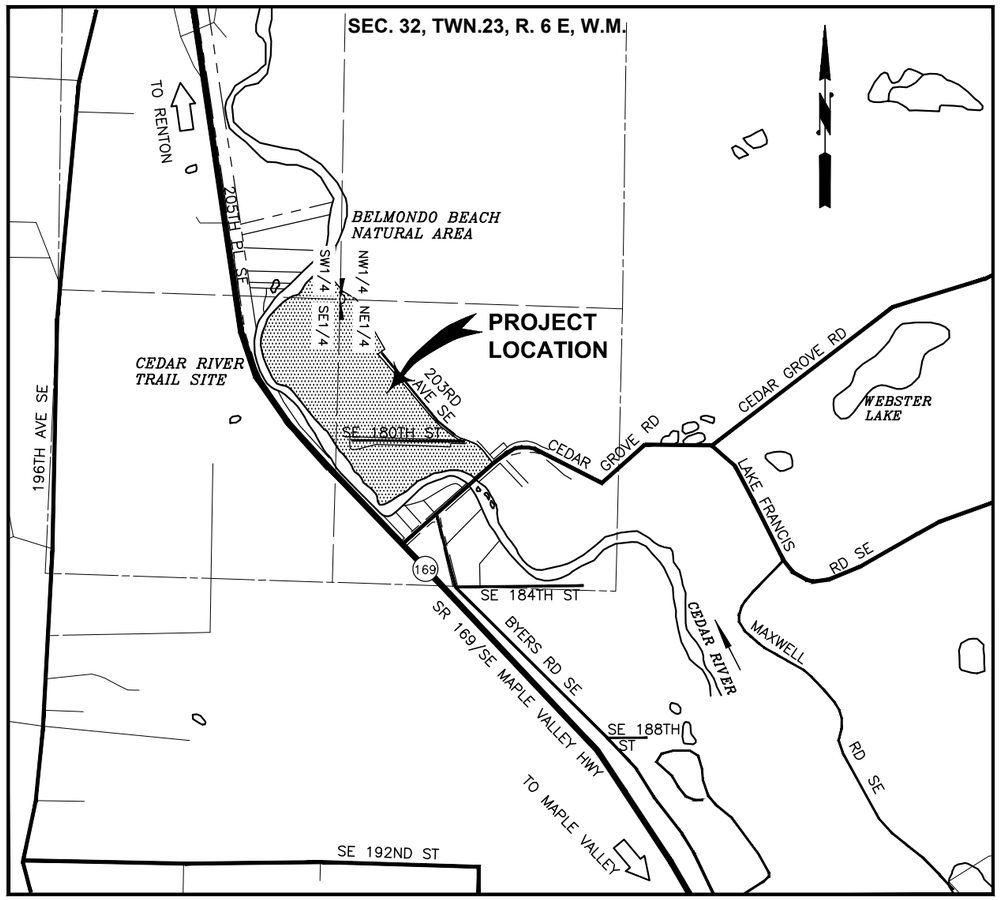
VICINITY MAP



NOT TO SCALE

King County
Department of Natural Resources and Parks
Water and Land Resources Division
Rural and Regional Services Section
Ecological Restoration and Engineering Services Unit

Christie True, Director
Department of Natural Resources and Parks

RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION

AT INTERSECTION OF CEDAR GROVE RD. AND 203RD AVE SE BETWEEN RM. 10.7 AND 11.5 ON THE CEDAR RIVER

MERIDIAN
W.S.L.G.N.Z.
NAD 83/91

DATUM

NAVD 88

CALL 2 WORKING DAYS BEFORE YOU DIG 1-800-424-5555

(UNDERGROUND UTILITY LOCATIONS ARE APPROX.)

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SURVEY BASE MAP: K.C. LIDAR 03-2010
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	TENZING THINLEY, P.E.	12/2012
CAD DESIGN:	L. TRAXINGER	12/2012

FUNDING SOURCE No. 101349
PROJECT No. 1044405
CONTRACT No. TBD

WILLIS R. MANSFIELD
STATE OF WASHINGTON
46388
REGISTERED
PROFESSIONAL ENGINEER

King County
Department of Natural Resources and Parks
Water and Land Resources Division
Rural and Regional Services Section
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RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION

VICINITY MAP AND SHEET INDEX

SHEET G1 OF 22 SHEETS

2006-27

DRAWING INDEX

GENERAL (G)

G1	VICINITY MAP
G2	SHEET INDEX, CONSTRUCTION SEQUENCE
	LEGEND & ABBREVIATIONS

CIVIL (C)

C1	EXISTING SITE CONDITIONS PLAN AND SURVEY CONTROL
C2	DESIGN SITE PLAN
C3	LEVEE REMOVAL PLAN AND PROFILE
C4	SIDE CHANNEL–GRADING PLAN AND PROFILE
C5	CUTOFF CHANNEL – GRADING PLAN AND PROFILE
C6	203RD ROAD FILL–SLOPE PROTECTION PLAN AND PROFILE
C7	BACKWATER GRADING PLAN
C8	CROSS SECTIONS AND DETAILS
C9	DETAILS AND SECTIONS
C10	DEMOLITION PLAN – PAVEMENT AND UTILITY REMOVAL

LARGE WOODY DEBRIS (LWD)

LWD1	WOOD PLACEMENT PLAN
LWD2	WOOD PLACEMENT DETAILS
LWD3	WOOD PLACEMENT DETAILS

TEMPORARY EROSION AND SEDIMENT CONTROL (TESC)

