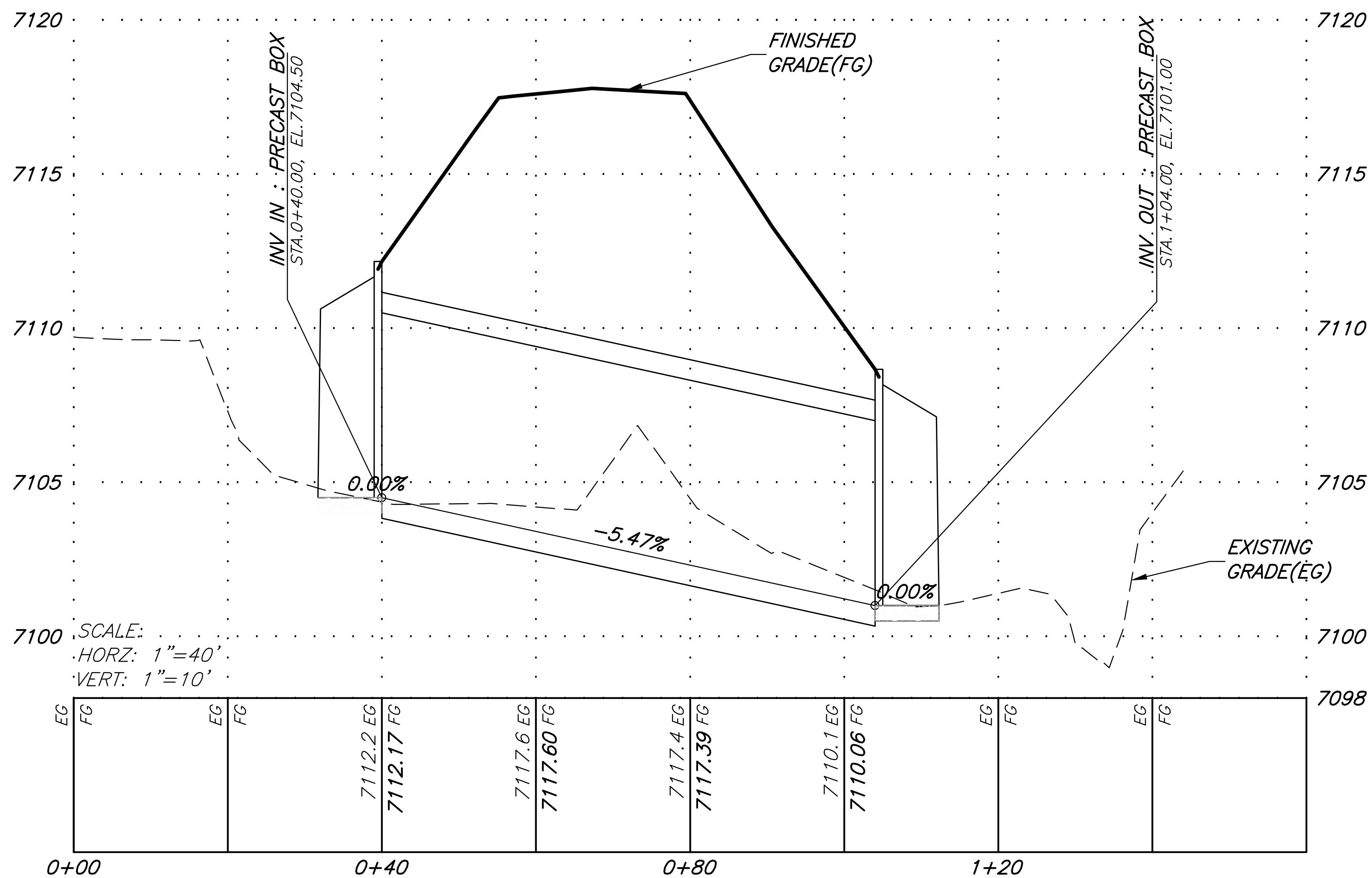

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23-4V Access & Beaver Creek Xing

Project Milestone: Preliminary Not For Construction

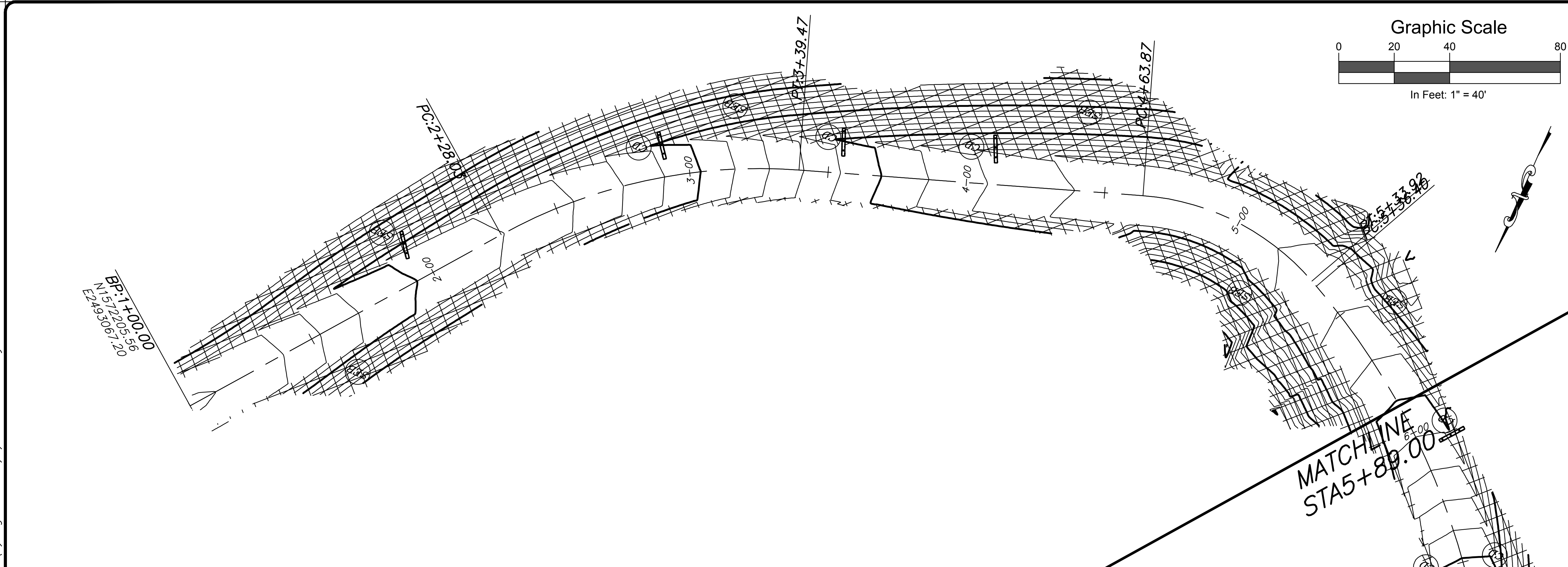
1

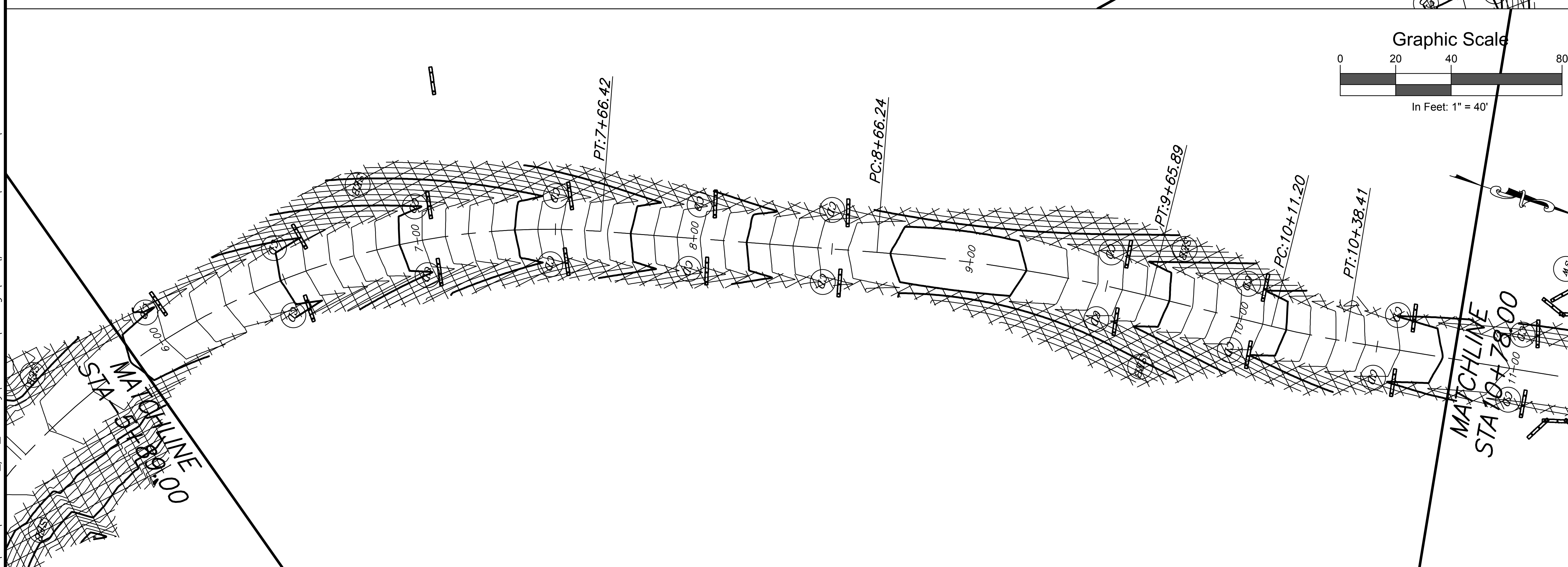
2013-379.001
SK
11.15.17
Approved: AE | PES: JSS
PRM-Carmony-23-4VAccessPS

Beaver Creek Crossing

27

43





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23-4V Access & Beaver Creek Xing

#	Revision	Date	By:
1			

Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	SK
Date:	11.15.17
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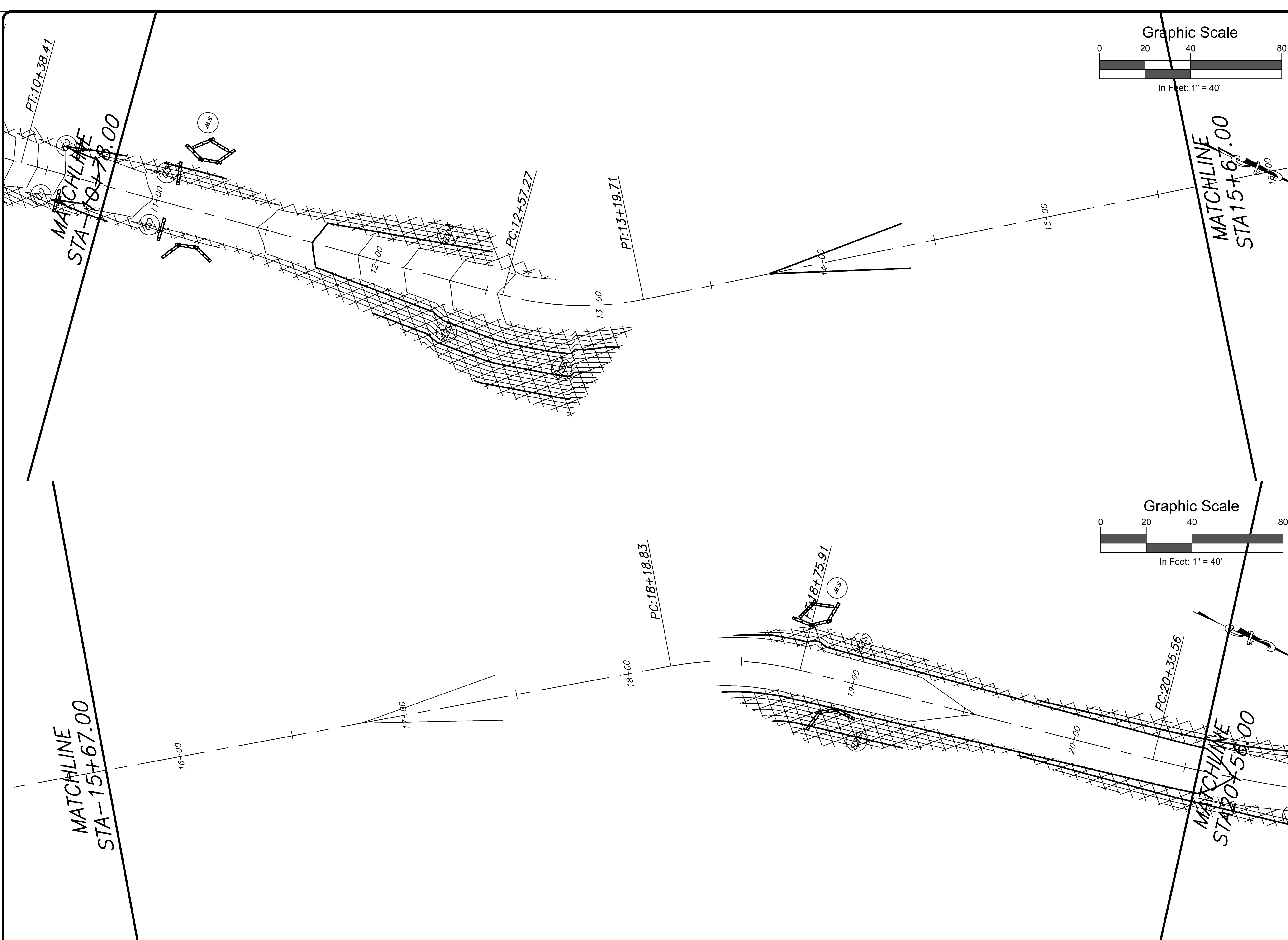
File:	VFG - Erosion Control - (1)

Title:
Access Rd Erosion Control 1

Dwg No.
28
Of : 43



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Title:

Access Rd Erosion Control 2

Dwg No.

