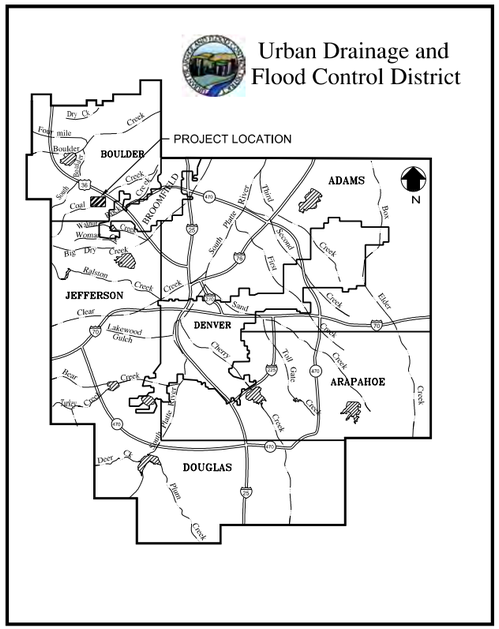
URBAN DRAINAGE AND FLOOD CONTROL DISTRICT AND TOWN OF SUPERIOR

IMPROVEMENTS TO COAL CREEK UPSTREAM OF MCCASLIN BOULEVARD

JANUARY 2015
PRELIMINARY DESIGN DRAWINGS
AGREEMENT NO. 14-12.26



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LOCATION MAP

N

VICINITY MAP; TOWN OF SUPERIOR, CO

NTS

SHEET INDEX

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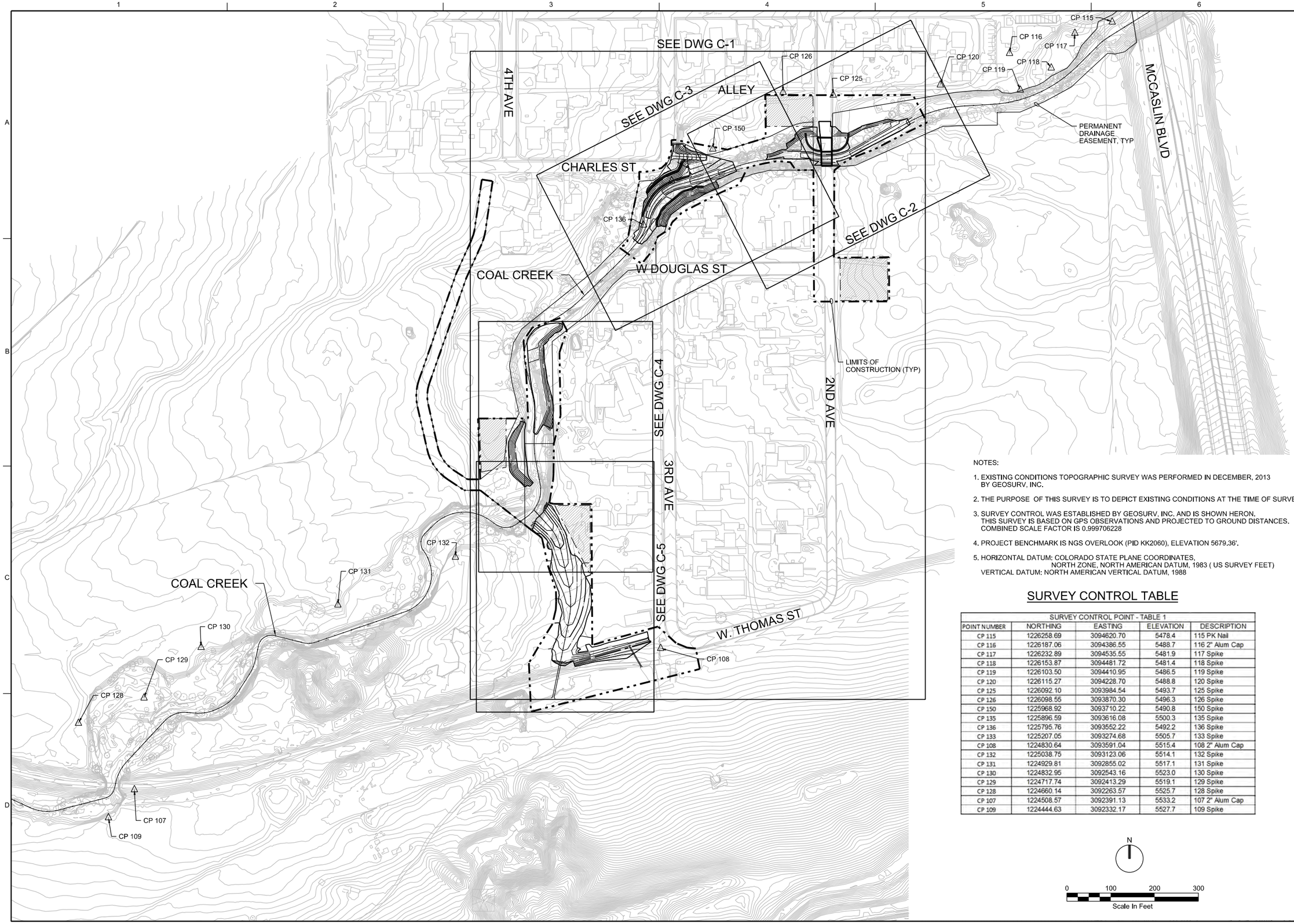
IMPROVEMENTS TO COAL CREEK UPSTREAM OF MCCASLIN BLVD

COVER SHEET

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2014
PROJ	240039
DWG	G-1
SHEET	1 of 22



NOTES:

1. EXISTING CONDITIONS TOPOGRAPHIC SURVEY WAS PERFORMED IN DECEMBER, 2013 BY GEOSURV, INC.
2. THE PURPOSE OF THIS SURVEY IS TO DEPICT EXISTING CONDITIONS AT THE TIME OF SURVEY.
3. SURVEY CONTROL WAS ESTABLISHED BY GEOSURV, INC. AND IS SHOWN HERON. THIS SURVEY IS BASED ON GPS OBSERVATIONS AND PROJECTED TO GROUND DISTANCES. COMBINED SCALE FACTOR IS 0.999706228
4. PROJECT BENCHMARK IS NGS OVERLOOK (PID KK2060), ELEVATION 5679.36'.
5. HORIZONTAL DATUM: COLORADO STATE PLANE COORDINATES, NORTH ZONE, NORTH AMERICAN DATUM, 1983 (US SURVEY FEET) VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM, 1988

SURVEY CONTROL TABLE

SURVEY CONTROL POINT - TABLE 1

POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP 115	1226258.69	3094620.70	5478.4	115 PK Nail
CP 116	1226187.06	3094386.55	5488.7	116 2" Alum Cap
CP 117	1226232.89	3094535.55	5481.9	117 Spike
CP 118	1226153.87	3094481.72	5481.4	118 Spike
CP 119	1226103.50	3094410.95	5486.5	119 Spike
CP 120	1226115.27	3094228.70	5488.8	120 Spike
CP 125	1226092.10	3093984.54	5493.7	125 Spike
CP 126	1226098.55	3093870.30	5496.3	126 Spike
CP 150	1225968.92	3093710.22	5490.8	150 Spike
CP 135	1225896.59	3093616.08	5500.3	135 Spike
CP 136	1225795.76	3093552.22	5492.2	136 Spike
CP 133	1225207.05	3093274.68	5505.7	133 Spike
CP 108	1224830.64	3093591.04	5515.4	108 2" Alum Cap
CP 132	1225038.75	3093123.06	5514.1	132 Spike
CP 131	1224929.81	3092855.02	5517.1	131 Spike
CP 130	1224832.95	3092543.16	5523.0	130 Spike
CP 129	1224717.74	3092413.29	5519.1	129 Spike
CP 128	1224660.14	3092263.57	5525.7	128 Spike
CP 107	1224508.57	3092391.13	5533.2	107 2" Alum Cap
CP 109	1224444.63	3092332.17	5527.7	109 Spike

N

0 100 200 300
Scale In Feet

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IMPROVEMENTS TO COAL CREEK UPSTREAM OF MCCASLIN BLVD

SURVEY CONTROL AND KEY MAP

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0 1"