TESC1	TEMPORARY EROSION AND SEDIMENT CONTROL PLAN
TESC2	TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS

LANDSCAPE PLAN (LS)

L1	PLANTING PLAN
L2	PLANTING SCHEDULE

ADAPTIVE MANAGEMENT (A)

A1	ADAPTIVE MANAGEMENT – PLAN AND SECTIONS

BRIDGE (B)

B1	CEDAR RIVER BRIDGE PROTECTION MEASURES

KING COUNTY PARK TRAIL AND RIVER ACCESS (R)

R1	RECREATIONAL USE ACCESS TRAIL AND VEHICLE PULLOUT FILL NEAR CEDAR GROVE ROAD

LEGEND

EXISTING — DESCRIPTION

- BUILDING LINE
- EDGE OF PAVEMENT (EAC)
- GRAVEL PATH
- CREEK/DITCH THALWEG
- INTERIOR / EXTERIOR — WB — WETLAND PERIMETER (DELINEATED BY BIOLOGIST)
- OHW — O.H.W.M. (ORDINARY HIGH WATER MARK)
- EXISTING TREE CANOPY
- CONTOUR (INTERVAL)
- XXX — CONTOUR (INDEX)
- PROPERTY LINE
- RIGHT–OF–WAY
- SECTION LINE
- PK — SURVEY NAIL
- RBC — REBAR & CAP
- PUMP
- GAUGE
- EXISTING BRIDGE
- GROUND WATER MONITORING WELL
- WATER WELL

EXISTING — UTILITIES

- CABLE ---TV---TV---TV---
- GAS ---G---G---G---
- POWER ---P---P---P---
- TELEPHONE ---T---T---T---
- SEWER ---S---S---S---
- WATER ---W---W---W---
- STORM DRAIN---S---S---S---
- G — GAS METER
- SS — SEWER MANHOLE
- CATCH BASIN
- STORM DRAIN GRATE
- W — WATER METER
- T — TELEPHONE RISER
- UVT — UNDERGROUND TELEPHONE VAULT
- GUY WIRE ANCHOR
- GUY POLE
- POWER POLE
- P — POWER METER
- P — POWER RISER
- UVP — UNDERGROUND POWER VAULT

SYMBOLS

- X / X–X — DETAIL NO. / SHEET NO.
- A / X–X — SECTION NO. / SHEET NO.
- MERIDIAN W.S.L.G.N.Z. — DATUM — NAVD88

TESC — DESCRIPTION

- HVF — HIGH VISIBILITY FENCE
- SF — SILT FENCE
- C — CONSTRUCTION LIMIT
- OHW — ORDINARY HIGH WATER
- WAM — WATER MANAGEMENT
- SPOILS AREA
- CHECK DAM

KEY CONSTRUCTION ACTIONS:

1. MARK CLEARING LIMITS AND TREES TO BE SAVED ON SITE.
2. INSTALL TESC MEASURES AS PER SHEET TESC1.
3. CLEAR VEGETATION EXCEPT FOR TREES MARKED TO BE SAVED IN ALL GRADING AREAS AND STOCKPILE AS PER TESC PLANS.
4. REMOVE AND HAUL AWAY EXISTING UTILITIES AND ROADWAY PAVEMENT AS PER SHEET C10. FILL HOLES CREATED BY SEPTIC VAULT REMOVALS USING SPOILS FROM EXCAVATION FOR CHANNELS.
5. EXCAVATE AND GRADE THE CUT OFF CHANNEL AND HAUL MATERIAL TO STOCK PILE AREA AS PER SHEET C5.
6. EXCAVATE AND GRADE THE SIDE CHANNEL AND HAUL MATERIAL TO STOCK PILE AREA AS PER SHEET C4.
7. EXCAVATE AND GRADE THE BACKWATER CHANNELS AND HAUL MATERIAL TO THE BACKWATER STOCKPILE AREA AS SHOWN IN SHEET C7.
8. INSTALL WATER DIVERSION AND WATER MANAGEMENT MEASURES AS NEEDED FOR THE RAINBOW BEND LEVEE AND REVETMENT REMOVAL.
9. COORDINATE WITH ON SITE KING COUNTY FISH BIOLOGIST PRIOR TO IN–WATER EXCAVATION. FISH REMOVAL TO BE DONE BY KING COUNTY IF NECESSARY.
10. EXCAVATE AND REMOVE MATERIAL FROM THE RAINBOW BEND LEVEE AND ROCK REVETMENT AS PER SHEET C3. HAUL SALVAGED ROCK AS NEEDED TO THE CEDAR RIVER TRAIL ROCK PLACEMENT. HAUL REMAINING LEVEE MATERIAL AND ROCKS TO STOCK PILE.
11. REMOVE ROCK REVETMENT ALONG RIGHT BANK DOWNSTREAM OF THE RAINBOW BEND LEVEE AND HAUL TO STOCKPILE AS PER SHEET C2.
12. REMOVE WATER DIVERSION AND WATER MANAGEMENT MEASURES.
13. REMOVE EXISTING GUARD RAIL AND CONSTRUCT FILL FOR RECREATIONAL ACCESS PULL OUT PARKING NEAR THE CEDAR GROVE ROAD AS PER SHEET C3.
14. INSTALL ROCK REVETMENT FACE NEAR THE CEDAR RIVER TRAIL USING SALVAGED RIP–RAP AS SHOWN ON SHEET C2.
15. PLACE LWD AND INSTALL LOG CLUSTERS AS PER SHEET C9.
16. INSTALL ROAD FILL ON 203RD AVE SE AS PER SHEET C6.
17. FINAL GRADE STOCK PILES AS PER SHEET C2.
18. REMOVE TESC MEASURES.