29

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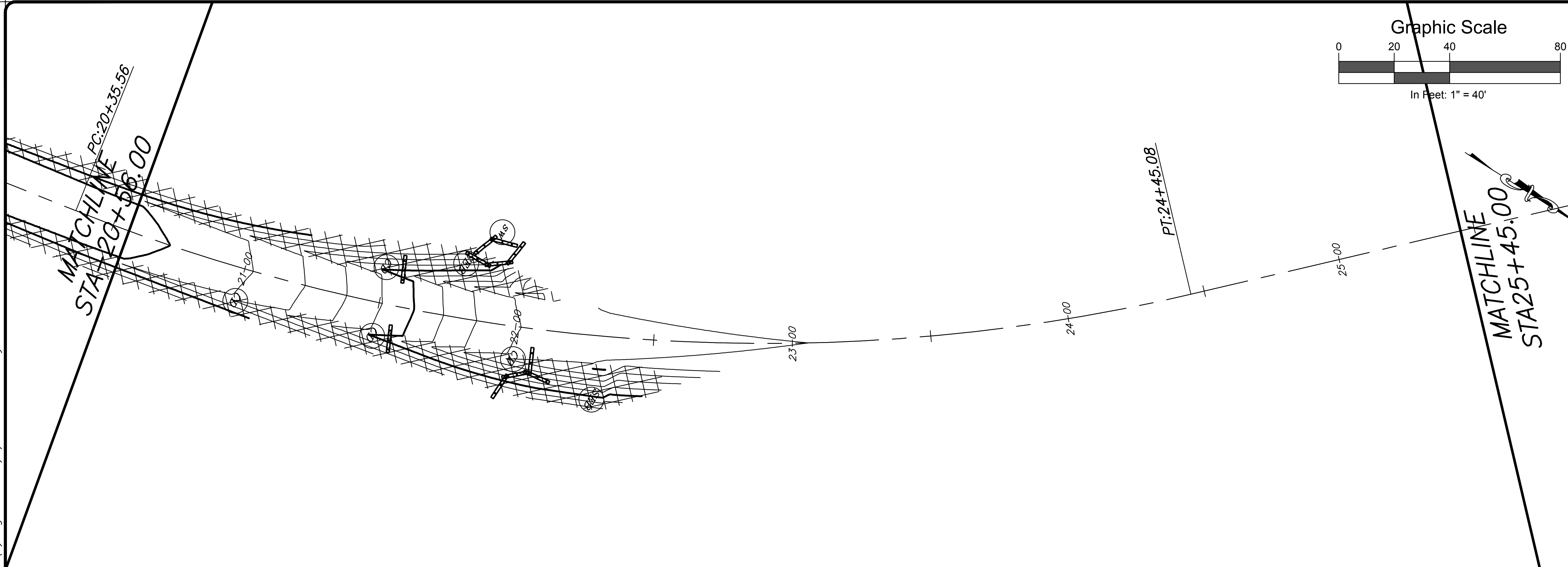

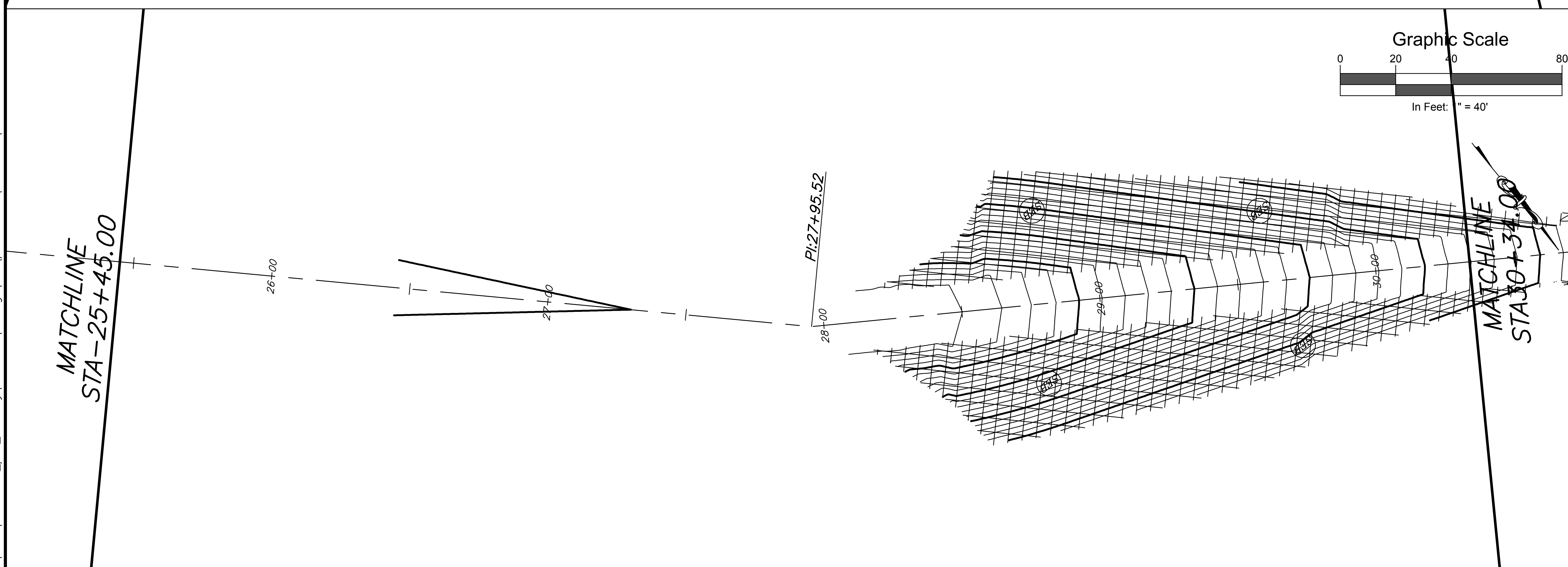

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23-4V Access & Beaver Creek Xing

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Drawn by:	SK
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QC: AE	PE: JSS
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Title:

Access Rd Erosion Control 3

Dwg No.

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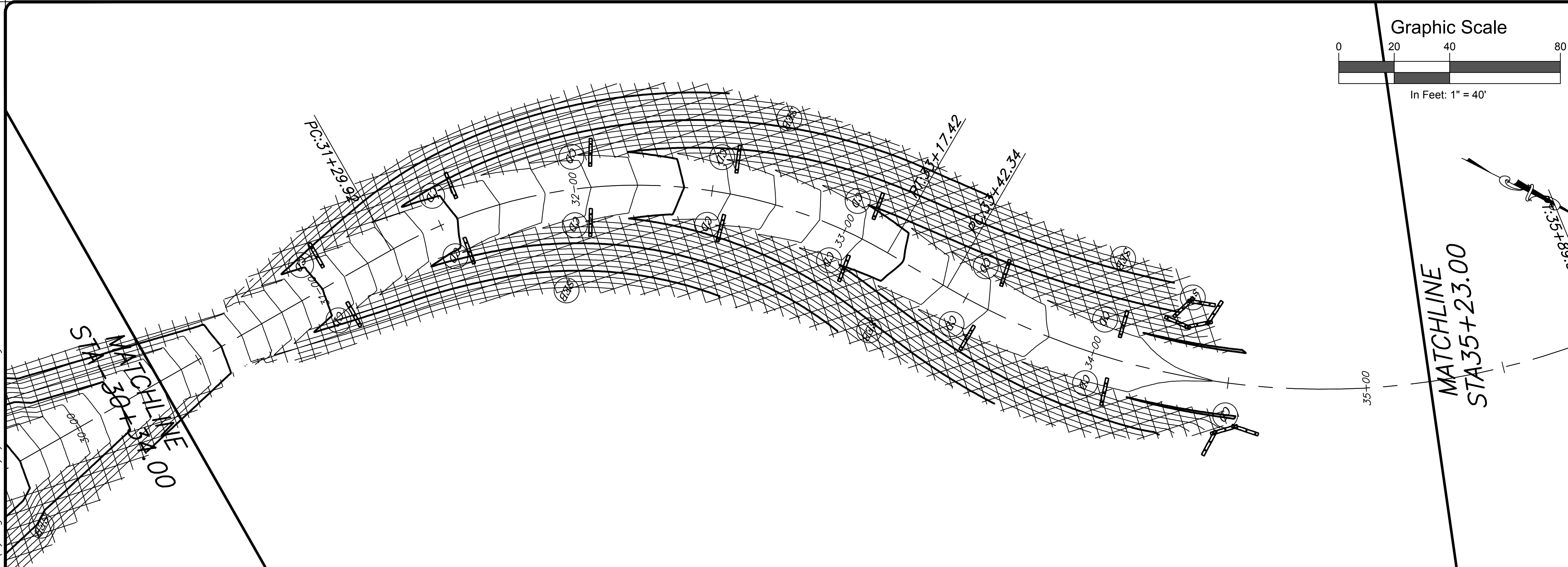

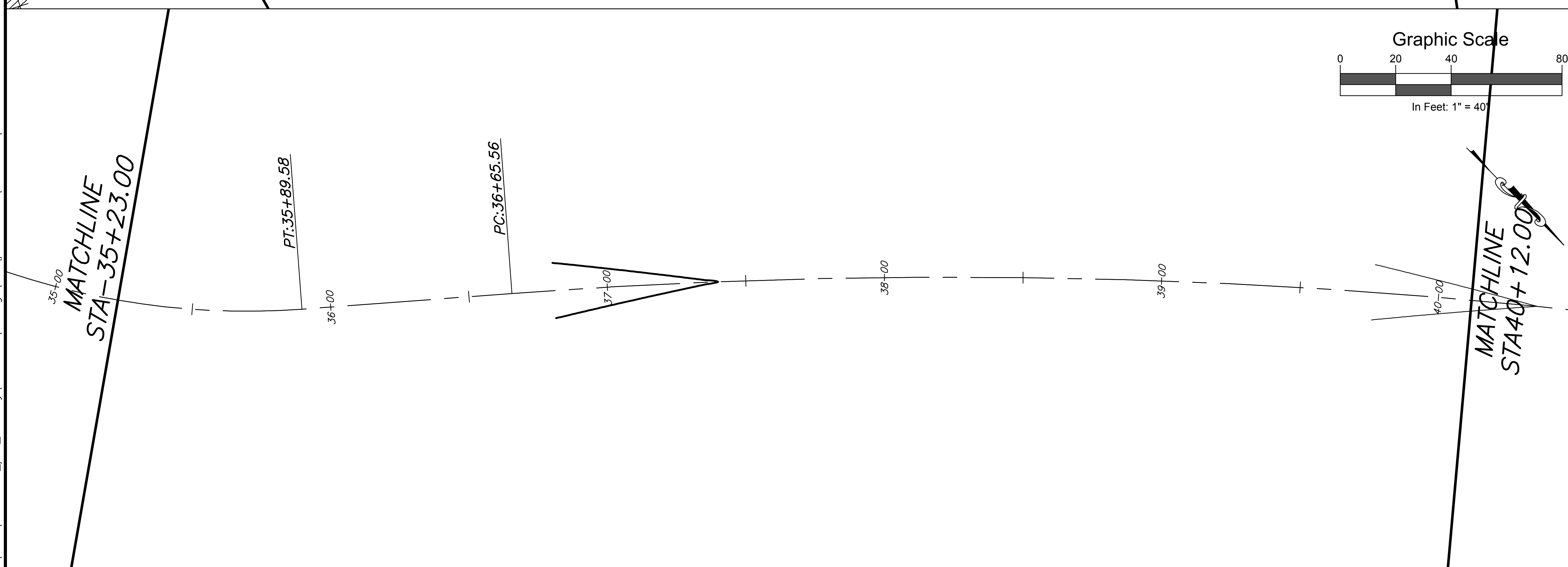

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23-4V Access & Beaver Creek Xing

#	Revision	Date	By:
1			

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Date:	11.15.17
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Title:

Access Rd Erosion Control 4

Dwg No.

31

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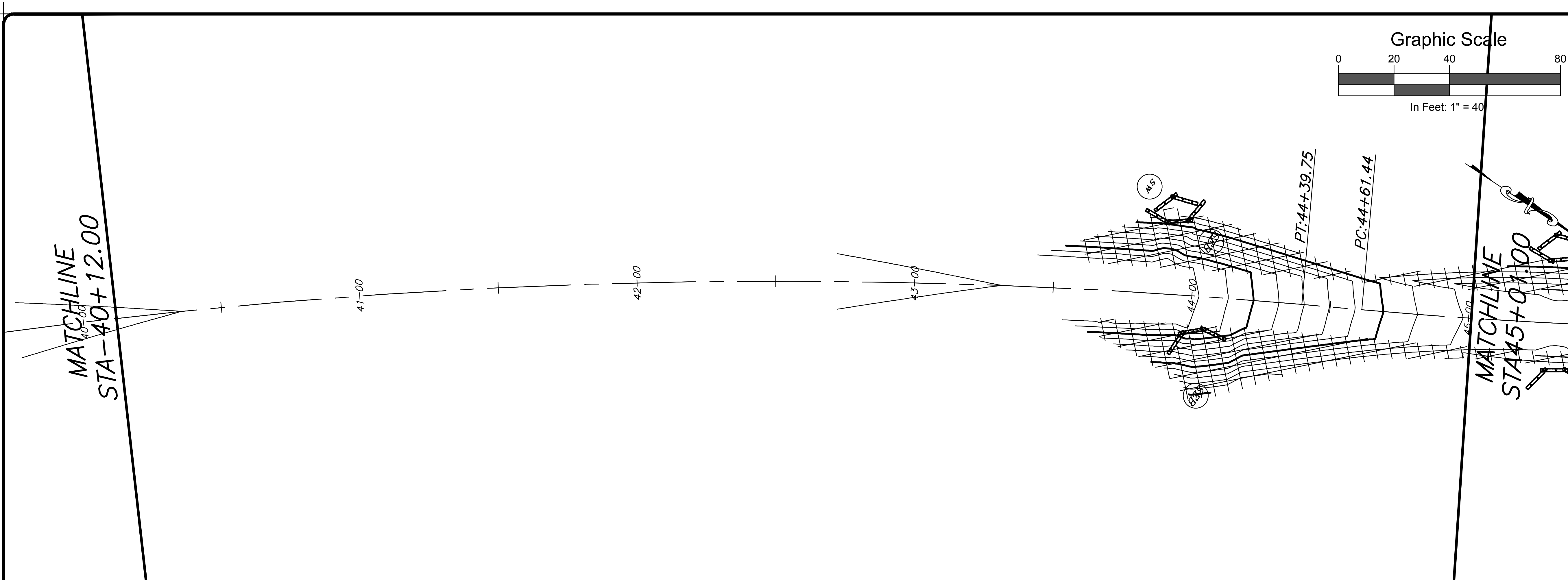