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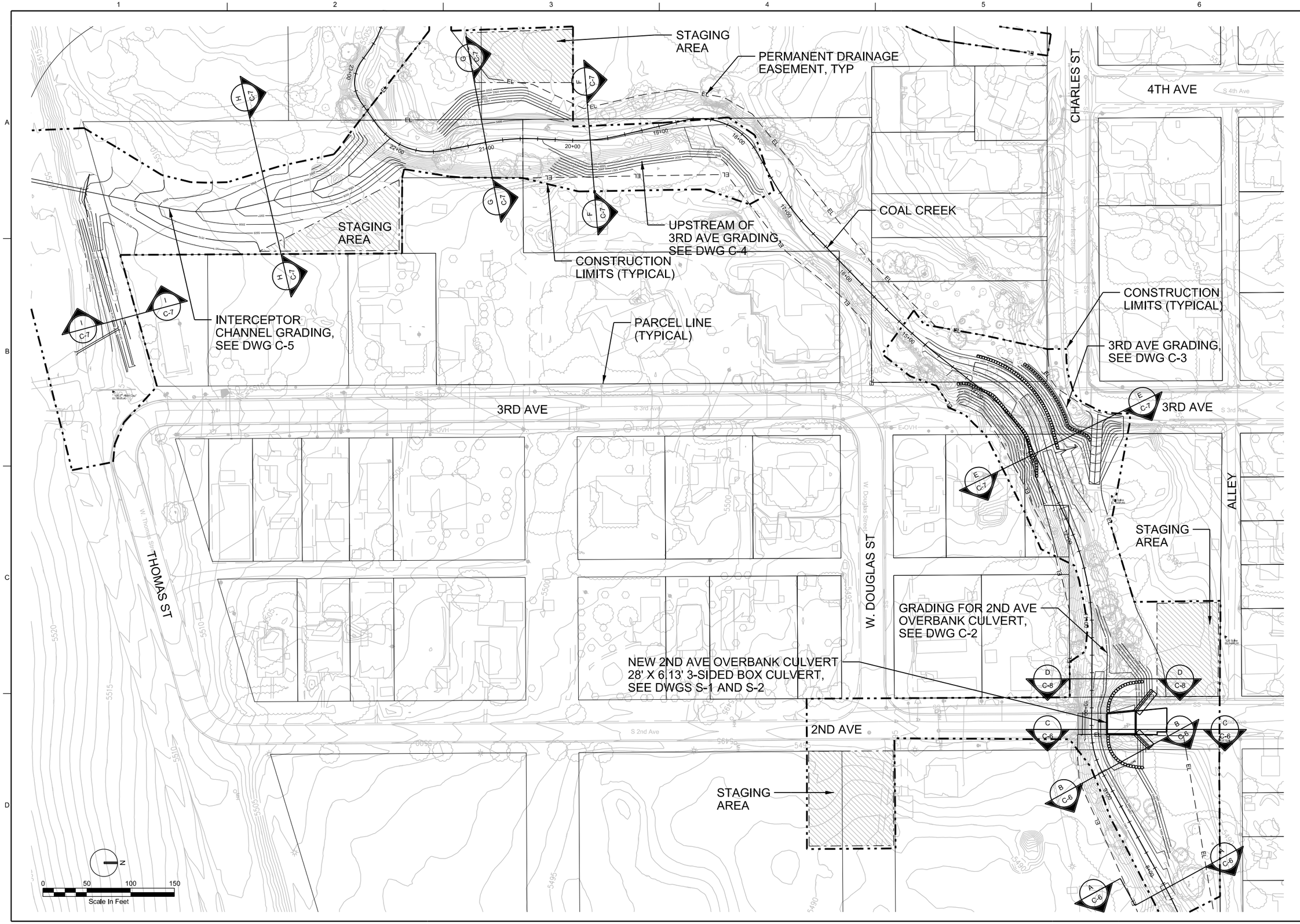
PROJ	240039
DWG	G-3
SHEET	3 of 22



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IMPROVEMENTS TO COAL CREEK UPSTREAM OF MCCASLIN BLVD

CROSS SECTION LOCATIONS

1:50

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2014
PROJ	240039
DWG	C-1
SHEET	4 of 22

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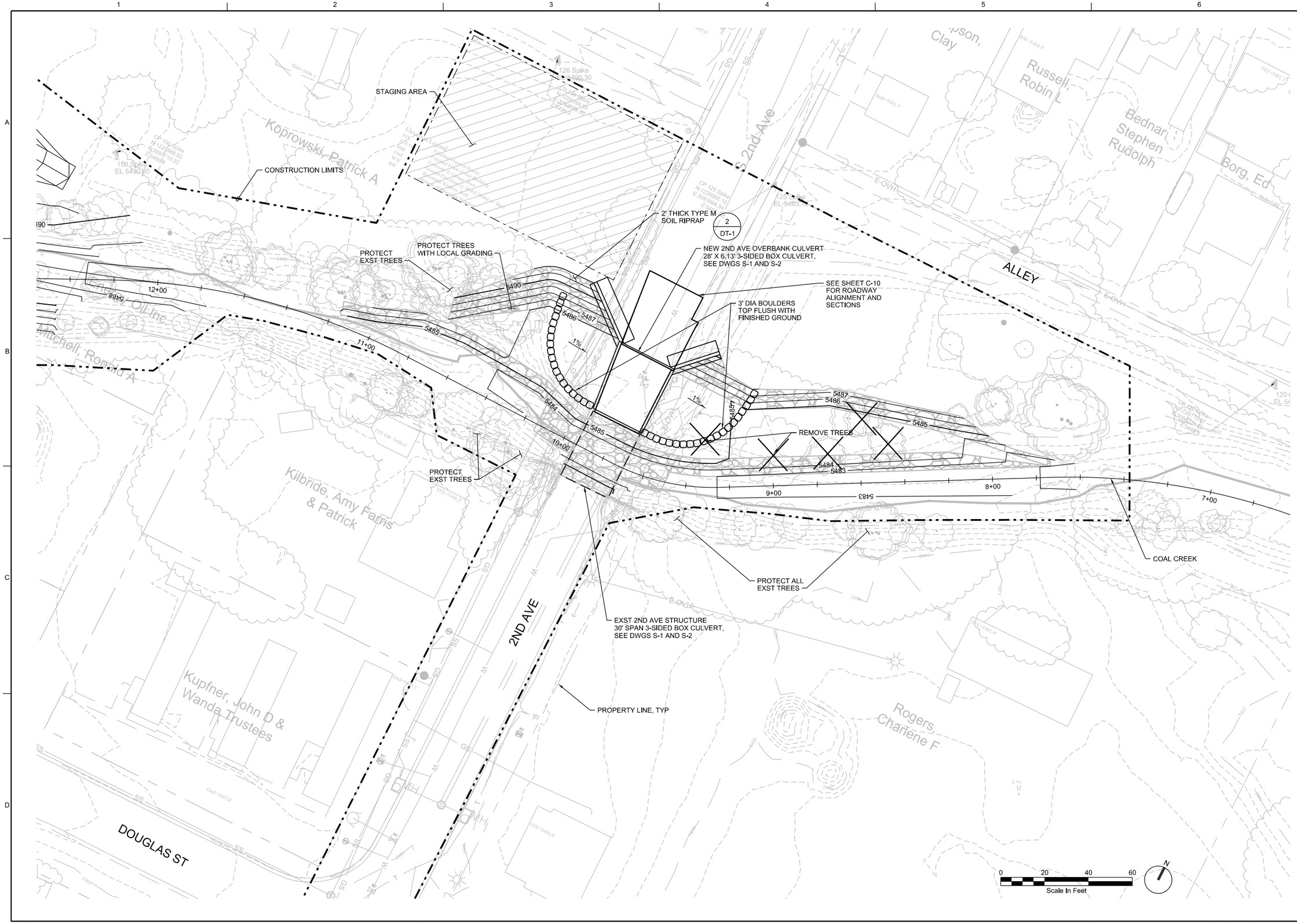