CONSTRUCTION — DESCRIPTION

- PROJECT LIMITS
- SF — SILT FENCE
- CENTERLINE
- CONTOUR (INTERVAL)
- XXX — CONTOUR (INDEX)
- C&G — CLEARING AND GRADING LIMIT
- TREE TOP WITH BRANCHES
- LANDSBURG WOOD (OWNER PROVIDED)
- LEVEE REMOVAL
- REVETMENT REMOVAL
- LARGE SALVAGED COTTONWOOD
- SLASH
- BACKWATER WOOD CLUSTERS
- KEY LOGS
- EXISTING TREES
- TREES TO BE REMOVED

ABBREVIATIONS

ABAND	ABANDONED
APPROX.	APPROXIMATELY
AVE	AVENUE
BLDG	BUILDING
BMP	BEST MANAGEMENT PRACTICE
BNSK	BERNSTEIN NAIL
℄	CENTERLINE
DIAM	DIAMETER
DWY	DRIVEWAY
EA	EACH
EAC	EDGE OF ASPHALT CONC. PAVEMENT
EL	ELEVATION
LWD	LARGE WOODY DEBRIS
MAX	MAXIMUM
MIN	MINIMUM
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
NTS	NOT TO SCALE
OHW	ORDINARY HIGH WATER
R/W	RIGHT–OF–WAY
SPEC	SPECIAL
SPECS	SPECIFICATIONS
SR	STATE ROUTE
TYP	TYPICAL
WSE	WATER SURFACE ELEV.

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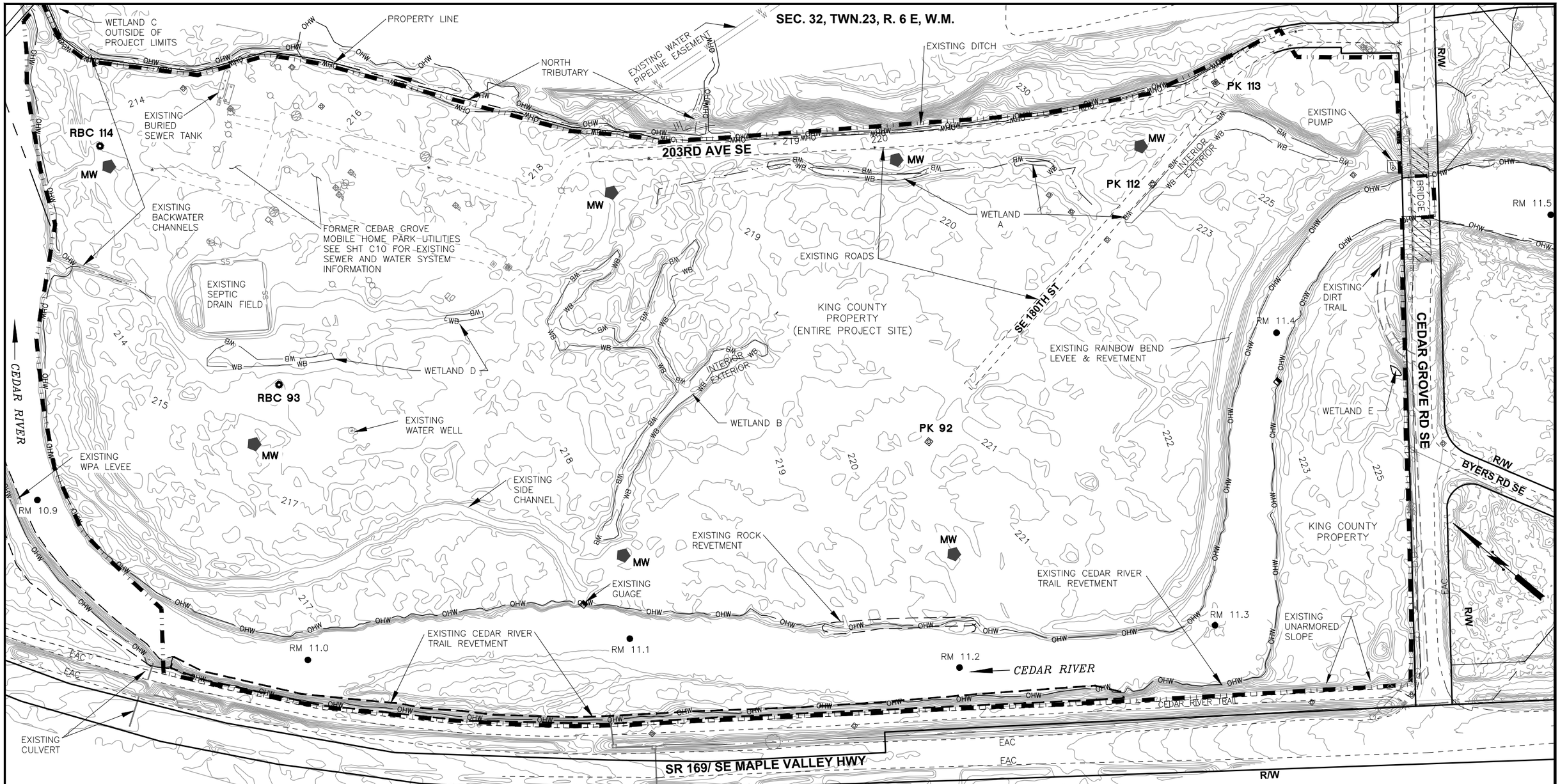
RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION

SHEET INDEX, CONSTRUCTION SEQUENCE LEGEND AND ABBREVIATIONS

SHEET G2 OF 22 SHEETS

2006-27



SCALE IN FEET: 80 0 80 160 240

SURVEY CONTROL PTS	NORTHING	EASTING	ELEV.	DESC.
92	163243.87	1335017.88	220.54	AT-2 PK
93	164126.06	1334400.49	216.22	AT-3 RBC
112	163234.14	1335581.00	222.46	PK
113	163262.18	1335775.82	230.84	AT-1 PK
114	164605.70	1334512.26	213.02	AT-4 RBC

NOTES:
1. BASIS OF BEARING IS THE WASHINGTON STATE PLANE COORDINATES SYSTEM. NORTH ZONE, N.A.D. 83/91, VERTICAL DATUM IS NGVD 88.
2. CONTOURS SHOWN ARE BASED ON MARCH 2010 LIDAR SURVEY, AT 1 FT INTERVALS.
3. IN WATER SURVEYS ARE USED TO CREATE CHANNEL BED SURFACE PROFILES IN DETAILS. NO BATHYMETRIC SURFACE CONTOURS WERE CREATED WITHIN CHANNNEL.

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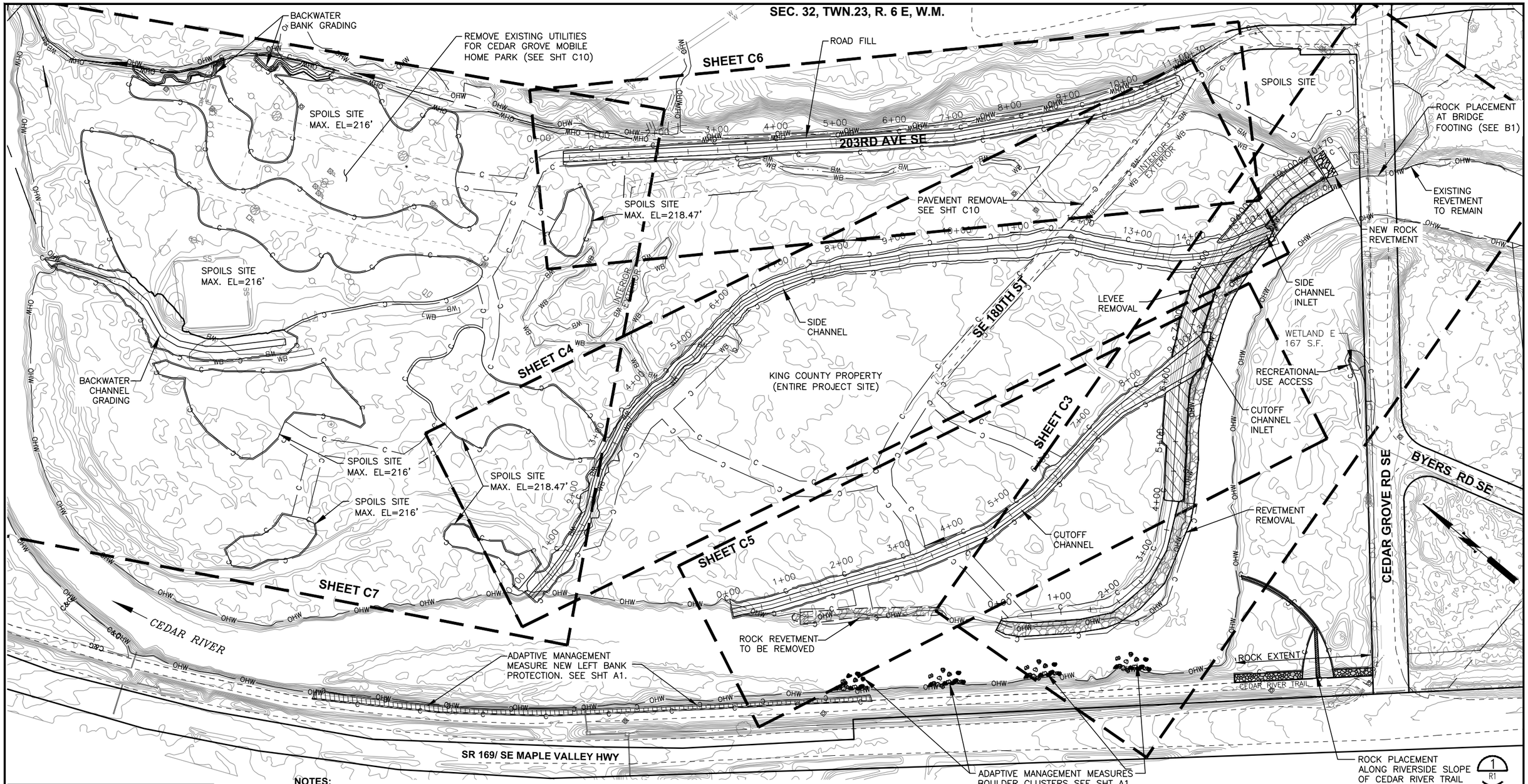
RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION

EXISTING SITE CONDITIONS PLAN AND SURVEY CONTROL

SHEET C1 OF 22 SHEETS

2006-27



NOTES:

1. HAVE A COPY OF APPROVED PLANS AND ALL REGULATORY PERMITS ON SITE AT ALL TIMES.
2. IN CEDAR RIVER WATER WORK SHALL ONLY TAKE PLACE DURING THE FISH WINDOW FROM JULY 15 THROUGH SEPTEMBER 15.
3. IF ARCHEOLOGICAL OR HISTORIC ARTIFACTS ARE ENCOUNTERED DURING EXCAVATION AND GRADING. IMMEDIATELY CEASE WORK AND NOTIFY THE ENGINEER.
4. REMOVE, HAUL AWAY AND DISPOSE OF ANY TRASH IN WORK AREAS.
5. WORK TO BE PERFORMED BY OTHERS: ADAPTIVE MANAGEMENT MEASURES AT THE CEDAR RIVER TRAIL REVETMENT (SHEET A1), BRIDGE PROTECTION MEASURE AT THE BRIDGE FOUNDATION (SHEET B1), RECREATIONAL USE ACCESS TRAIL AND VEHICLE PULLOUT FILL (SHEET R1).

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RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION
DESIGN SITE PLAN

SHEET **C2** OF **22** SHEETS

2006-27

SEC. 32, TWN.23, R. 6 E, W.M.

NEW SIDE CHANNEL

PLACE SANDBAG PLUG TO BE REMOVED BY OTHERS (2/C9)

PLACE SANDBAG PLUG TO BE REMOVED BY OTHERS (2/C9)

SPOILS SITE

NEW CUTOFF CHANNEL

REMOVE EXISTING ROCK REVETMENT STA. 0+00–STA. 10+50. SEE TESC SHEETS FOR WATER MANAGEMENT MEASURES.

REMOVE EXISTING LEVEE STA. 4+00 TO STA. 10+50

INSTALL NEW ROCK REVETMENT (1/C9)

STA. 10+50 END LEVEE REMOVAL

ROCK PLACEMENT AT BRIDGE FOOTING (SEE SHT B1)

REMOVE EXISTING ROCK REVETMENT STA. 0+00–STA. 10+50. SEE TESC SHEETS FOR WATER MANAGEMENT MEASURES.

STA. 4+00 BEGIN LEVEE REMOVAL

WETLAND E 167 S.F.

RECREATIONAL ACCESS PULLOUT

ORDINARY HIGH WATER

CEDAR RIVER

CEDAR RIVER TRAIL

CEDAR GROVE RD SE

REMOVE AND DISPOSE OF GUARD RAIL. FILL ADJACENT SLOPE WITH SALVAGED MATERIAL

CEDAR GROVE ROAD IMPROVEMENTS
LEVEE AND REVETMENT REMOVAL – PLAN

SCALE: 1"=40'

40 0 40 120 120
SCALE IN FEET

MERIDAN W.S.L.G.N.Z.
DATUM
NAVD88

EXISTING LEVEE CENTERLINE GRADE

LEVEE REMOVAL

STA. 4+08 EL.=222.50

0.25%

FINISHED GRADE LEVEE

FINISHED GRADE CUTOFF CHANNEL

FINISHED GRADE SIDE CHANNEL

10+50 EL.=223.85

INSTALL NEW REVETMENT AT END OF LEVEE REMOVAL (1/C9)

LEVEE REMOVAL – PROFILE

HORIZ. SCALE: 1"=40', VERT SCALE: 1"=10'

40 0 40 120 120
SCALE IN FEET

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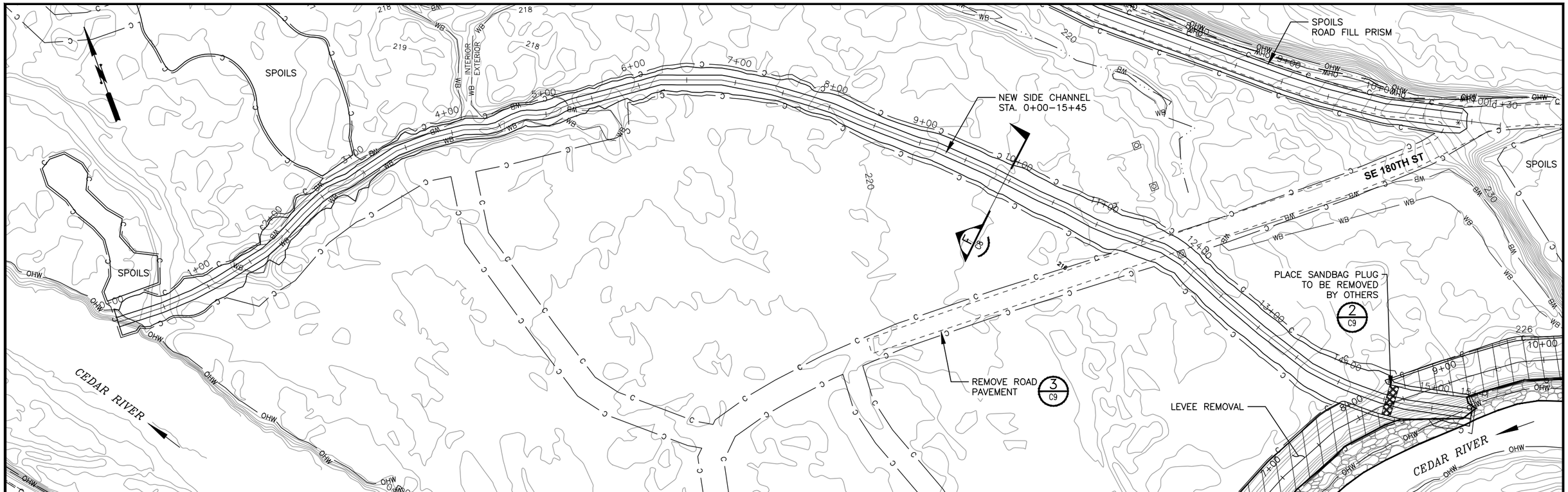
RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION

LEVEE AND REVETMENT REMOVAL
LEVEE AND CEDAR GROVE RD. IMPROVEMENTS
PLAN, PROFILE AND SECTIONS

SHEET C3 OF 22 SHEETS

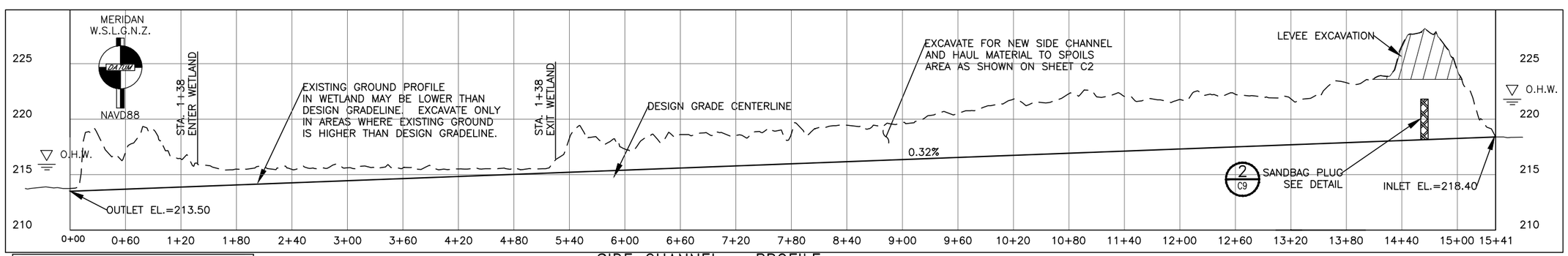
2006-27



SIDE CHANNEL – PLAN
STA. 0+00 TO STA. 15+45

SCALE: 1"=50' HORIZ.

50 0 50 100 150
SCALE IN FEET



60 0 60 120 180
SCALE IN FEET

SIDE CHANNEL – PROFILE
STA. 0+00 TO STA. 15+45

SCALE: 1"=60' HORIZ., 1"=5' VERT.

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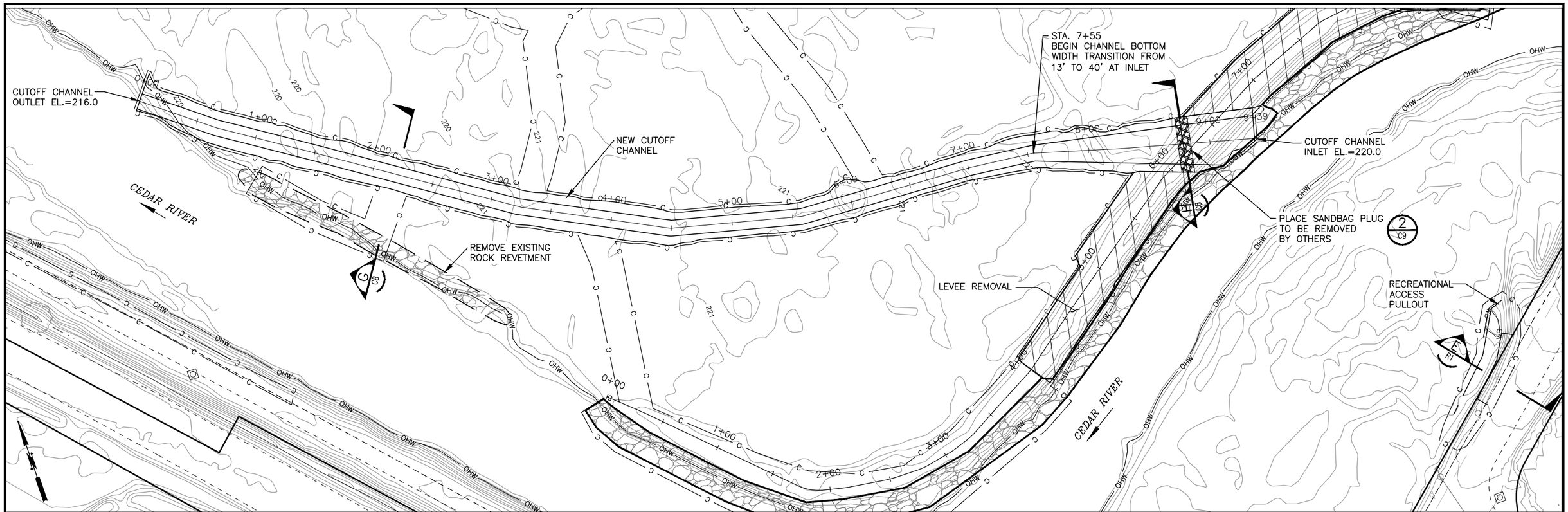
RAINBOW BEND
LEVEE REMOVAL
AND FLOODPLAIN RECONNECTION