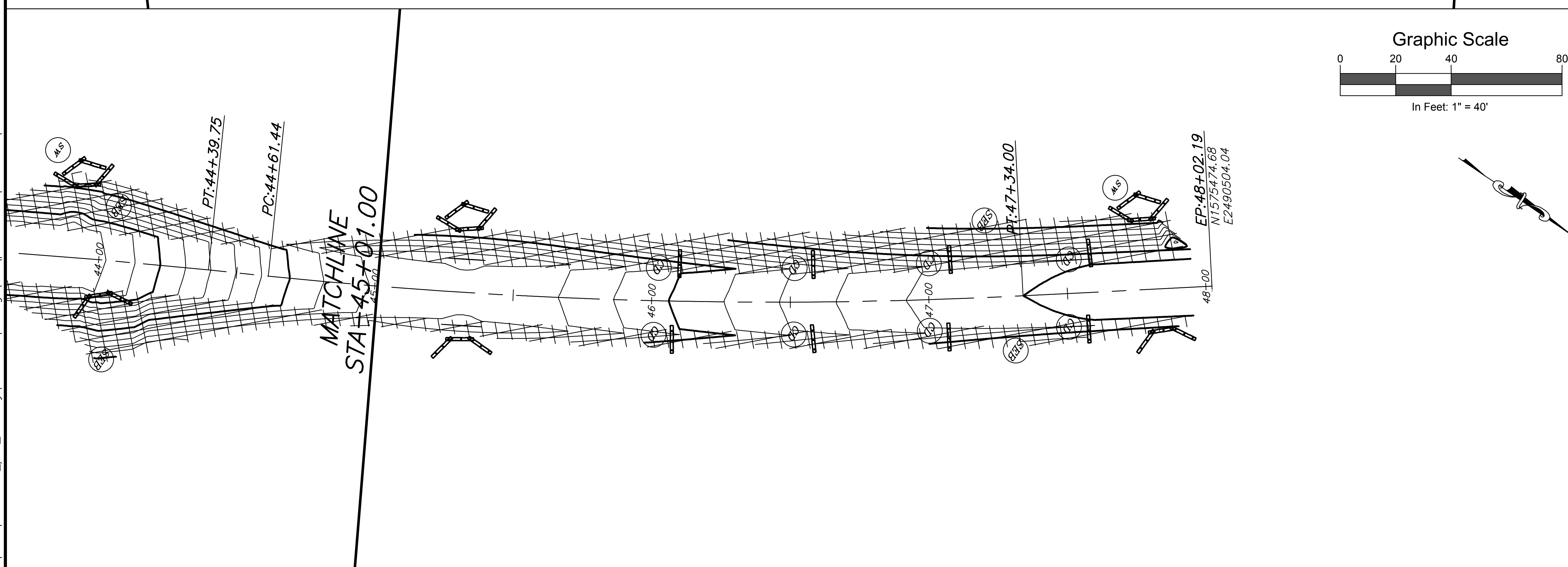

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23-4V Access & Beaver Creek Xing

#	Revision	Date	By:
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Title:

Access Rd Erosion Control 5

Dwg No.

32

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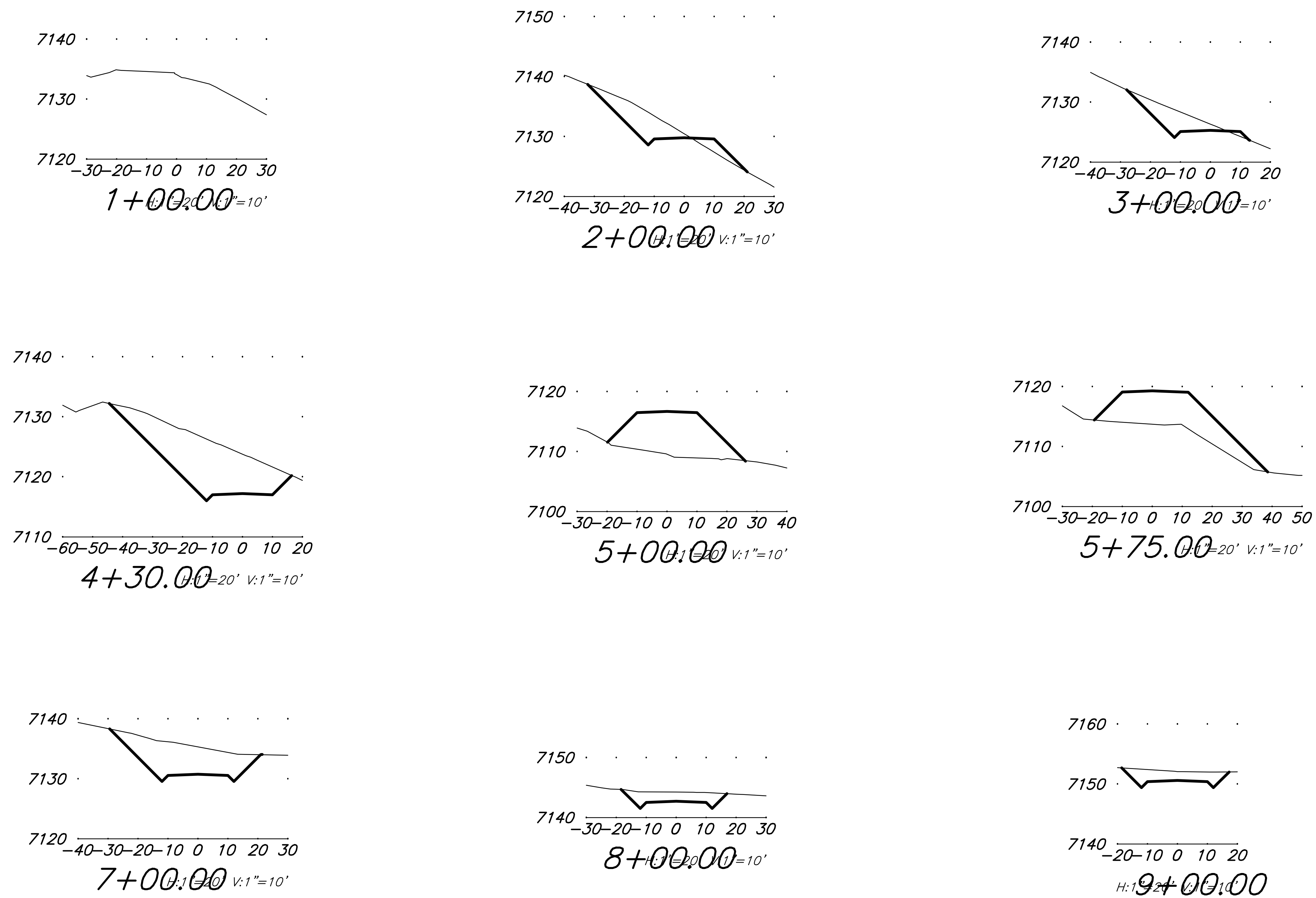

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Carmony Exploration, LLC
23-4V Access & Beaver Creek Xing

#	Revision	Date	By:
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Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	SK
Date:	11.15.17
QC: AE	PE: JSS
File:	23-4VAccess-RdCrossSections

Title:

Cross Sections 1

Dwg No.

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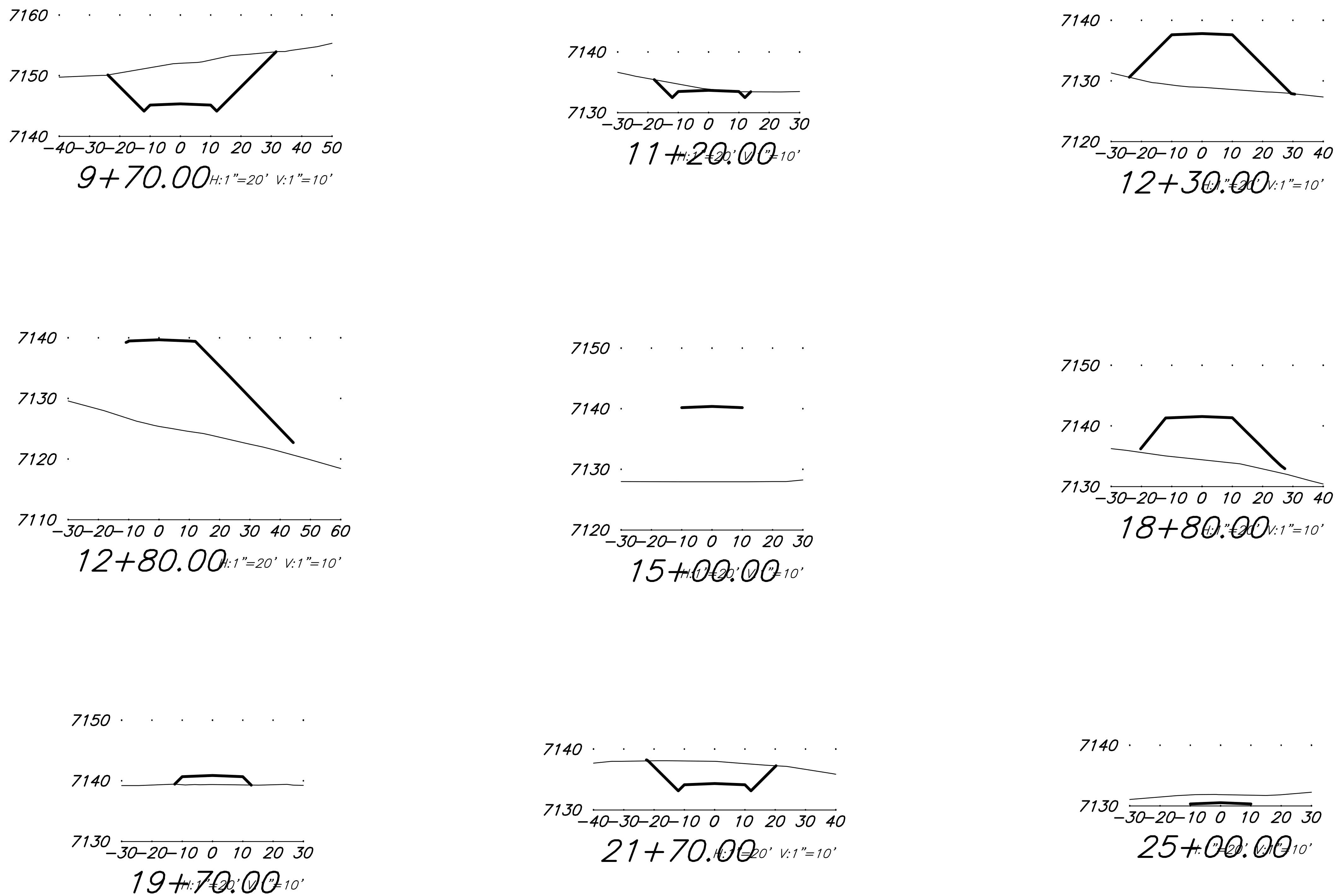

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Job No.: 2013-379.001
Drawn by: SK
Date: 11.15.17
QC: AE | PE: JSS
File: 23-4VAccess-RdCrossSections

Title: Cross Sections 2

Dwg No. 34

Of: 43

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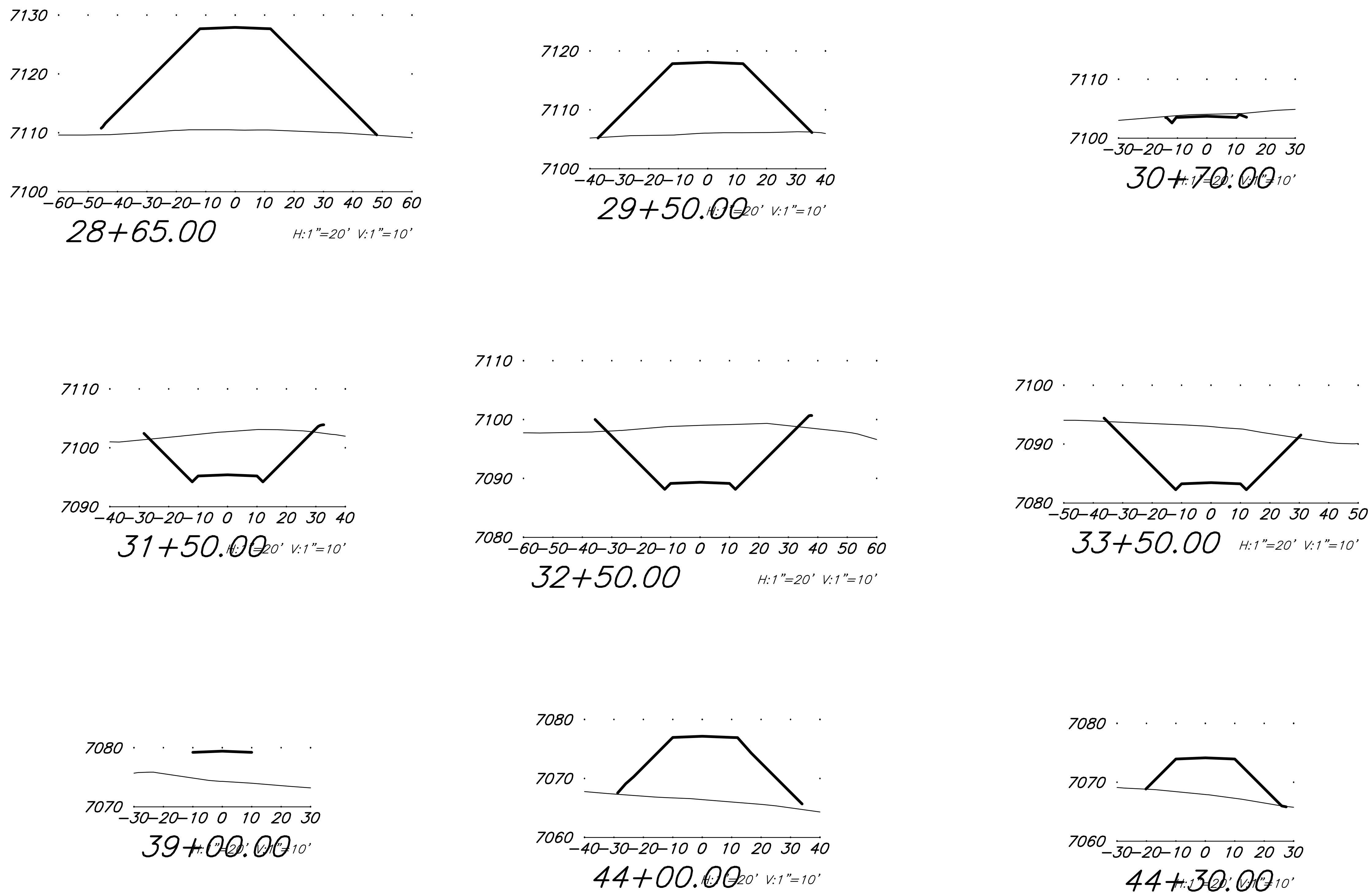