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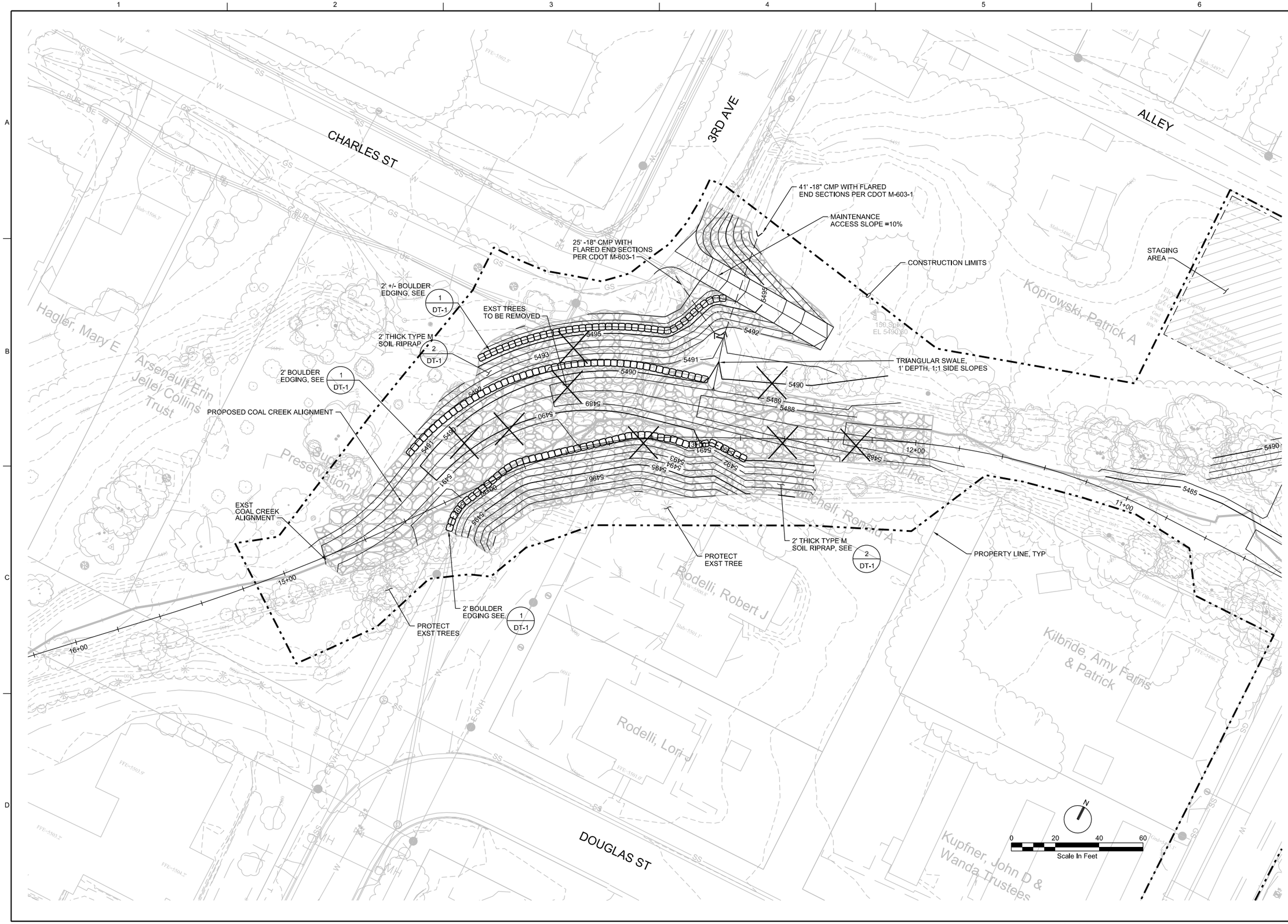
IMPROVEMENTS TO COAL CREEK UPSTREAM MCCASLIN

2ND AVE OVERBANK CULVERT GRADING PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2014
PROJ	240039
DWG	C-2
SHEET	5 of 22



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3RD AVE GRADING PLAN

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VERIFY SCALE
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0 1"

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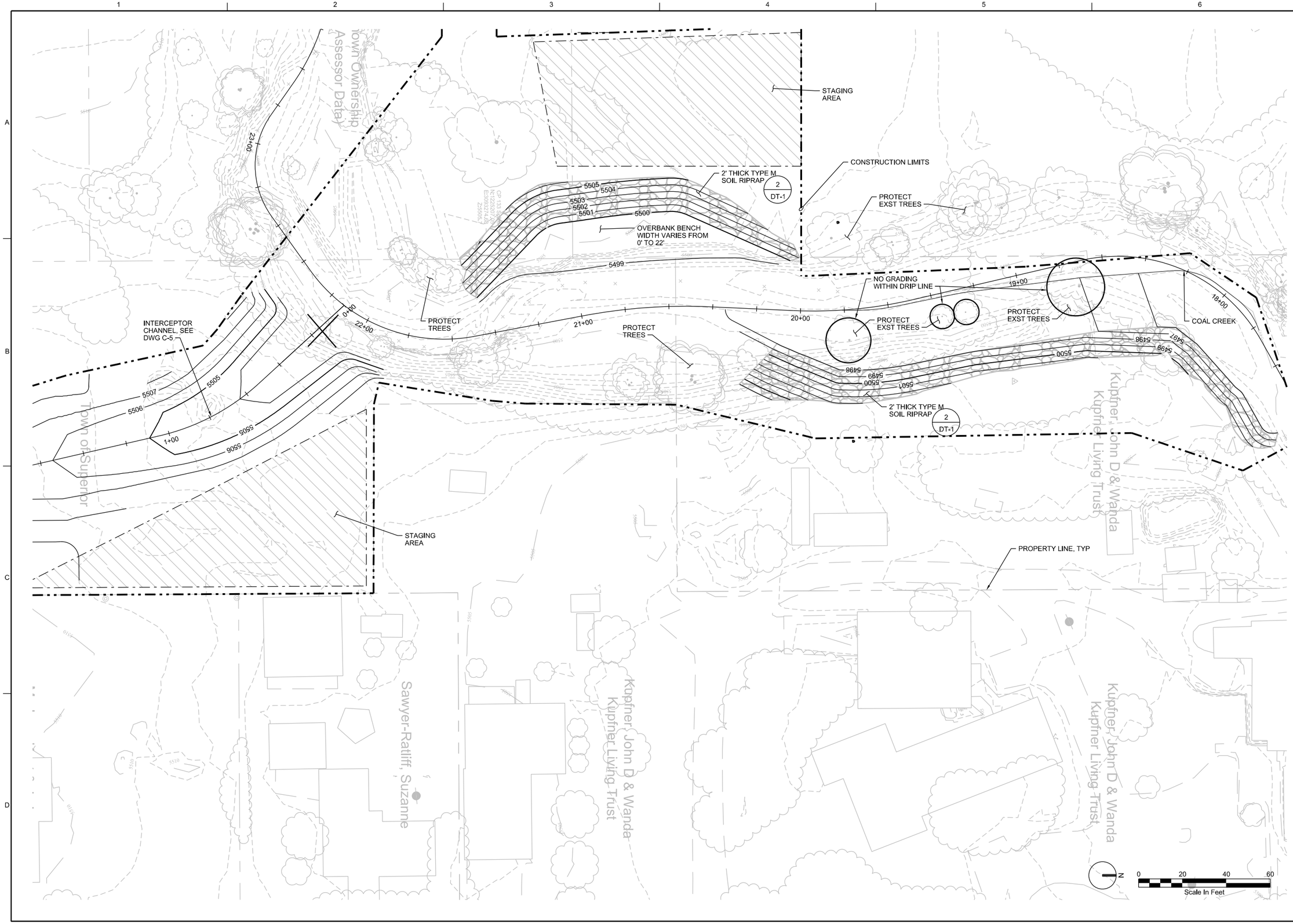
PROJ	240039
DWG	C-3
SHEET	6 of 22



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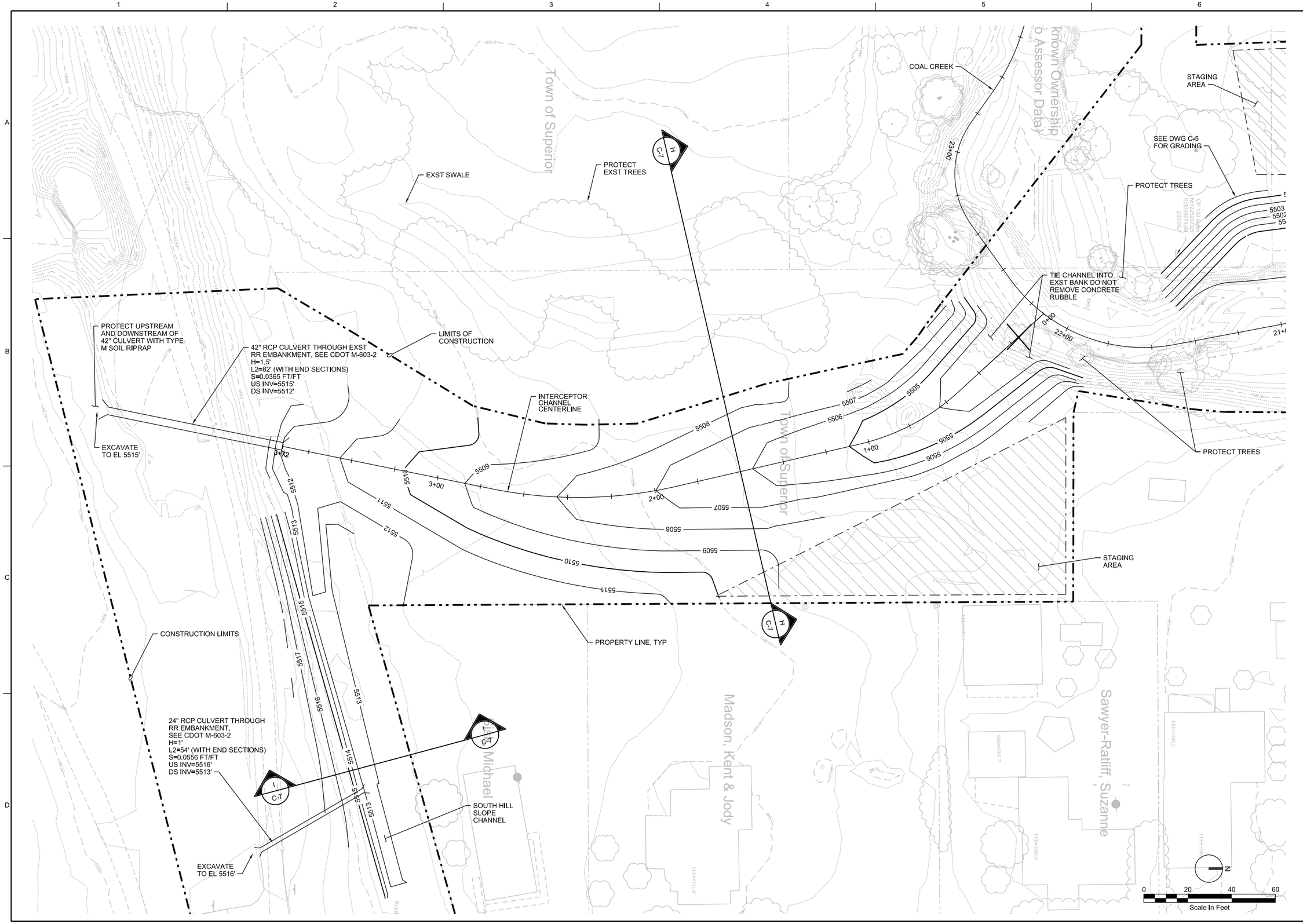
IMPROVEMENTS TO COAL CREEK UPSTREAM OF MCCASLIN BLVD