SIDE CHANNEL - GRADING PLAN AND PROFILE
STA. 0+00 TO STA. 15+41

SHEET **C4** OF **22** SHEETS

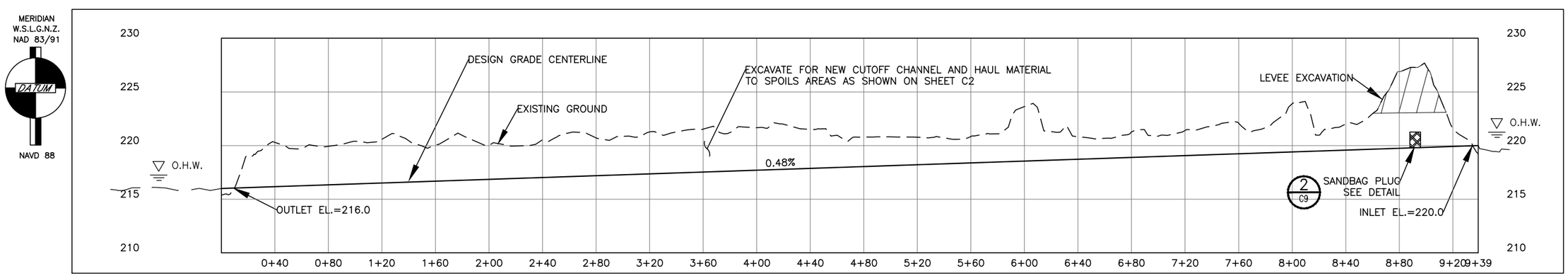
2006-27



40 0 40 80 120
SCALE IN FEET

CUTOFF CHANNEL – PLAN
STA. 0+00 TO 9+39

SCALE: 1"=40' HORIZ.



40 0 40 80 120
SCALE IN FEET

CUTOFF CHANNEL – PROFILE
STA. 0+00 TO 9+39

SCALE: 1"=40' HORIZ., 1"=5' VERT.

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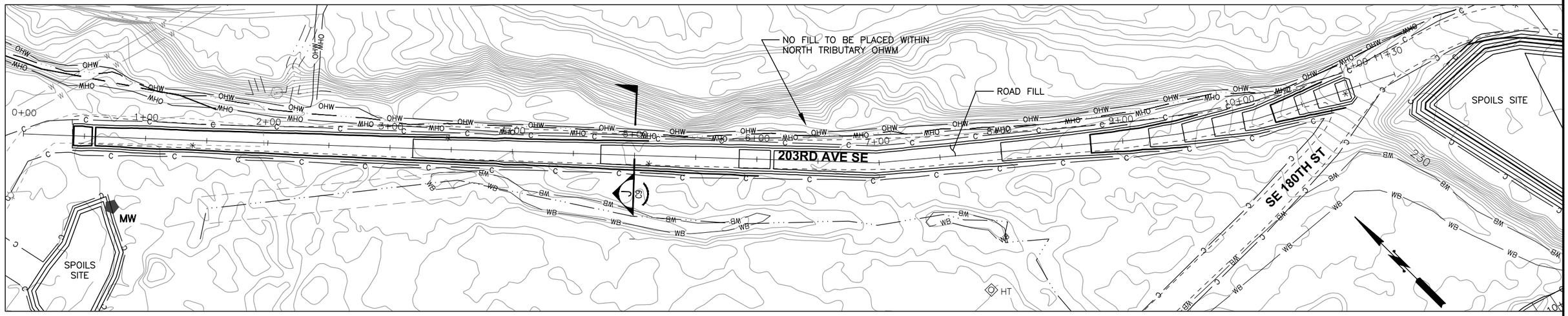
CUTOFF CHANNEL GRADING PLAN AND PROFILE STA. 0+00 TO STA. 9+39

SHEET **C5** OF **22** SHEETS

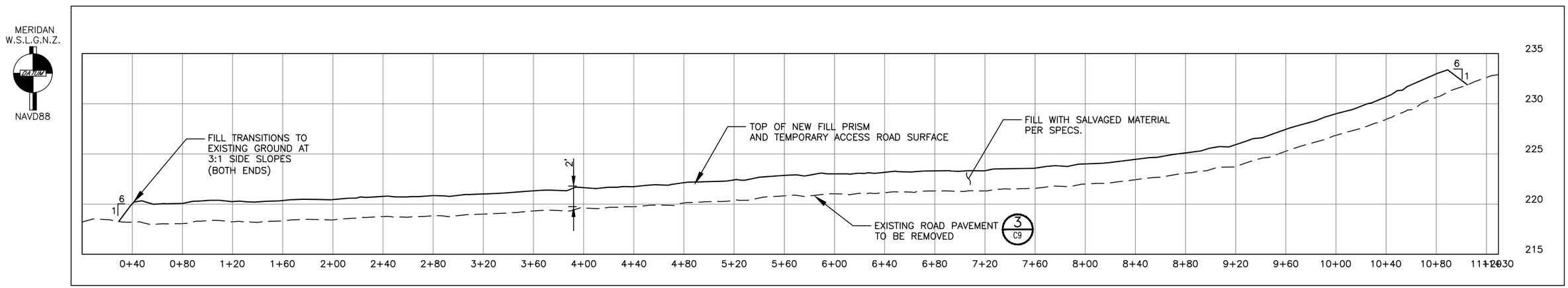
2006-27



40 0 40 80 120
SCALE IN FEET

203RD ROAD FILL
STA. 0+40 TO STA. 10+89

SCALE: 1"=40' HORIZ.



40 0 40 80 120
SCALE IN FEET

203RD ROAD FILL – SLOPE PROTECTION PROFILE
STA. 0+40 TO STA. 10+89

SCALE: 1"=40' HORIZ., 1"=5' VERT.