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Carmony Exploration, LLC
23-4V Access & Beaver Creek Xing

#	Revision	Date	By
1			

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Drawn by:	SK
Date:	11.15.17
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File:	23-4VAccess-RdCrossSections

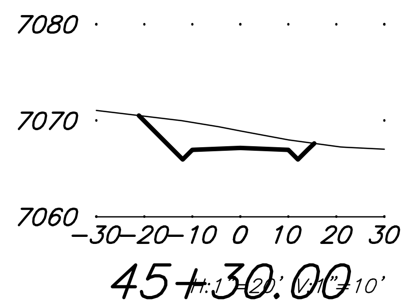
Title:

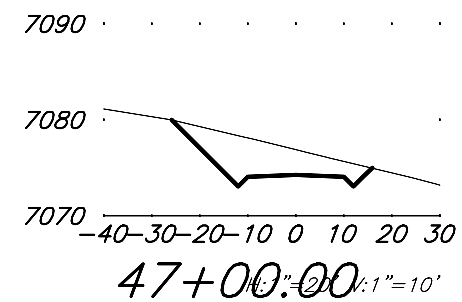
Cross Sections 3

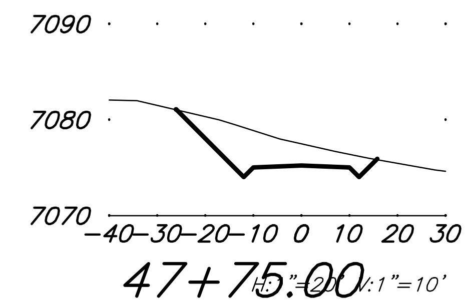
Dwg No.

35

Of: 43







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Carmony Exploration, LLC
23-4V Access & Beaver Creek Xing

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1			

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Job No.	2013-379.001
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File:	23-4VAccess-RdCrossSections

Title:

Cross Sections 4

Dwg No.

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COLORADO
DEPARTMENT OF TRANSPORTATION

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JULY 4, 2012

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Last Modification Date: 07/04/12	Initials: LTA
Full Path: www.coloradodot.info/business/designsupport	
Drawing File Name: Table of Contents.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

R-X R-X R-X R-X

Sheet Revisions	
Date:	Comments

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9083
Fax: (303) 757-9820
Project Development Branch DD/LTA

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Carmony Exploration, LLC
Access Road - Pipeline & APD's

#	Revision	Date	By:
1			

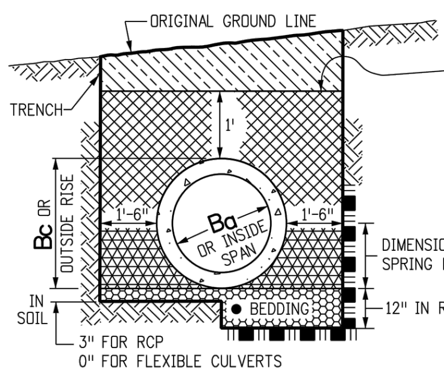
Project Milestone: Preliminary Not For Construction

Job No. 2013-379.001
Drawn by: RCS
Date: 01/19/2018
QC: RCS | PE: JSS
File: 23-4V-PRM-Carmony-CDOT-Details

Title: CDOT Standard Details (Box Culvert)

Dwg No. 1

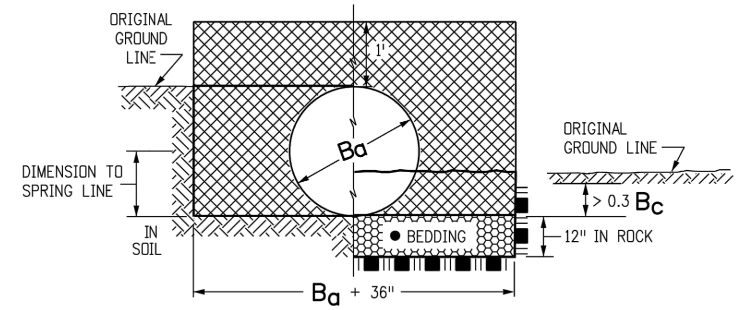
Of: 7



ALL EXCAVATION AND BACKFILL, INCLUDING BEDDING MATERIAL BELOW THIS LINE SHALL BE INCLUDED IN THE BID PRICE FOR THE PIPE. ABOVE THE LINE, THEY SHALL BE PAID FOR AS STRUCTURE EXCAVATION AND EMBANKMENT.

PIPE IN TRENCH

● THE BEDDING MATERIAL FOR RIGID PIPE IN SOIL SHALL BE 3 IN. OF LOOSE STRUCTURE BACKFILL (CLASS 1 OR 2). BEDDING IS NOT REQUIRED FOR FLEXIBLE PIPE IN SOIL. BEDDING MATERIAL FOR RIGID OR FLEXIBLE PIPE IN ROCK SHALL BE 12 IN. OF LOOSE STRUCTURE BACKFILL, CLASS 1.



CIRCULAR PIPE

(WHERE ORIGINAL GROUND LINE IS BETWEEN 0.3 Bc AND Bc + 1 FT. ABOVE FLOWLINE)

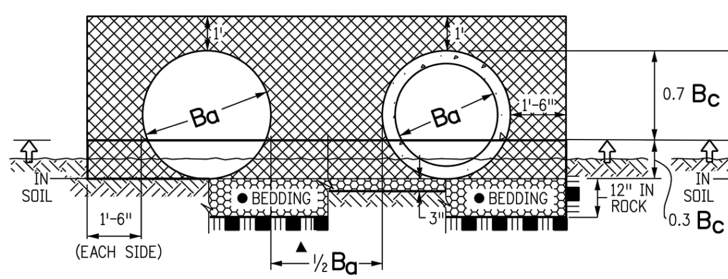
▲ WHEN TWO OR MORE CONDUITS ARE LAID SIDE-BY-SIDE, THEY SHALL BE PLACED SO THAT THEY ARE ½ OUTSIDE DIAMETER, OR ½ OUTSIDE SPAN, OR 3 FT. APART, WHICHEVER IS LESS. HOWEVER, IF END SECTIONS ARE USED, THE MINIMUM SPACING SHALL BE 1 FT. BETWEEN END SECTIONS.

GENERAL NOTES

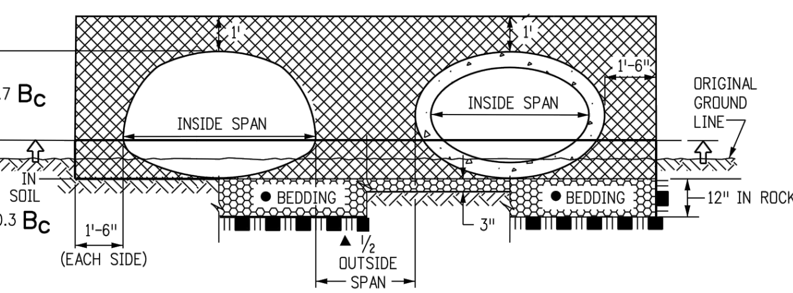
1. EXCAVATION AND BACKFILL PATTERNS DIFFERENT FROM THOSE INDICATED ON THESE SHEETS WILL BE SHOWN ELSEWHERE ON THE PLANS.
2. EXCAVATION FOR CHANNEL CHANGE OR CHANNEL IMPROVEMENT WILL BE EITHER UNCLASSIFIED EXCAVATION OR MUCK EXCAVATION AND WILL BE NOTED ON THE PLANS. EXCAVATION FROM THE CHANNEL FLOWLINE TO THE DEPTH REQUIRED FOR THE NEW STRUCTURE AND INCIDENTAL CHANNEL EXCAVATION WILL BE PAID FOR AS STRUCTURE EXCAVATION.
3. STRUCTURE FOOTINGS WHICH ARE LOCATED IN ROCK SHALL BE POURED OUT TO UNDISTURBED ROCK WITHOUT FORMING IN CONFORMANCE WITH SUBSECTION 601.09(b).
4. STRUCTURAL PLATE CULVERTS SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS.
5. **Ba** EQUALS THE INSIDE DIAMETER OF A PIPE AND **Bc** EQUALS THE OUTSIDE DIAMETER OF A PIPE. FOR THIN WALLED PIPES, IT IS ASSUMED THAT **Ba** = **Bc**.
6. APPROXIMATE STRUCTURE EXCAVATION AND BACKFILL QUANTITIES, UP TO 1 FT. OVER THE PIPE WILL BE SHOWN ON THE PLANS, FOR INFORMATION ONLY.

LEGEND

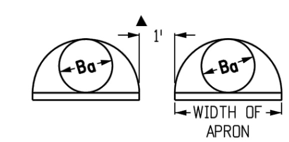
- STRUCTURE EXCAVATION LIMITS
- STRUCTURE BACKFILL, CLASS 1 OR 2, AS SHOWN ON PLANS
- STRUCTURE BACKFILL, CLASS 1
- EMBANKMENT MATERIAL
- EARTH
- ROCK
- BEDDING
- CONCRETE
- = WHEN FLOW LINE OF CULVERT IS LESS THAN 0.3 **Bc** BELOW THE ORIGINAL GROUND LINE, EMBANKMENT SHALL BE BUILT UP TO 0.3 **Bc** ABOVE THE FLOW LINE AND TRENCH EXCAVATED TO THE BOTTOM OF PIPE OR AS SHOWN.



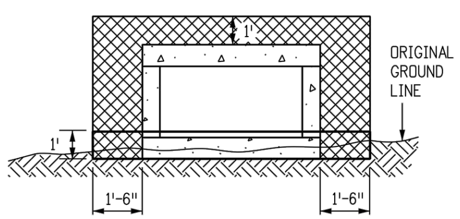
CIRCULAR PIPE IN FILL



ARCH OR ELLIPTICAL PIPE IN FILL

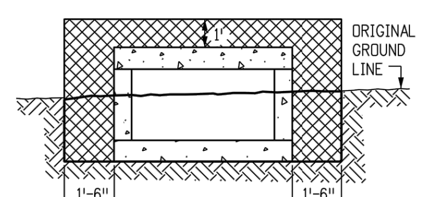


CONDUIT WITH END SECTIONS



CASE 1

APPLIES WHEN THE ORIGINAL GROUND LINE IS LESS THEN 1 FT. ABOVE THE BOTTOM OF THE BOX CULVERT. THE EMBANKMENT SHALL BE BUILT UP TO 1 FT. ABOVE THE BOTTOM OF THE BOX CULVERT AND THEN EXCAVATED TO THE BOTTOM OF THE BOX CULVERT. THIS EMBANKMENT AND EXCAVATION WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.

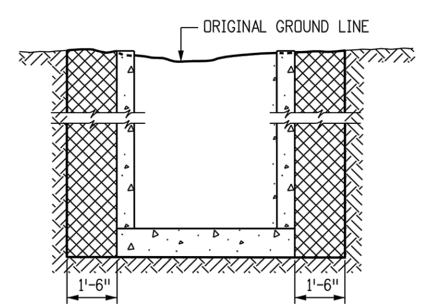


CASE 2

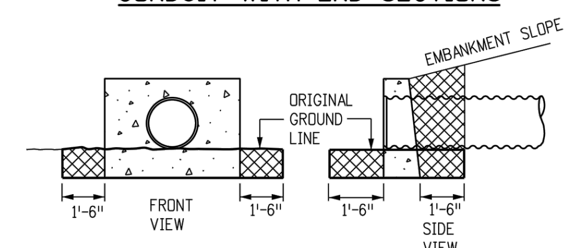
APPLIES WHEN THE ORIGINAL GROUND LINE IS MORE THAN 1 FT. ABOVE THE BOTTOM OF THE BOX CULVERT.

CONCRETE BOX CULVERT

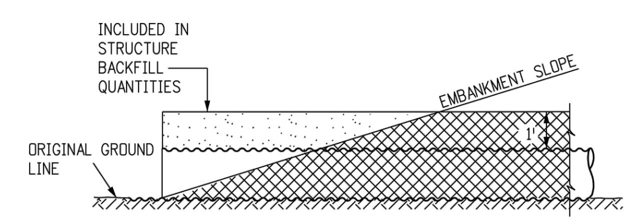
IN BOTH CASES, THE TRENCH (OUTLINED BY THE THICK SOLID LINE) SHALL THEN BE EXCAVATED TO ACCOMMODATE CONSTRUCTION OF THE BOX CULVERT.