UPSTREAM OF 3RD AVE GRADING PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2014
PROJ	240039
DWG	C-4
SHEET	7 of 22



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IMPROVEMENTS TO COAL CREEK UPSTREAM OF MCCASLIN BLVD

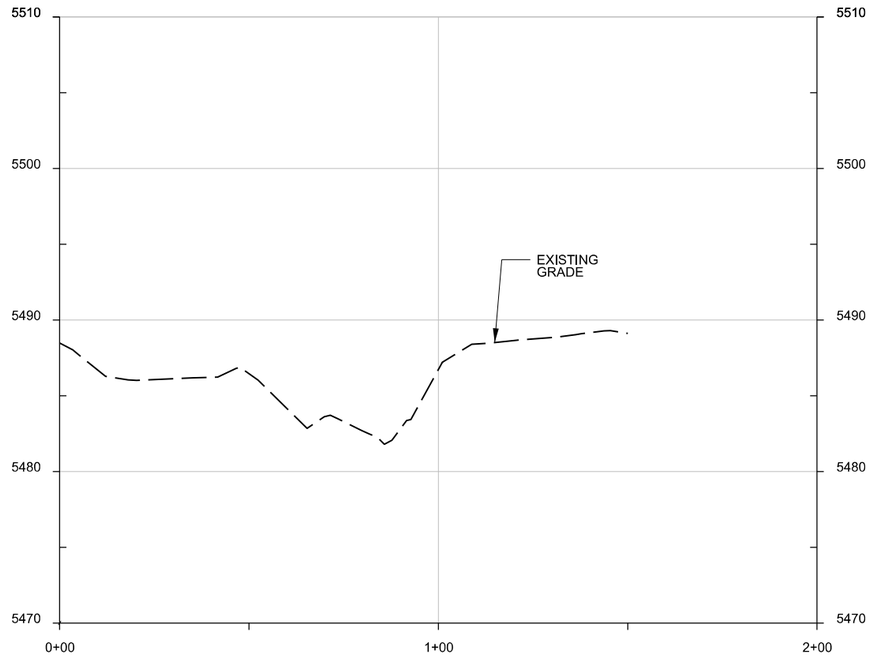
INTERCEPTOR CHANNEL GRADING

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2014
PROJ	240039
DWG	C-5
SHEET	8 of 22

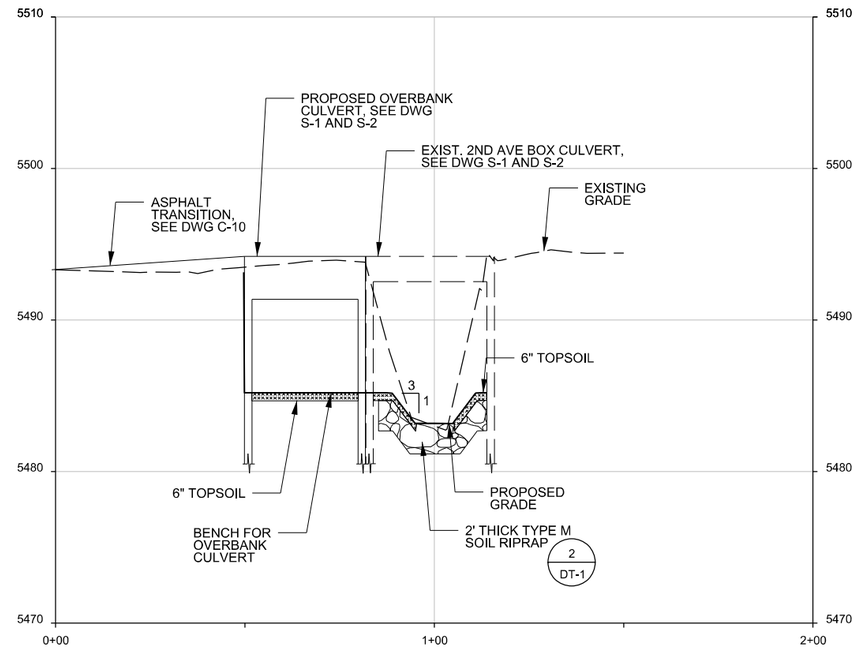
NOTE:

FOR CROSS SECTION LOCATIONS SEE DWG C-1



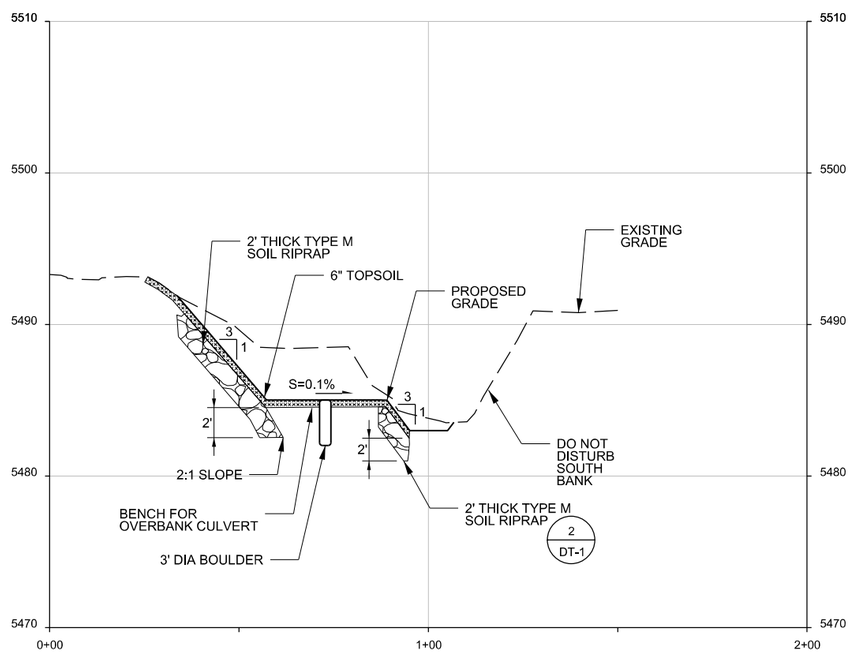
A C-1 COAL CREEK SECTION STA 7+73.34

H:1"=20'-0"
V:1"=10'-0"



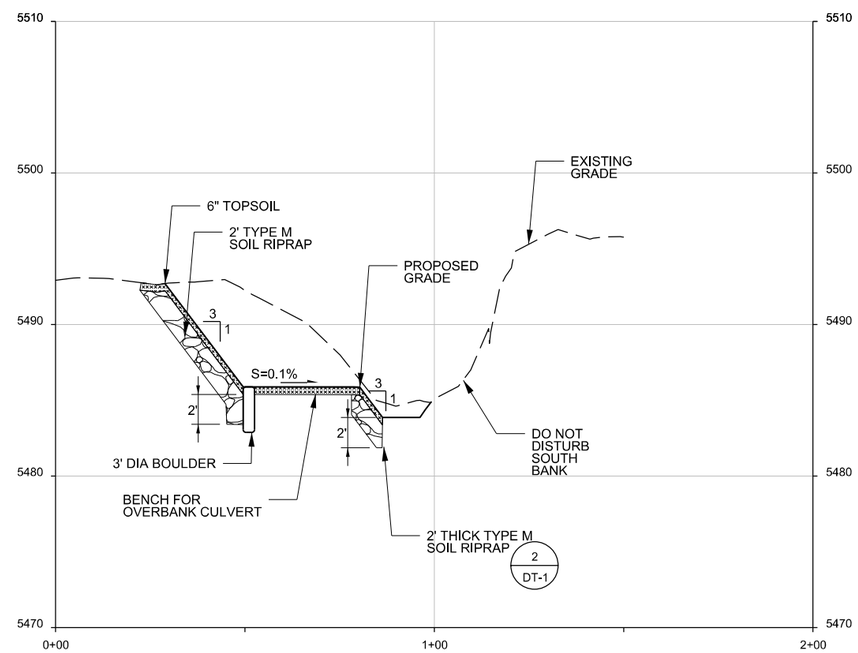
C C-1 COAL CREEK SECTION STA 9+75.34

H:1"=20'-0"
V:1"=10'-0"



B C-1 COAL CREEK SECTION STA 9+24.55

H:1"=20'-0"
V:1"=10'-0"



D C-1 COAL CREEK SECTION STA 10+33.20

H:1"=20'-0"
V:1"=10'-0"

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IMPROVEMENTS TO COAL CREEK UPSTREAM OF MCCASLIN BLVD

PROPOSED SECTIONS SHEET 1

1:20

VERIFY SCALE

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0 1"

DATE	DECEMBER 2014
PROJ	240039
DWG	C-6
SHEET	9 of 22

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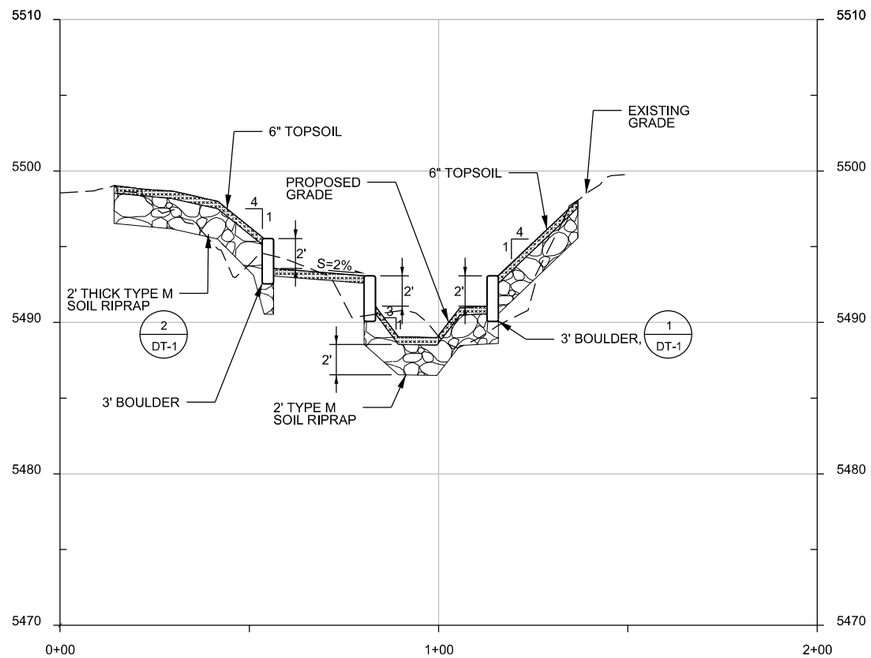

E C-1 COAL CREEK SECTION STA 13+02.42

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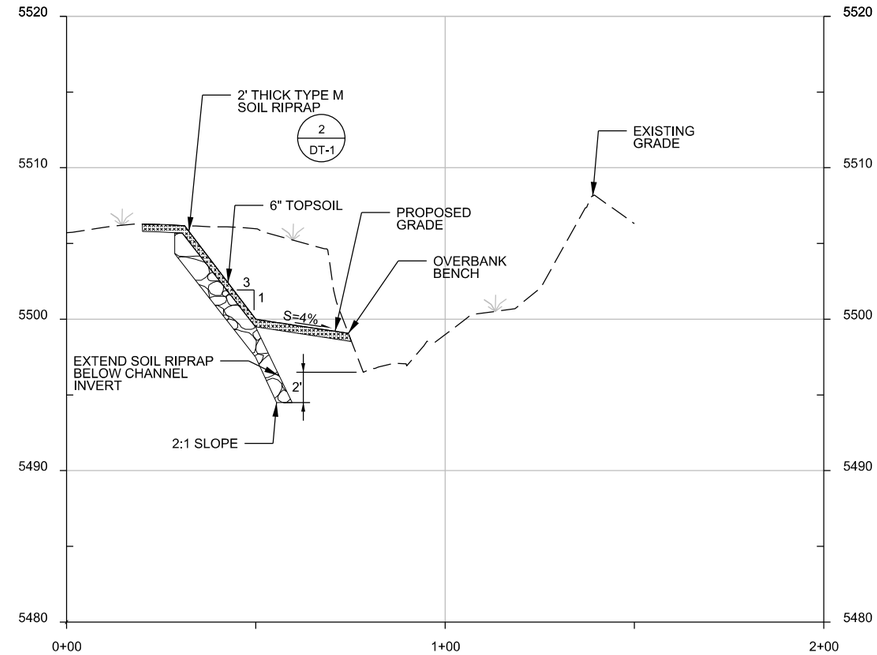
V:1"=10'-0"

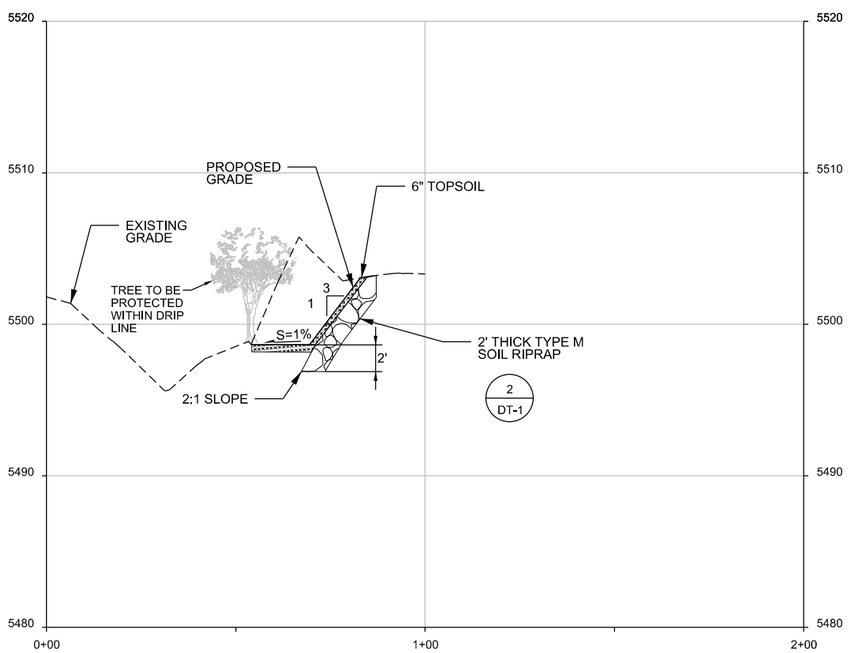


G C-1 COAL CREEK SECTION STA 20+99.44

H:1"=20'-0"
V:1"=10'-0"

NOTE:

FOR CROSS SECTION LOCATIONS SEE DWG C-1 AND DWG C-5



F C-1 COAL CREEK SECTION STA 19+80

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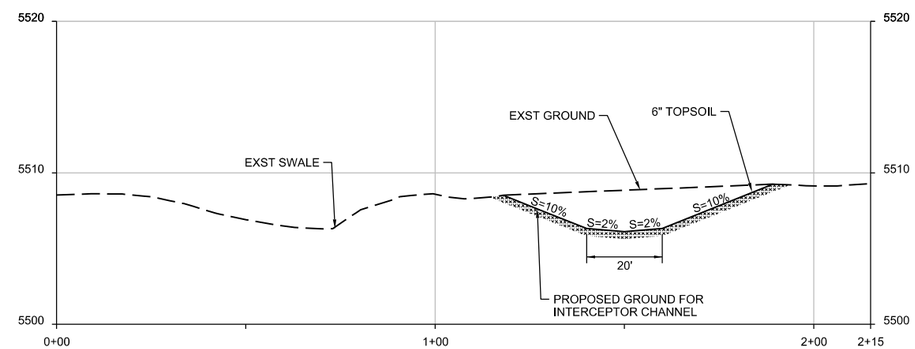
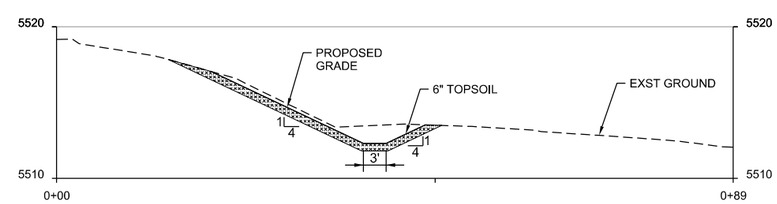
V:1"=10'-0"