DROP INLETS AND DIVISION BOXES



HEADWALL



END OF PIPE

Computer File Information		
Creation Date: 07/04/12	Initials: DD	(R-X)
Last Modification Date: 07/04/12	Initials: LTA	(R-X)
Full Path: www.coloradodot.info/business/designsupport		(R-X)
Drawing File Name: 206010102.dgn		(R-X)
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English		(R-X)

Sheet Revisions	
Date:	Comments

Colorado Department of Transportation
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Project Development Branch DD/LTA

EXCAVATION AND BACKFILL FOR STRUCTURES

Issued By: Project Development Branch July 4, 2012

STANDARD PLAN NO.
M-206-1
Sheet No. 1 of 2

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

Carmony Exploration, LLC
Access Road - Pipeline & APD's

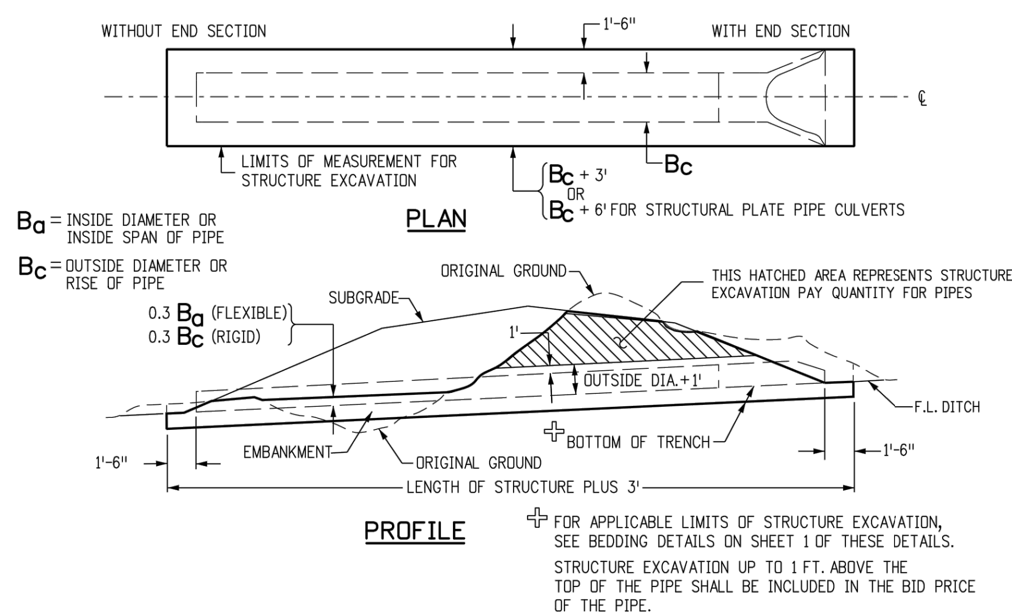
#	Revision	Date	By:
1			

Project Milestone: Preliminary Not For Construction

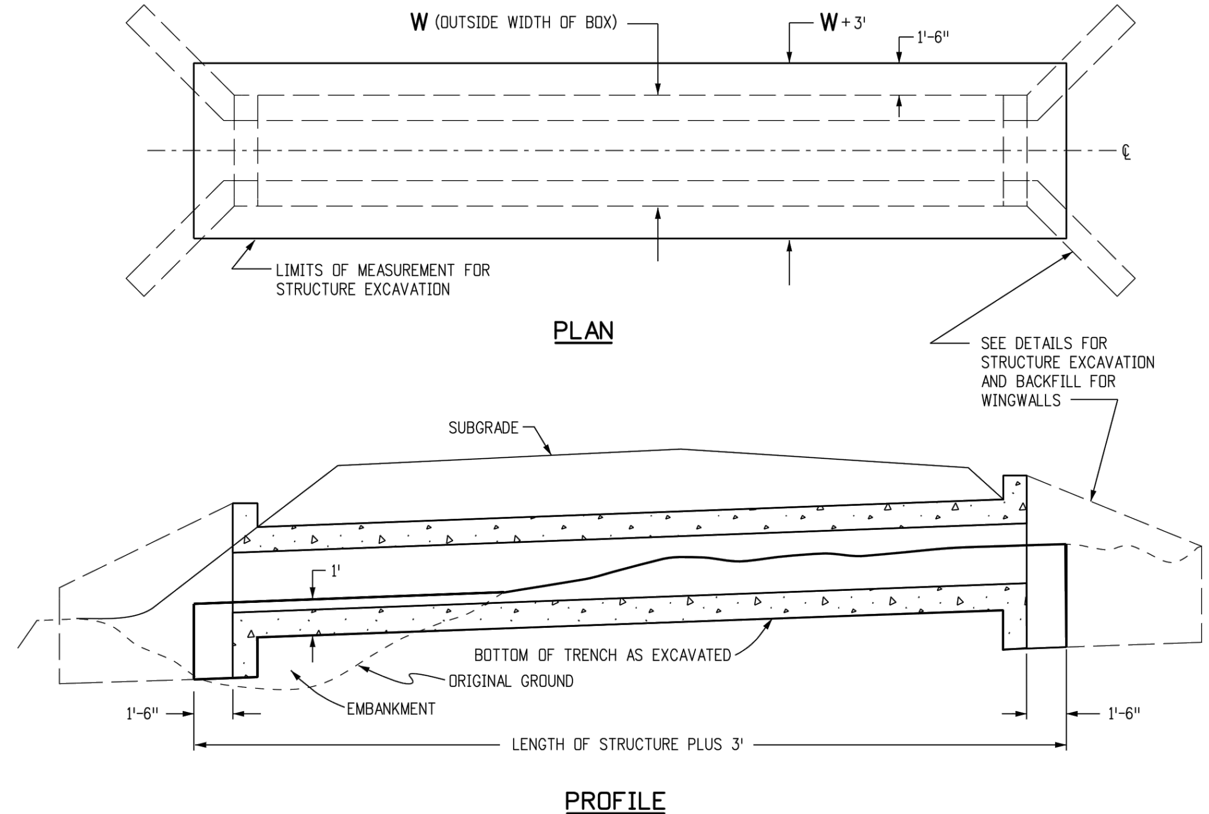
Job No.	2013-379.001
Drawn by:	RCS
Date:	01/19/2018
QC: RCS	PE: JSS
File:	23-4V-PRM-Carmony-CDOT-Details

Title: CDOT Standard Details (Box Culvert)

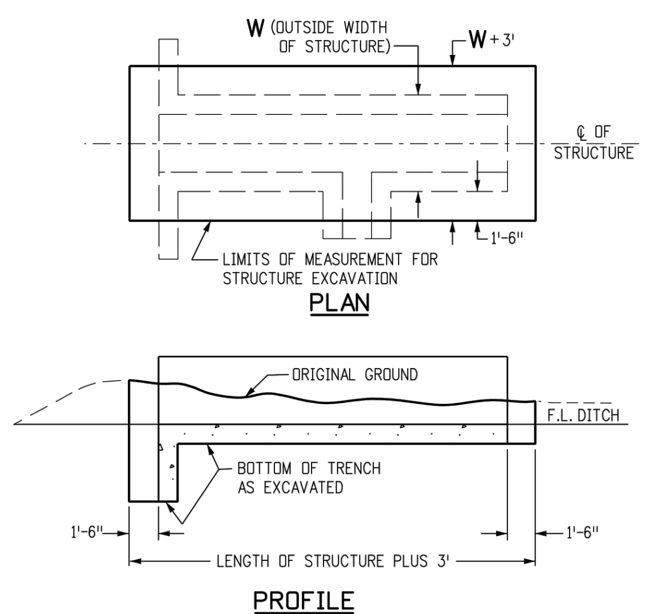
Dwg No. 1
Of: 7



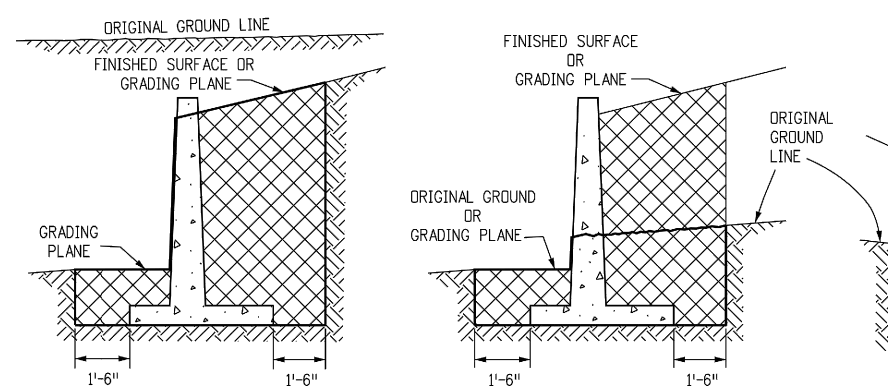
STRUCTURE EXCAVATION MEASUREMENT FOR PIPE CULVERTS



STRUCTURE EXCAVATION MEASUREMENT FOR CONCRETE BOX CULVERTS

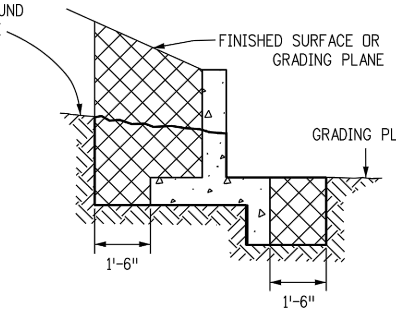


STRUCTURE EXCAVATION MEASUREMENT FOR DIVISION BOXES



RETAINING WALL IN CUT & IN PARTIAL CUT

ANY ADDITIONAL EXCAVATION BEHIND THE LIMITS SHOWN SHALL BE FILLED WITH CLASS I BACKFILL MATERIAL.
THE ADDITIONAL EXCAVATION AND BACKFILL WILL NOT BE MEASURED AND PAID FOR.



WINGWALL

LEGEND

- STRUCTURE EXCAVATION LIMITS
- STRUCTURE BACKFILL, CLASS 1 OR 2, AS SHOWN ON PLANS
- CONCRETE

Computer File Information	
Creation Date: 07/04/12	Initials: DD
Last Modification Date: 07/04/12	Initials: LTA
Full Path: www.coloradodot.info/business/designsupport	
Drawing File Name: 206010202.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions		
	Date:	Comments
(R-X)		
(R-X)		
(R-X)		
(R-X)		

Colorado Department of Transportation
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Project Development Branch DD/LTA

EXCAVATION AND BACKFILL FOR STRUCTURES

Issued By: Project Development Branch July 4, 2012

STANDARD PLAN NO.
M-206-1
Sheet No. 2 of 2

SGM
118 West Sixth Street, Suite 200
Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

Carmony Exploration, LLC
Access Road - Pipeline & APD's

#	Revision	Date	By:
1			

Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	RCS
Date:	01/19/2018
QC: RCS	PE: JSS
File:	23-4V-PRM-Carmony-CDOT-Details

Title: CDOT Standard Details (Box Culvert)

Dwg No. 1

Of: 7

SINGLE CONCRETE BOX CULVERT DIMENSIONS & QUANTITIES (EXCLUDING HEADWALLS & TOEWALLS)