H C-5 INTERCEPTOR CHANNEL SECTION STA 1+60

H:1"=20'-0"
V:1"=10'-0"



I C-5 SOUTH HILL SLOPE CHANNEL SECTION

H:1"=10'-0"
V:1"=10'-0"

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IMPROVEMENTS TO COAL CREEK UPSTREAM OF MCCASLIN BLVD

PROPOSED SECTIONS SHEET 2

1:20

VERIFY SCALE

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0 1"

DATE	DECEMBER 2014
PROJ	240039
DWG	C-7
SHEET	10 of 22

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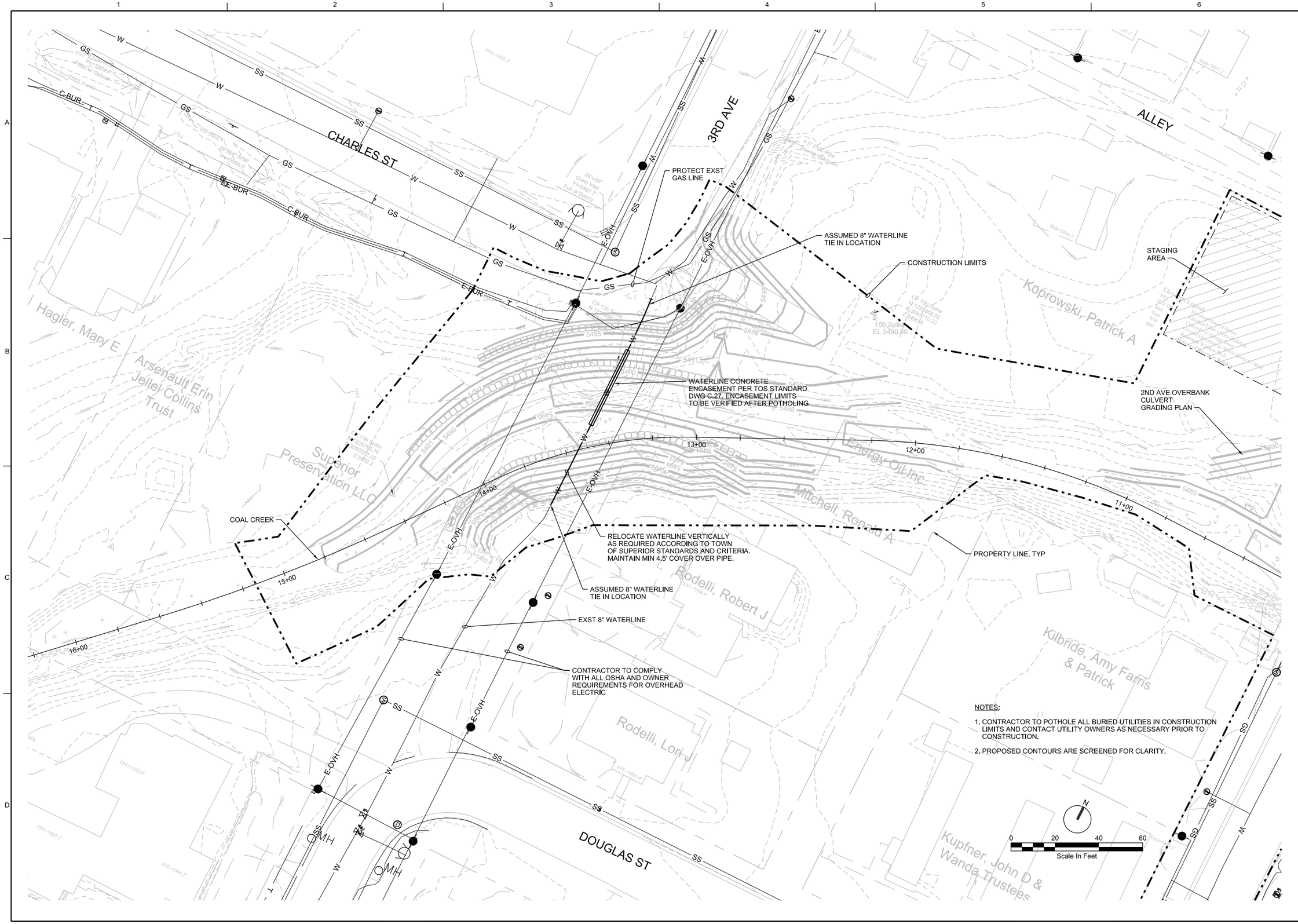

NOTES:

1. CONTRACTOR TO POTHOLE ALL BURIED UTILITIES IN CONSTRUCTION LIMITS AND CONTACT UTILITY OWNERS AS NECESSARY PRIOR TO CONSTRUCTION.
2. PROPOSED CONTOURS ARE SCREENED FOR CLARITY.

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IMPROVEMENTS TO COAL CREEK UPSTREAM OF MCCASLIN BLVD

3RD AVE UTILITY PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2014
PROJ	240039
DWG	C-8
SHEET	11 of 22

STAGING AREA

CONSTRUCTION LIMITS

NEW 2ND AVE OVERBANK CULVERT

GAS LINE TO BE RELOCATED BY OTHERS. CONTACT OWNER PRIOR TO CONSTRUCTION

SEE DWG C-10 FOR LIMITS OF ASPHALT PAVING

RELOCATE WATERLINE VALVE PER TOS STANDARD DWG B.13, TIE IN WATERLINE AT NEW VALVE

CONTRACTOR TO COMPLY WITH ALL OSHA AND OWNER REQUIREMENTS FOR OVERHEAD ELECTRIC

REMOVE EXISTING WATERLINE AND VALVE

RELOCATE WATERLINE ACCORDING TO TOWN OF SUPERIOR STANDARDS AND CRITERIA. MAINTAIN MIN 4.5' OF COVER OVER PIPE

PROTECT EXST SANITARY SEWER, SEE GENERAL NOTES

EXST 2ND AVE STRUCTURE

WATERLINE CONCRETE ENCASEMENT PER TOS STANDARD DWG C.27. ENCASEMENT LIMITS TO BE VERIFIED AFTER POTHOLING

TIE IN WATERLINE AT END OF CONCRETE EASEMENT

EXST 12" WATERLINE

PROPERTY LINE, TYP

COAL CREEK

ALLEY

2ND AVE

DOUGLAS ST

Koprowski, Patrick A

Energy Oil Inc.

Mitchell, Ronald A

Kilbride, Amy Farris & Patrick

Kupfner, John D & Wanda Trustees

Rogers, Charlene F

Russell, Robin L

Bednar, Stephen Rudolph

Borg, Ed

Clay

12+00

11+00

10+00

9+00

8+00

7+00

NOTES:

1. CONTRACTOR TO POTHOLE ALL BURIED UTILITIES IN CONSTRUCTION LIMITS AND CONTACT UTILITY OWNERS AS NECESSARY PRIOR TO CONSTRCUTION.

2. PROPOSED CONTOURS ARE SCREENED FOR CLARITY.

0 20 40 60
Scale In Feet

N

PRELIMINARY
NOT FOR
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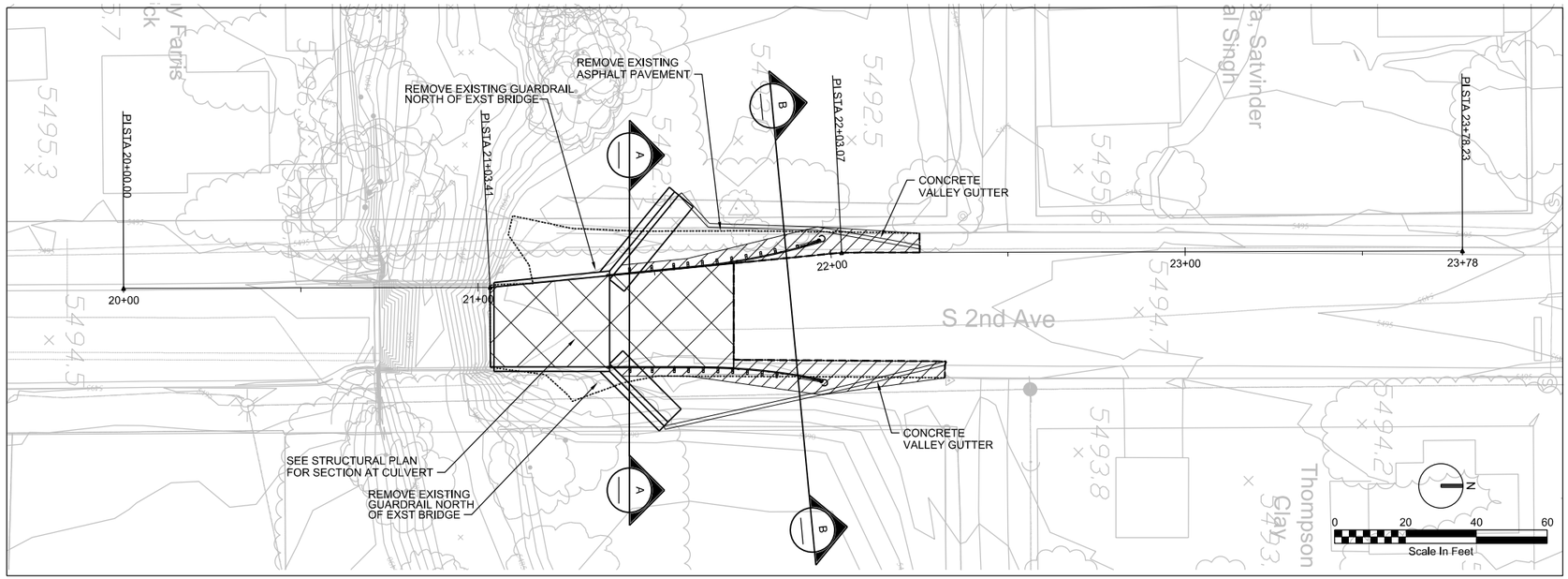
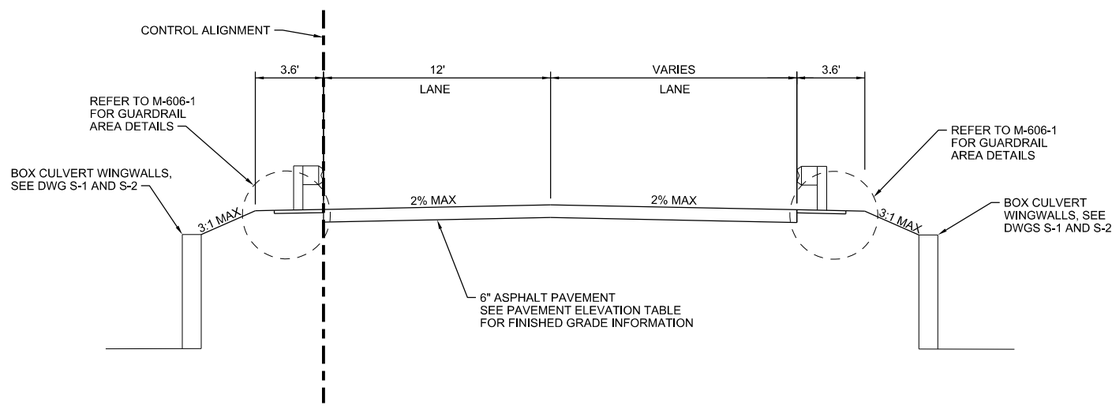
IMPROVEMENTS TO COAL CREEK UPSTREAM MCCASLIN

2ND AVE UTILITY PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

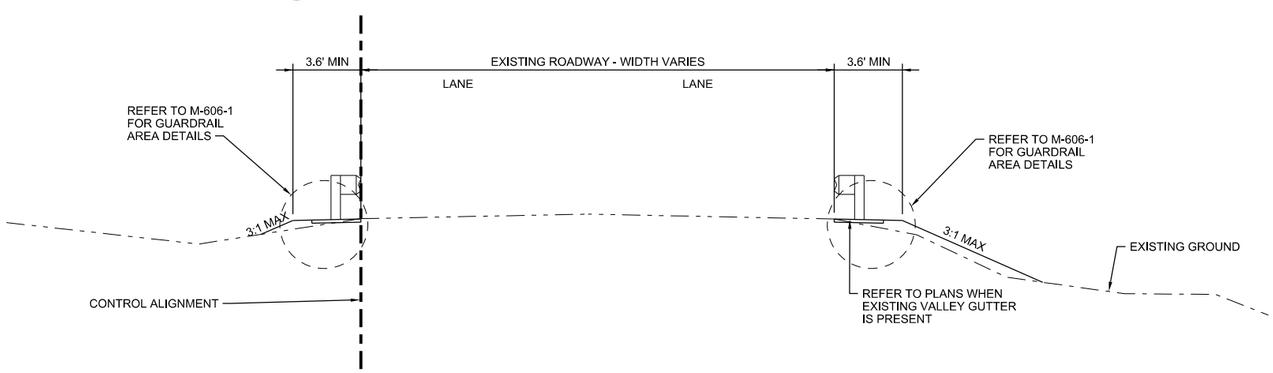
DATE	DECEMBER 2014
PROJ	240039
DWG	C-9
SHEET	12 of 22





A ROADWAY TYPICAL SECTION STA 21+37 TO STA 21+70

NTS



B ROADWAY TYPICAL SECTION STA 21+70 TO STA 22+33

NTS

PAVEMENT ELEVATION TABLE

POINT	NORTHING	EASTING	ELEV	DESCRIPTION
TO BE PROVIDED IN FUTURE SUBMITTAL				

GENERAL NOTES:

1) SEE CDOT STANDARD PLAN M-606-1 FOR GUARDRAIL INSTALLATION DETAILS PAVING SPECIFICS

2) GUARDRAIL CONSISTS OF A FLARED END ANCHORAGE AND A TYPE 3L TRANSITION TO CONNECT TO NEW BRIDGE RAIL

3) EMBANKMENT BELOW NEW ASPHALT PAVEMENT MUST HAVE ADEQUATE STRENGTH TO ALLOW FOR "FULL DEPTH ASPHALT" PER TOWN OF SUPERIOR PAVEMENT DESIGN CRITERIA.

LEGEND

- GUARDRAIL
- REMOVE ASPHALT LIMIT
- SAWCUT ASPHALT
- FULL DEPTH ACP PAVEMENT
- 2" ASPHALT PAVEMENT SEE CDOT M-606-1

PRELIMINARY NOT FOR CONSTRUCTION

NO.	DATE	REVISION	BY	APVD

DSGN A BASTASCH | DR B SCHAEROTH | CHK A COOK | APVD W VOSS

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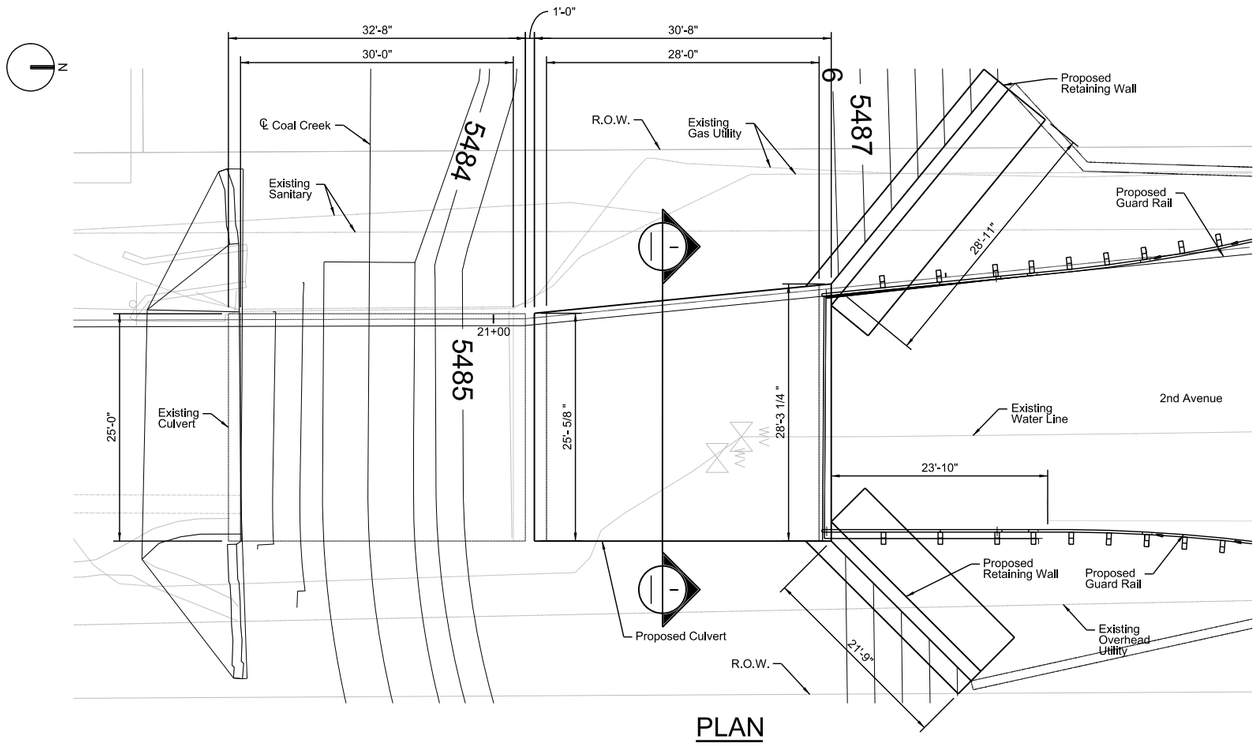
IMPROVEMENTS TO COAL CREEK AT MCCASLIN BLVD