BOX SIZE				FILL HEIGHT ALLOWED	SLAB & WALL THICKNESS (INCHES)			BAR SIZES						d_1▲	DIMENSIONS					QUANTITIES	
S	R	HT.	WIDTH					t_1* & b_1	t_2	b_2	w_1* & w_2	c_1*	c_2		h_1	h_2	v_1	v_2	v_3	CONCRETE	REBAR STL
FT.	FT.	FT.-IN.	FT.-IN.	FT.-FT.	T_t	T_b	TW	#	#	#	#	#	#	NO.	FT.-IN.	FT.-IN.	FT.-IN.	FT.-IN.	FT.-IN.	CU.YDS./LIN.FT.	LBS./LIN.FT.
6	7	8-5	7-8	0 TO 10	8	9	10	4	5	5	4	4	4	48	2-7	2-11	7-6	2-3	2-3	0.834	153
		8-7	7-8	>10 TO 15	8.5	10.5	10	4	5	5	4	4	4		2-7	3-1	7-6	2-4	2-4	0.882	154
		8-10	7-8	>15 TO 20	10	12.0	10	4	5	5	4	4	4		2-7	3-3	7-9	2-6	2-6	0.953	156
8	6	7-7.5	9-8	0 TO 10	9	10.5	10	4	6	6	4	4	4	52	3-4	2-10	6-7	2-4	2-4	0.952	184
		7-11	9-8	>10 TO 15	10.5	12.5	10	4	6	6	4	4	4		3-0	2-10	6-8	2-6	2-6	1.057	184
		8-3	9-8	>15 TO 20	12.5	14.5	10	4	7	7	4	4	4		3-2	2-11	6-10	2-8	2-8	1.176	207
	8	9-7.5	9-8	0 TO 10	9.0	10.5	10	4	6	6	4	5	4	60	4-5	3-5	8-7	2-4	2-4	1.076	224
		9-11	9-8	>10 TO 15	10.5	12.5	10	4	6	6	4	5	4		2-9	3-7	8-8	2-6	2-6	1.180	218
		10-3	9-8	>15 TO 20	12.5	14.5	10	4	6	6	4	5	4		2-9	3-9	8-10	2-8	2-8	1.299	221
	10	11-8	9-8	0 TO 10	9	11	10	4	6	5	5	5	5	64	2-9	2-9	10-7	2-10	2-10	1.214	253
		11-11	9-8	>10 TO 15	10.5	12.5	10	4	6	6	5	5	5		2-9	2-9	10-8	2-11	2-11	1.303	267
		12-3	9-11	>15 TO 20	12.5	14.5	11.5	4	6	6	5	5	5		2-11	5-1	10-10	3-1	3-1	1.536	282
10	6	7-10.5	11-8	0 TO 10	10.5	12.0	10	4	6	7	4	5	5	56	3-4	3-0	6-8	2-11	2-6	1.181	243
		8-3	11-8	>10 TO 15	12.5	14.5	10	4	7	7	4	5	4		3-4	2-11	6-10	3-1	2-8	1.343	248
		8-10	11-8	>15 TO 20	15.5	18.5	10	4	7	7	4	4	5		3-1	2-9	7-1	3-5	3-0	1.395	244
	8	9-10.5	11-8	0 TO 10	10.5	12.0	10	4	6	7	4	5	5	64	3-11	3-5	8-8	2-11	2-6	1.304	266
		10-3.5	11-8	>10 TO 15	13	14.5	10	4	7	7	4	5	5		4-1	3-6	8-11	3-1	2-8	1.484	282
		10-9	11-8	>15 TO 20	15.5	17.5	10	4	7	7	4	5	5		3-6	2-11	9-1	3-4	2-11	1.682	280
	10	11-11	11-8	0 TO 10	10.5	12.5	10	4	6	6	4	5	5	68	2-11	4-6	10-8	2-11	2-6	1.445	270
		12-3.5	11-8	>10 TO 15	12.5	15.0	10	4	7	7	5	6	5		3-4	4-10	10-10	3-7	3-2	1.608	354
		12-8	11-11	>15 TO 20	15.0	17.5	11.5	4	7	7	5	5	5		3-8	3-4	11-1	3-4	3-4	1.905	328
12	6	7-11	13-8	0 TO 8	10.5	12.5	10	4	7	7	4	6	5	60	3-11	3-8	6-8	3-4	2-6	1.341	306
		8-4	13-8	>8 TO 12	13	15	10	4	8	8	4	5	5		2-10	2-9	6-11	3-2	2-9	1.551	313
		8-9.5	13-8	>12 TO 16	15.5	18	10	4	8	8	4	5	5		3-6	2-9	7-1	3-5	3-0	1.783	319
		9-3.5	13-8	>16 TO 20	19.0	20.5	10	4	8	9	4	5	5		3-6	2-9	7-5	3-7	3-2	2.037	341
	8	9-11	13-8	0 TO 8	10.5	12.5	10	4	7	7	5	6	5	68	4-1	3-9	8-8	3-4	2-11	1.464	351
		10-4	13-8	>8 TO 12	13	15	10	4	8	8	4	6	5		3-4	2-9	8-11	3-6	2-9	1.675	358
		10-9.5	13-8	>12 TO 16	15.5	18	10	4	8	8	4	5	5		3-6	2-10	9-1	3-5	3-0	1.907	338
		11-3.5	13-8	>16 TO 20	18.5	21	10	4	8	8	4	5	5		3-6	3-0	9-4	3-8	3-3	2.160	342
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		12-4.5	13-8	>8 TO 12	13	15.5	10	4	8	8	4	6	6		3-4	3-4	10-11	3-7	2-9	1.819	393
		12-9.5	13-9	>12 TO 16	15.5	18	10.5	4	8	8	4	6	5		4-3	3-2	11-1	3-10	3-0	2.070	390
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14	6	7-11.5	15-8	0 TO 6	11	12.5	10	4	8	8	5	6	6	68	4-3	4-0	6-9	3-4	2-11	1.507	408
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	8	10-3.5	17-9	0 TO 6	12.5	15	10.5	4	8	8	5	7	6	80	4-7	3-10	8-10	3-7	3-2	2.025	497
		10-6.5	17-10	>6 TO 8	14.0	16.5	11.0	4	9	9	4	7	6		3-8	3-4	9-0	4-2	2-10	2.189	522
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		12-11	17-9	>8 TO 10	16.5	18.5	10.5	4	9	9	4	6	6		4-3	3-4	11-2	3-10	3-0	2.566	516
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		13-0.5	22-1	>6 TO 8	17	19.5	12.5	4	10	10	4	8	7		5-7	4-7	11-3	4-5	3-1	3.259	792
		13-5.5	22-2	>8 TO 10	19.5	22	13	4	10	10	4	7	6		5-1	4-7	11-5	4-2	3-4	3.642	728

HEADWALL AND TOEWALL QUANTITIES

HEADWALL SKEW ANGLE	90° TO 75°			74° TO 60°			59° TO 45°		
SPAN - S	Ƶ	STIRRUPS	REBAR QUANT.		STIRRUPS	REBAR QUANT.	Ƶ	STIRRUPS	REBAR QUANT.
	#	#	LBS./LIN.FT.	#	#	LBS./LIN.FT.	#	#	LBS./LIN.FT.
6	4	4	22.1	4	4	21.9	4	4	21.3
8	4	4	22.5	4	4	22.3	5	4	28.0
10	5	4	28.2	5	4	27.9	7	4	43.2
12	5	4	27.6	6	4	34.5	8	5	56.4
14	6	4	34.0	7	4	41.9	10	5	81.5
16	6	4	32.3	8	5	53.3	☆	☆	☆
18	7	4	39.0	9	5	62.6	☆	☆	☆
20	7	4	38.6	11	6	96.9	☆	☆	☆
CONCRETE QUANTITY = 0.085 CU.YDS./LIN.FT.									

NOTES

1. QUANTITIES ARE PER LINEAR FOOT (OF HEADWALL) FOR ONE HEADWALL AND TOEWALL AND INCLUDE ALL HEADWALL AND TOEWALL REINFORCING STEEL. QUANTITY INCLUDED WAS CALCULATED PER 1 FT. STRIP. SKEW ANGLE MAY VARY. QUANTITIES SHALL BE PAID FOR AS SHOWN ON THE PLANS.

☆ 2. A SKEWED HEADWALL IS NOT RECOMMENDED FOR THESE SPANS. A SPECIAL DESIGN IS REQUIRED.

3. FOR HEADWALL AND TOEWALL DETAILS SEE SHEET 1.

4. WHEN THE FILL HEIGHT IS LESS THAN OR EQUAL TO 2 FT.-0 IN., ALL REINFORCING BARS IN THE HEADWALL, ALL REINFORCING BARS DESIGNATED BY AN ASTERISK (*), AND THE d_1 IN THE BARS IN THE TOP MAT OF THE TOP SLAB SHALL BE EPOXY COATED.

5. REINFORCING QUANTITIES INCLUDE BOTH EPOXY-COATED AND UNCOATED BARS.

6. WHEN AN R (RISE) OF LESS THAN 6 FT. IS REQUIRED, USE THE BAR SIZES AND THE SLAB AND WALL THICKNESSES FOR THE 6 FT. RISE (IF AVAILABLE ON THE TABLE).

▲ 7. THE SIZE OF d_1 BARS IS #4. THE NUMBER OF BARS REQUIRED IS LISTED.

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Sheet Revisions	
Date:	Comments

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SINGLE CONCRETE BOX CULVERT

Issued By: Project Development Branch July 4, 2012

STANDARD PLAN NO.

M-601-1

Sheet No. 2 of 2

SGM
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Glenwood Springs, CO 81601
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Carmony Exploration, LLC
Access Road - Pipeline & APD's

#	Revision	Date	By:
1			

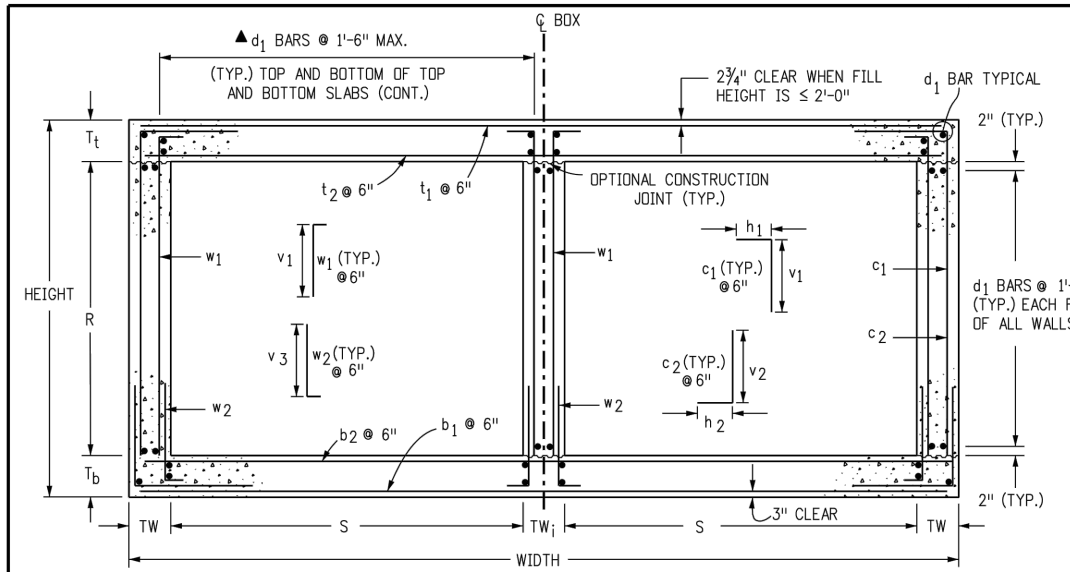
Project Milestone: Preliminary Not For Construction

Job No. 2013-379.001
Drawn by: RCS
Date: 01/19/2018
QC: RCS | PE: JSS
File: 23-4V-PRM-Carmony-CDOT-Details

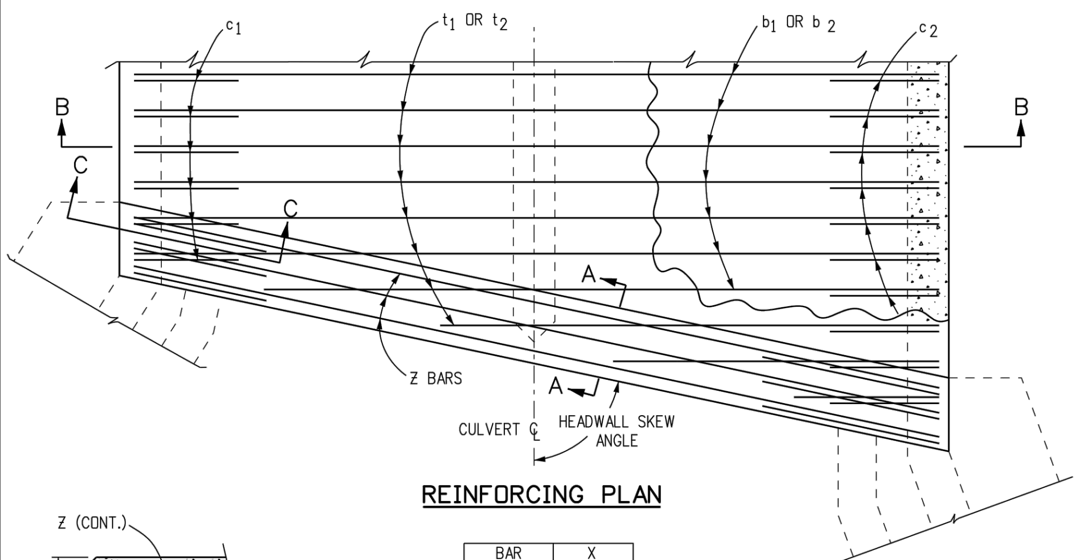
Title: CDOT Standard Details (Box Culvert)

Dwg No. 1

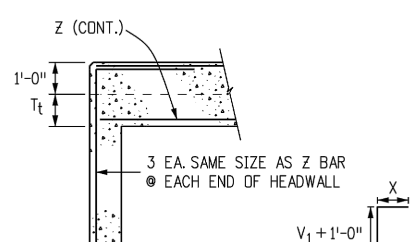
Of: 7



SECTION B-B



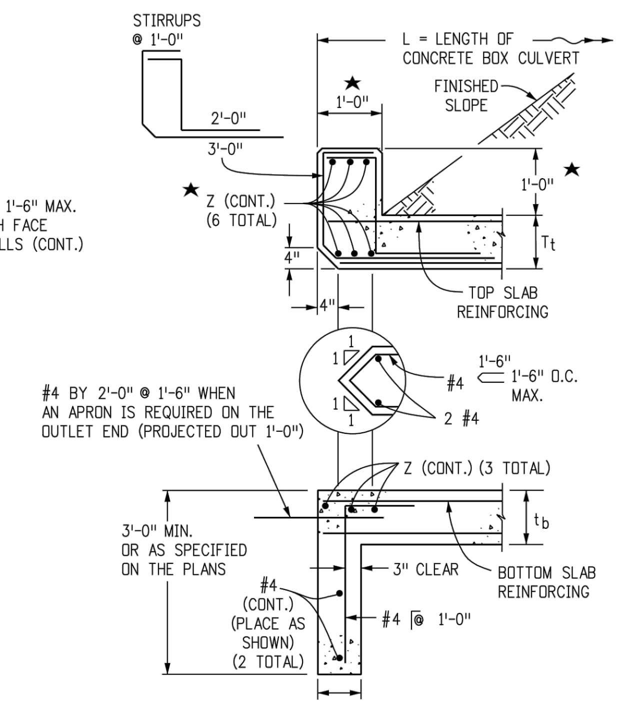
REINFORCING PLAN



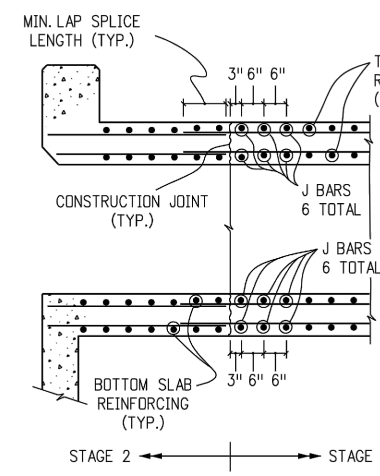
SECTION C-C

HEADWALL CORNER REINFORCING DETAIL

BAR SIZE (#)	X (FT.-IN.)
4	1-9
5	2-2
6	2-7
7	3-1
8	4-0
9	5-1
10	6-5
11	7-11



SECTION A-A



SPAN (FT.)	J BAR SIZE (#)
6	5
8	6
10	7
12	8
14	8
16	9
18	10
20	10

CONSTRUCTION JOINT DETAIL FOR STAGED CONSTRUCTION

NOTE: THIS DETAIL IS FOR CONSTRUCTION JOINTS PERPENDICULAR TO THE ℄ OF THE BOX ONLY.