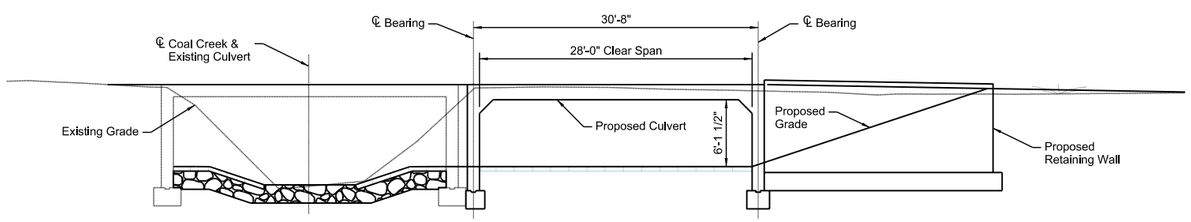
ROAD PLAN AND SECTIONS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2014
PROJ	240039
DWG	C-10
SHEET	13 of 22



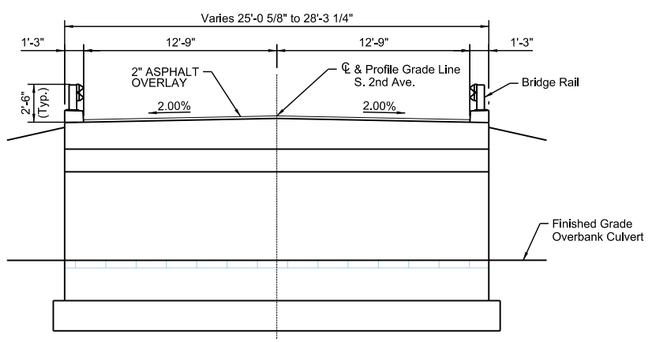
PLAN



ELEVATION

NOTES:

SEE DRAWING S-2 FOR REINFORCING DETAILS.



I TYPICAL SECTION

GENERAL NOTES

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION 2011 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH STD M-206-1.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M213.

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL CONCRETE SHALL BE CLASS D (BOX CULVERT).

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

CONSTRUCTION JOINTS NOT SHOWN ON THE PLANS MAY BE CONSTRUCTED ONLY IF APPROVED BY THE ENGINEER.

DO NOT BACKFILL UNTIL TOP SLAB HAS REACHED DESIGN STRENGTH f'c.

ALL DIMENSIONS ARE PERPENDICULAR TO THE CENTERLINE OF THE BOX.

ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3#4".

WINGWALL FOOTINGS AND FLOOR OF BOX CULVERT, INCLUDING TOE WALLS, SHALL BE PLACED MONOLITHICALLY.

WATERPROOFING MEMBRANE SHALL BE PLACED ON THE OUTSIDE OF THE TOP SLAB AND SIDE WALLS OF THE BOX CULVERT.

ALL TRANSVERSE REINFORCING SHALL BE NORMAL TO THE CENTERLINE OF THE BOX.

ALL REINFORCING STEEL SHALL BE EPOXY COATED UNLESS OTHERWISE NOTED.

THE FOLLOWING TABLE GIVES THE MINIMUM CLASS B LAP SPLICE LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER. NO MORE THAN 50% OF LAP SPLICES SHALL BE AT SAME LOCATION FOR VALUES BELOW TO BE APPROPRIATE STAGGER SPLICES OR USE CLASS C LAP SPLICES IF MORE THAN 50% OF SPLICES ARE AT SAME LOCATION.

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

THE ABOVE SPLICE LENGTHS MAY BE REDUCED BY 20% WHEN 3" OF CLEAR COVER EXISTS AND BAR SPACING IS 6" OR GREATER ON CENTER.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTORS ATTENTION IS DIRECTED TO SECTIONS 101, 202, 509 AND 601 OF THE PROJECT SPECIAL PROVISIONS, STANDARD SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS REGARDING SAFETY AND STRUCTURAL STABILITY.

COST FOR DEWATERING, TEMPORARY CULVERTS AND CHANNEL DIVERSIONS DURING CONSTRUCTION SHALL BE INCLUDED IN THE WORK. ANY TEMPORARY PIPES/CULVERTS LEFT IN PLACE SHALL BE FLOW FILLED ONCE PERMANENT STRUCTURE IS COMPLETED.

AS AN ALTERNATIVE CONTRACTOR MAY ELECT TO USE PRECAST CONCRETE BOX SEGMENTS. PRECAST CAST CONCRETE BOX SEGMENTS SHALL NOT BE PAID FOR SEPARATELY AND SHALL BE INCLUDED IN THE COST OF THE WORK. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS, SEALED BY AN ENGINEER REGISTERED IN THE STATE OF COLORADO, TO THE ENGINEER FOR APPROVAL. PRECAST CONCRETE BOX SEGMENTS SHALL BE DESIGNED TO MEET METHODS AND LOADS ON PLANS. BOX SEGMENT JOINTS SHALL BE SEALED TO PREVENT WATER FROM PENETRATING JOINT, DETAIL SHALL BE INCLUDED ON SHOP DRAWINGS.

STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM A RECENT FIELD SURVEY. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST 2 DAYS (NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK. SEE UTILITY PLANS FOR MORE COMPREHENSIVE DETAILS.

DESIGN DATA - BOX CULVERT

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION, 2012

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN

LIVE LOAD: HL-93 (DESIGN TRUCK OR TANDEM, AND DESIGN LANE LOAD)

LIVE LOAD SURCHARGE ON VERTICAL WALLS = 2 ft. OF EARTH

DEAD LOAD: HORIZONTAL EARTH = 60 pcf FLUID EQUIV.
VERTICAL EARTH = 125 pcf DRY WEIGHT
WEARING SURFACE = 145 pcf

REINFORCED CONCRETE:
CLASS A(AE) CONCRETE: f'c = 4,500 psi
REINFORCING STEEL: fy = 60,000 psi

EARTH: COEFF. OF FRICTION = 0.35
INTERNAL FRICTION ANGLE = 34ª
ALLOWABLE BEARING CAPACITY = 4,000 psf

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2ND AVE OVERBANK CULVERT PRELIMINARY LAYOUT

2ND AVE OVERBANK CULVERT
PRELIMINARY LAYOUT 01

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

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PROJ	240039
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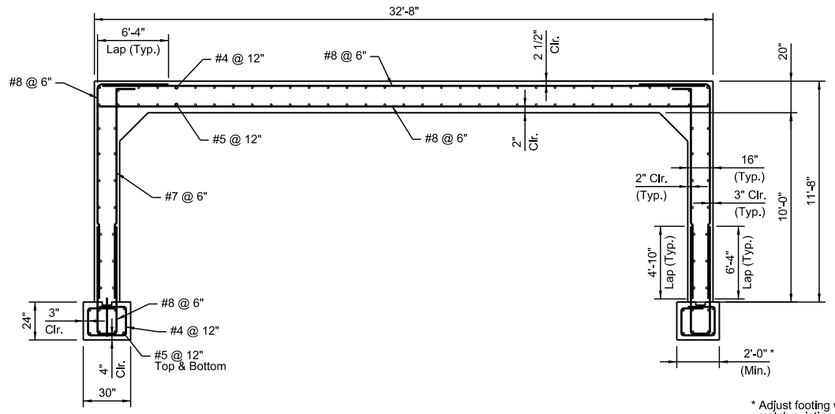
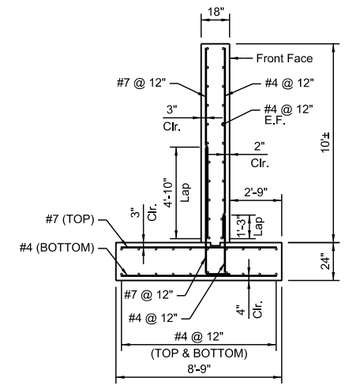


* Adjust footing width to match existing footing.

J REINFORCING DETAIL - CULVERT

S-1



K REINFORCING DETAIL - WINGWALL

S-1

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2ND AVE OVERBANK CULVERT PRELIMINARY LAYOUT

2ND AVE OVERBANK CULVERT PRELIMINARY DETAILS

VERIFY SCALE
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0 1"

DATE	DECEMBER 2014
PROJ	240039
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