GENERAL NOTES

1. ALL CONCRETE SHALL BE CLASS D (BOX CULVERT).
2. ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS PLACED.
3. ALL CONSTRUCTION JOINTS NOT SHOWN ON THE PLANS SHALL BE CONSTRUCTED ONLY IF APPROVED BY THE ENGINEER.
4. THE CONTRACTOR SHALL MAINTAIN THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.
5. STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH STANDARD PLAN M-206-1.
6. FOR ANY CULVERT SPAN 20 FT. OR GREATER, A FOUNDATION INVESTIGATION AND REPORT ARE REQUIRED.
7. BACKFILL SHALL NOT BEGIN UNTIL TOP SLAB HAS REACHED DESIGN STRENGTH, f'_c.
8. SPLICE QUANTITIES FOR LONGITUDINAL AND TRANSVERSE BARS ARE NOT INCLUDED.
9. REINFORCING STEEL SHALL BE GRADE 60.
10. THE MINIMUM LAP SPLICE LENGTH FOR EPOXY COATED REINFORCING BARS SHALL BE:

BAR SIZE:	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH:	1'-3"	1'-6"	1'-10"	2'-2"	3'-8"	4'-8"	5'-11"	7'-3"

THE MINIMUM LAP SPLICE LENGTH FOR BLACK REINFORCING BARS SHALL BE:

BAR SIZE:	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH:	1'-0"	1'-4"	1'-7"	1'-10"	2'-5"	3'-1"	3'-11"	4'-10"

11. ALL DIMENSIONS ARE PERPENDICULAR TO THE CENTERLINE OF THE BOX.
12. WINGWALLS SHALL BE TIED TO CONCRETE BOX CULVERT IN ACCORDANCE WITH STANDARD PLAN M-601-20.
13. ALL TRANSVERSE REINFORCING SHALL BE NORMAL TO THE CENTERLINE OF THE BOX.
14. FILL HEIGHT IS THE DISTANCE MEASURED FROM TOP OF TOP SLAB TO TOP OF PAVEMENT.
15. ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED ¾ IN.

▲ WHEN THE FILL HEIGHT IS LESS THAN OR EQUAL TO 2 FT., THE SPACING OF THE d_1 BARS IN THE BOTTOM OF THE TOP SLAB SHALL BE 6 IN. OR LESS. USE THE FOLLOWING EQUATION TO CALCULATE THE ADDITIONAL REINFORCING QUANTITY. WHERE S IS IN FEET:

$$\text{ADDED REINFORCING, LBS./LIN FT.} = 2 \times \left(\frac{S}{0.5} - \frac{S}{1.5}\right) \times 0.668 = 1.781\,S$$

DESIGN DATA: 16TH EDITION OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES

SERVICE LOAD DESIGN METHOD

UNIT STRESSES: $f_s = 24{,}000$ psi., $f_y = 60{,}000$ psi., $f_c = 1{,}800$ psi., $f'_c = 4{,}500$ psi., $n = 8$

LOADING DATA:

LIVE LOAD = AASHTO, HS 20-44 AND ALTERNATE MILITARY LOADING

DEAD LOAD CASE 1: VERTICAL EARTH LOAD = 120 LBS./CU. FT. HORIZONTAL EARTH LOAD = 30 LBS./CU.FT.

DEAD LOAD CASE 2: VERTICAL EARTH LOAD = 120 LBS./CU. FT. HORIZONTAL EARTH LOAD = 60 LBS./CU. FT.

FUTURE HMA OVERLAY = 48 LBS./SQ. FT. BASED ON 4 IN. THICKNESS

LIVE LOAD SURCHARGE ON EXTERIOR WALLS = 2 FT. OF EARTH

★ IF HEADWALL MOUNT GUARDRAIL IS USED (SEE STANDARD PLAN M-606-1, SHEET 16):
- ALL REINFORCING STEEL SHALL BE ACCORDING TO THIS BOX CULVERT PLAN.
- ANY ADDITIONAL STIRRUP LENGTH WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
- HEADWALL DIMENSION AND CONCRETE QUANTITY SHALL BE ACCORDING TO STANDARD PLAN M-606-1, SHEET 16.
- POST ANCHORS SHALL BE PROVIDED ACCORDING TO STANDARD PLAN M-606-1, SHEET 16.
- POST ANCHORS AND CONCRETE FOR HEADWALL MOUNT OF GUARDRAIL WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
- POST ANCHORS WHEN REQUIRED AND ENCASED IN HEADWALL CONCRETE, SHALL CONFORM TO ASTM A 36 OR AASHTO M 169 STEEL.

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DOUBLE CONCRETE BOX CULVERT

Issued By: Project Development Branch July 4, 2012

STANDARD PLAN NO.
M-601-2
Sheet No. 1 of 2

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Carmony Exploration, LLC
Access Road - Pipeline & APD's

Revision	Date	By:
# 1		

Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	RCS
Date:	01/19/2018
QC: RCS	PE: JSS
File:	23-4V-PRM-Carmony-CDOT-Details

Title: CDOT Standard Details (Box Culvert)

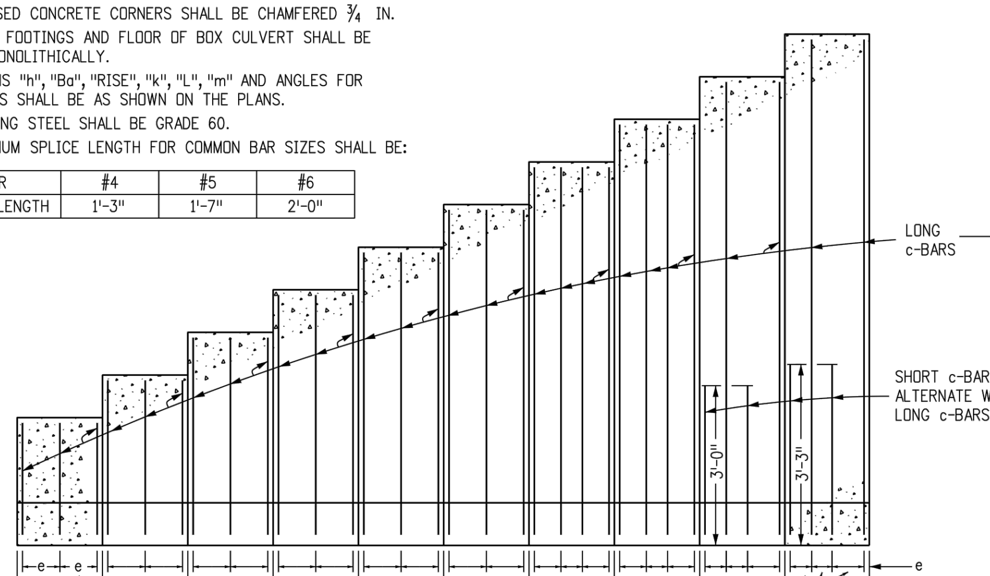
Dwg No. 1

Of: 7

GENERAL NOTES

1. ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED ¾ IN.
2. WINGWALL FOOTINGS AND FLOOR OF BOX CULVERT SHALL BE PLACED MONOLITHICALLY.
3. DIMENSIONS "h", "Ba", "RISE", "k", "L", "m" AND ANGLES FOR WINGWALLS SHALL BE AS SHOWN ON THE PLANS.
4. REINFORCING STEEL SHALL BE GRADE 60.
5. THE MINIMUM SPLICE LENGTH FOR COMMON BAR SIZES SHALL BE:

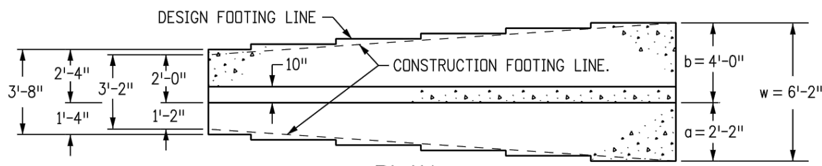
BAR	#4	#5	#6
SPLICE LENGTH	1'-3"	1'-7"	2'-0"



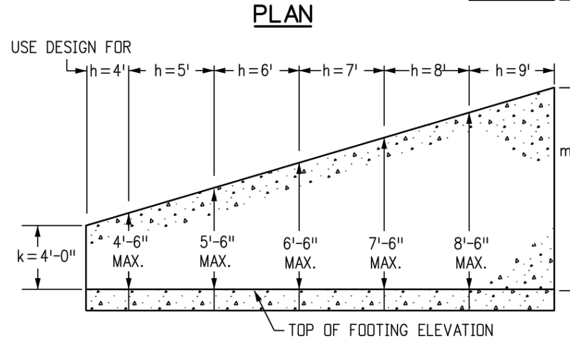
e =	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-4"	1'-3"	11'	9"	7"	CTRS.
h =	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	
a =	1'-0"	1'-2'	1'-4"	1'-6'	1'-8"	1'-10"	2'-0"	2'-2"	2'-4"	2'-6"	
b =	1'-8"	2'-0"	2'-4'	2'-8'	3'-0"	3'-4"	3'-8"	4'-0"	4'-4"	4'-8"	
w =	2'-8"	3'-2"	3'-8"	4'-2"	4'-8"	5'-2"	5'-8"	6'-2"	6'-8"	7'-2"	
c & d BARS	#4@1'-6"	#4@1'-6"	#4@1'-6"	#4@1'-6"	#4@1'-6"	#4@1'-4"	#5@1'-3"	#5@11"	#6@9"	#6@7"	CTRS.
* CONC.CU.YD./L.F.	0.161	0.210	0.259	0.308	0.358	0.407	0.457	0.506	0.556	0.604	
* REINF. LB./L.F.	8.0	9.3	10.7	12.1	14.3	16.4	23.0	28.6	41.8	54.6	

* DOES NOT INCLUDE TOE WALL QUANTITIES

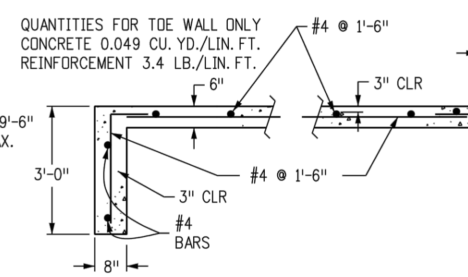
DESIGN TABLE



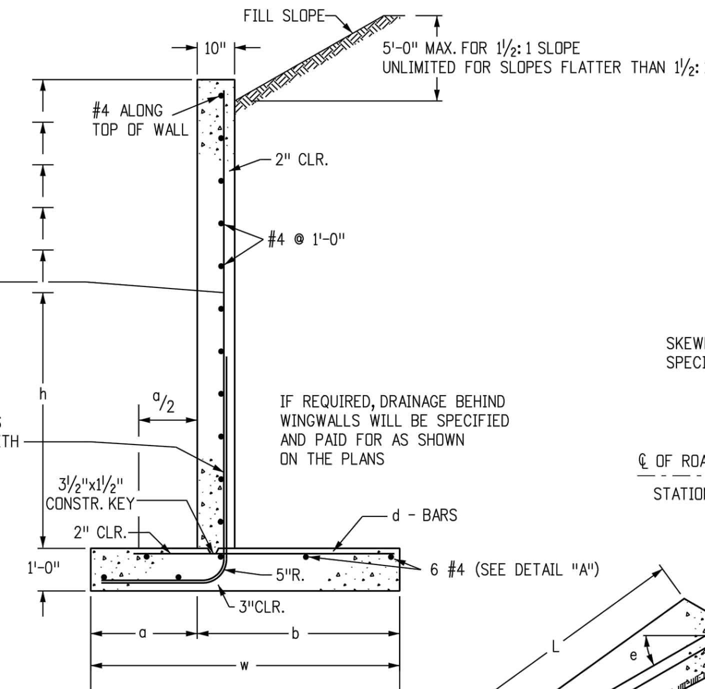
PLAN



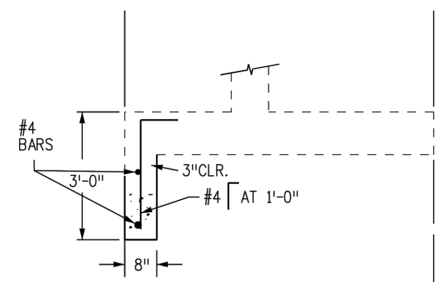
DESIGN EXAMPLE



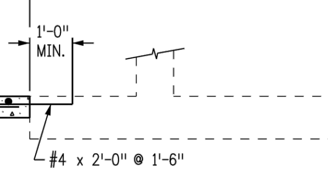
APRON TOE WALL



TYPICAL SECTION

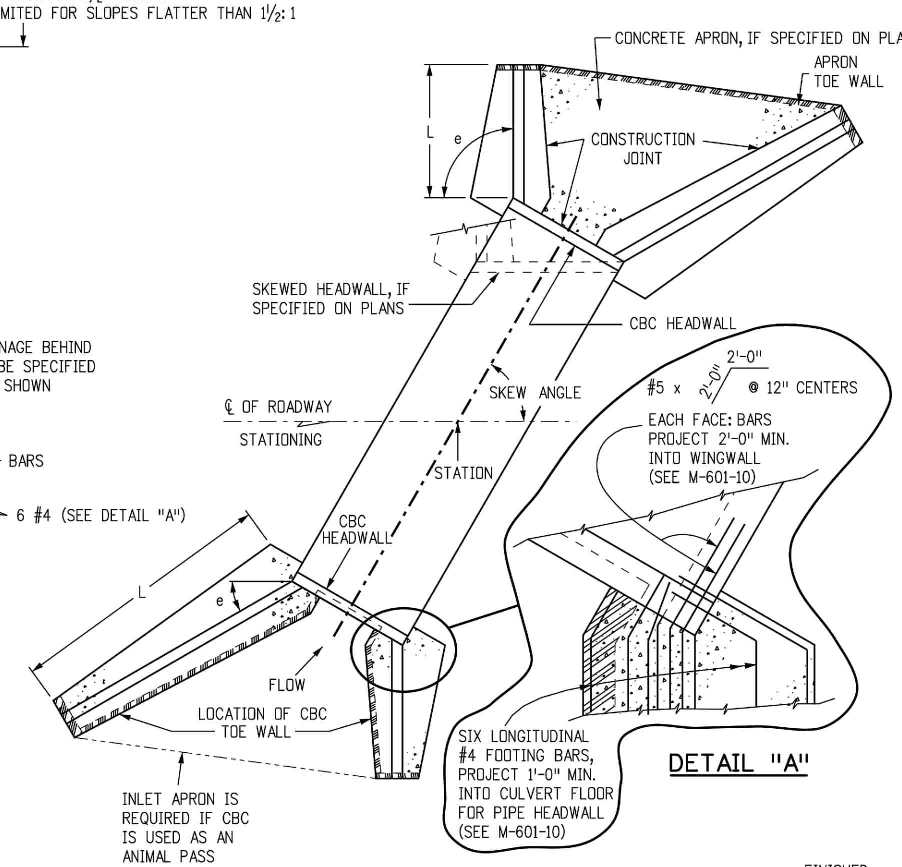


WITH TOE WALL



WITH CONCRETE APRON

REINFORCEMENT 0.89 LB./SQ. FT.



TYPICAL CULVERT LAYOUT

DESIGN DATA:

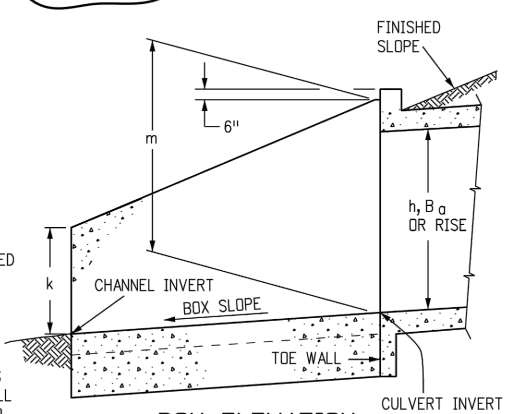
UNIT STRESSES: f_s = 24,000 PSI
f_c = 1,200 PSI
n = 9

EQUIVALENT FLUID PRESSURE = 36 LBS./CU. FT.
MAXIMUM TOE PRESSURE = 1 TON/SQ. FT.

ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE CONCRETE IS POURED.

WINGWALL AND APRON CONCRETE SHALL BE:
CONCRETE CLASS B, OR D (BOX CULVERT) FOR CBC's.
CONCRETE CLASS B, OR D (WALL) FOR PIPES.

LIVE LOAD SURCHARGE HAS NOT BEEN CONSIDERED. WALLS WITHIN h/2 OF THE EDGE OF THE ROADWAY SHOULDER WILL REQUIRE A SPECIAL DESIGN IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.



BOX ELEVATION

m = h, B a OR RISE + (1'-4")
UNLESS OTHERWISE SHOWN ON PLANS

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WINGWALLS FOR PIPE OR BOX CULVERTS

Issued By: Project Development Branch July 4, 2012

STANDARD PLAN NO.
M-601-20
Sheet No. 1 of 1

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Carmony Exploration, LLC
Access Road - Pipeline & APD's

#	Revision	Date	By
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Project Milestone: Preliminary Not For Construction

Job No.	2013-379.001
Drawn by:	RCS
Date:	01/19/2018
QC: RCS	PE: JSS
File:	23-4V-PRM-Carmony-CDOT-Details

Title: CDOT Standard Details (Box Culvert)

Dwg No. 1
Of: 7

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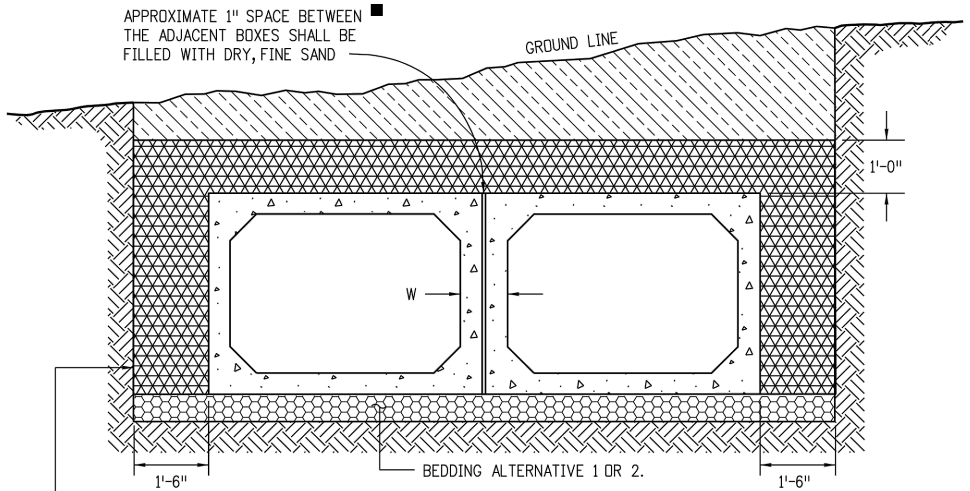
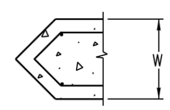


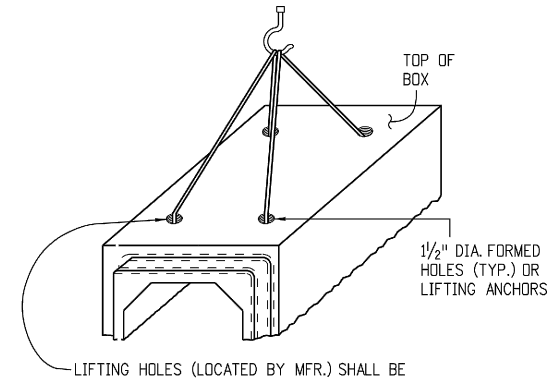
EXCAVATION & BACKFILL

(PARALLEL PRECAST BOX CULVERT INSTALLATION)

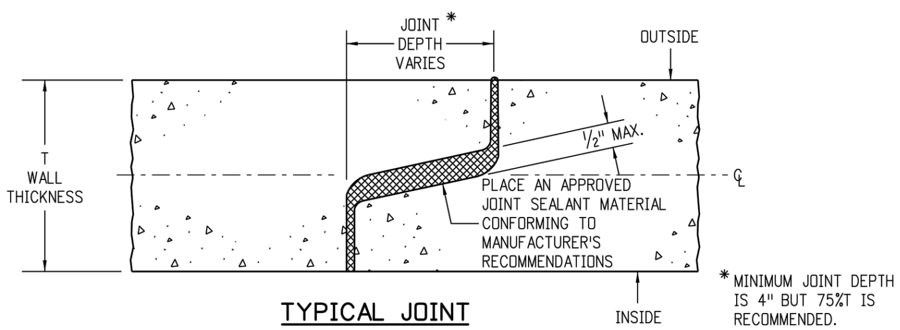


NOSE ANGLE DETAIL

SEE STANDARD PLANS M-601-2, AND 3 TYPICAL AT ADJACENT BOXES DRILL AND GROUT REINFORCING BARS (TYP.)

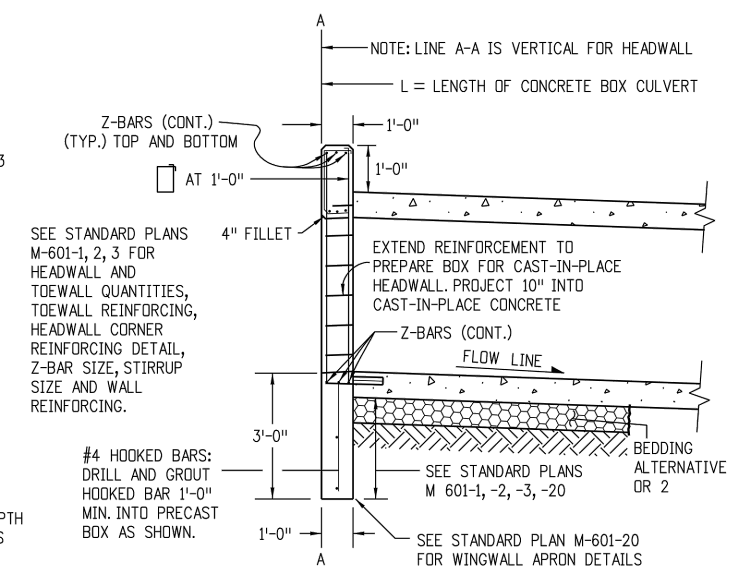


LIFTING



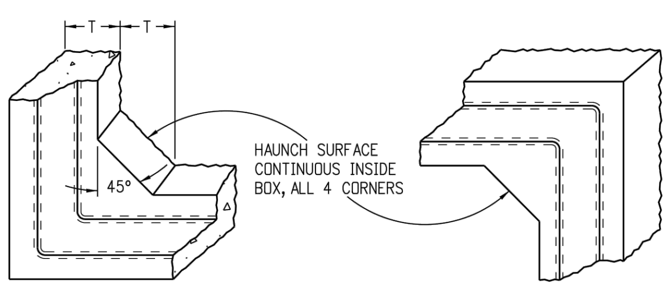
TYPICAL JOINT

* MINIMUM JOINT DEPTH IS 4" BUT 75%T IS RECOMMENDED.

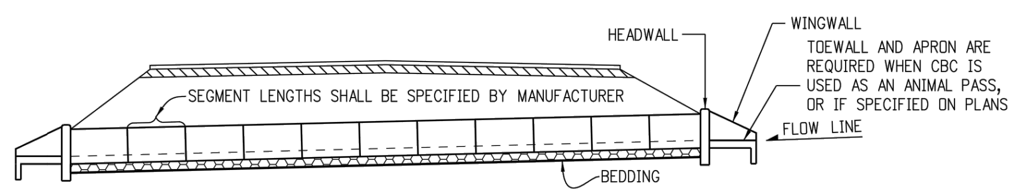


CULVERT END

(WITH HEADWALL)



CORNERS



TYPICAL CULVERT INSTALLATION

GENERAL NOTES

1. PRECAST CONCRETE BOX CULVERT SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING SPECIFICATIONS:

ITEM OR CONDITION	MIN. COVER	AASHTO	EQUIV. ASTM
2 FT. OR MORE COVER	2 FT.	M 259, TABLE 2	C 1433, TABLE 2
LESS THAN 2 FT. COVER	0 FT.	M 273, TABLE 2	C 1433, TABLE 2
PREFORMED JOINT MATERIAL	———	M 198, 6.1 OR 6.2	C 990, 6.1 OR 6.2
SPAN 20 FT. OR MORE	0 FT.	———	C 1577

THE SPECIFICATIONS LISTED ABOVE SHOW REINFORCING PLACEMENT, EARTH COVER AND OTHER DETAILS NEEDED TO MANUFACTURE THE BOX CULVERTS.

THE DESIGN FOR A PRECAST CONCRETE BOX WITH A SPAN LARGER THEN 12 FT. SHALL BE PROVIDED BY THE MANUFACTURER.

2. THE CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS TO THE ENGINEER FOR INFORMATION ONLY, PRIOR TO FABRICATION.

3. BEDDING ALTERNATIVE 1 OR 2 IS REQUIRED:

   BEDDING ALTERNATIVE IS AT THE CONTRACTOR'S OPTION. BEDDING AND EXCAVATION FOR BEDDING WILL NOT BE MEASURED AND PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.

   BEDDING ALTERNATIVE 1 CONSISTS OF 6 IN. OF AGGREGATE BASE COURSE (CLASS 6) COMPACTED TO NOT LESS THAN 95% MAXIMUM DENSITY DETERMINED IN CONFORMANCE WITH AASHTO T 180.

   BEDDING ALTERNATIVE 2 CONSISTS OF AN 3 IN. THICK, MINIMUM, LEAN CONCRETE BASE. CEMENT CONTENT = 250 LBS./CU. YD.

   AGGREGATE GRADATION FOR ALTERNATIVE 2 BEDDING:

   PASSING 2 IN. SIEVE — 100%
   PASSING NO. 4 SIEVE — 20% TO 70%
   PASSING NO. 200 SIEVE — 5% TO 15%

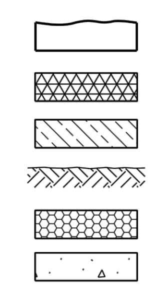
4. CBC JOINTS USING RUBBER GASKETS SHALL MEET ASTM C1677.

5. CLASS 1 DRAINAGE GEOTEXTILE SHALL BE COMPLETELY WRAPPED AROUND ALL CBC JOINTS WHICH DO NOT HAVE RUBBER GASKETS. THE GEOTEXTILE SHALL EXTEND A MINIMUM OF 1 FT. ON EACH SIDE OF JOINTS AND SHALL OVERLAP AND BE SECURELY ATTACHED FOR AT LEAST 1 FT. AT ITS ENDS. THE WRAP SHALL BE A SMOOTH FIT (NOT LOOSE OR STRETCHED) JUST PRIOR TO BACKFILL. THE GEOTEXTILE MATERIAL SHALL MEET THE APPLICABLE REQUIREMENTS OF SECTION 420. COST FOR GEOTEXTILE WILL NOT BE MEASURED AND PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE WORK.

6. FOR ANY CULVERT SPAN 20 FT. OR GREATER, A FOUNDATION INVESTIGATION AND REPORT ARE REQUIRED. A LOAD-AND-RESISTANCE FACTOR DESIGN (LRFD) IS REQUIRED USING ASTM C 1577.

7. THE CONTRACTOR HAS THE OPTION OF PROVIDING A CBC WHICH MEETS ASTM C 1577 FOR SPANS LESS THAN 20 FT.

LEGEND



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PRECAST CONCRETE BOX CULVERT

Issued By: Project Development Branch on July 4, 2012

STANDARD PLAN NO.
M-603-3
Sheet No. 1 of 1

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Access Road - Pipeline & APD's

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(Box Culvert)

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1
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