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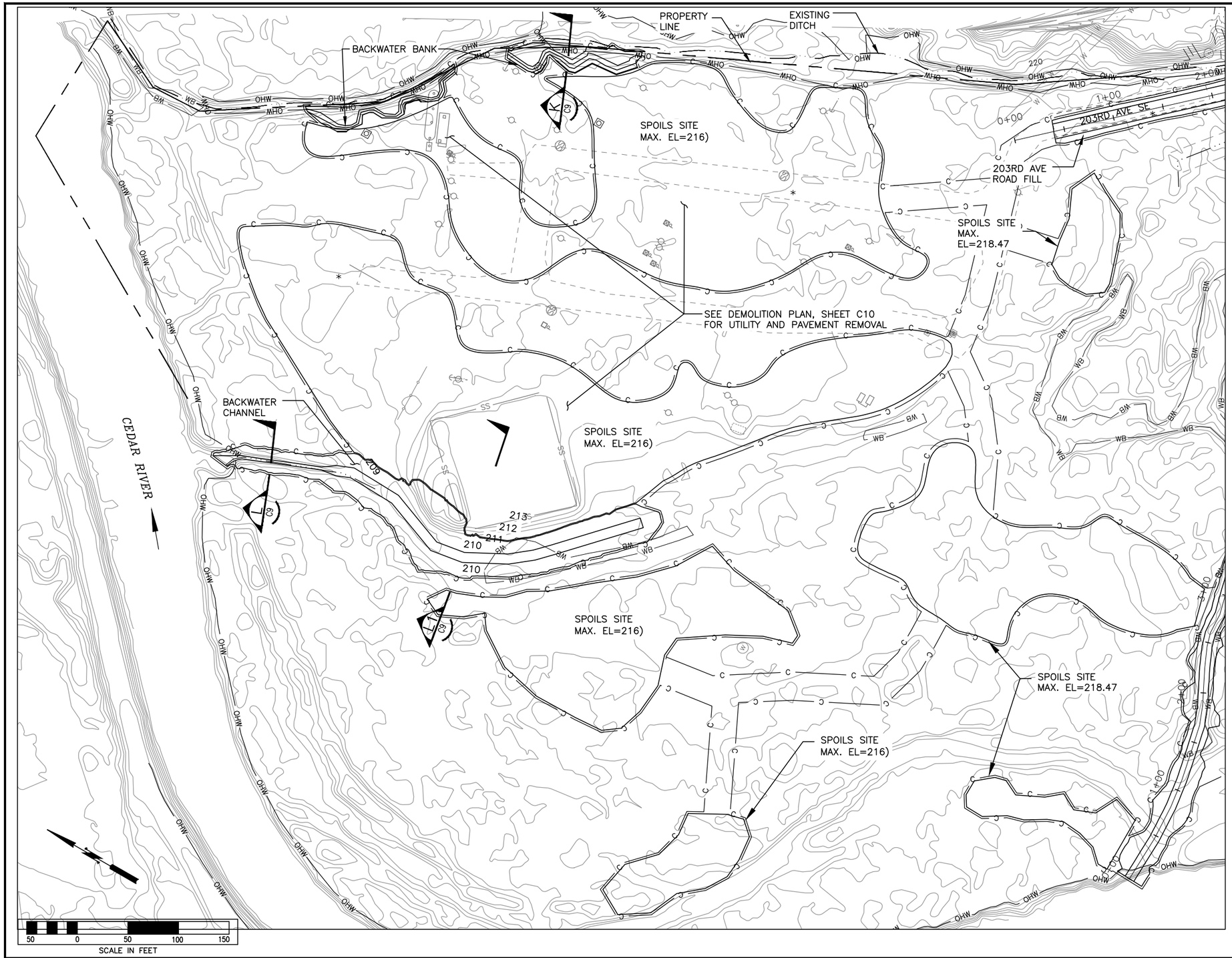
Christie True, Director

RAINBOW BEND
LEVEE REMOVAL
AND FLOODPLAIN RECONNECTION

203RD ROAD FILL - SLOPE PROTECTION PLAN AND PROFILE, STA. 0+00 TO STA. 10+50

SHEET **C6** OF **22** SHEETS

2006-27



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	TENZING THINLEY, P.E.	12/2012
CAD DESIGN:	L. TRAXINGER	12/2012

FUNDING SOURCE No. 101349
PROJECT No. 1044405
CONTRACT No. TBD

WILLIS R. MANSFIELD STATE OF WASHINGTON 46388 REGISTERED PROFESSIONAL ENGINEER

King County
Department of Natural Resources and Parks
Water and Land Resources Division
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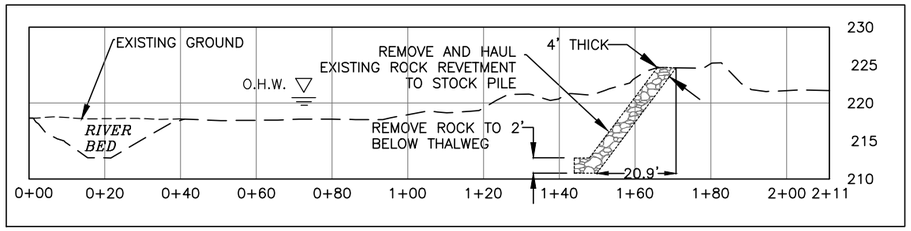
Christie True, Director

RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION

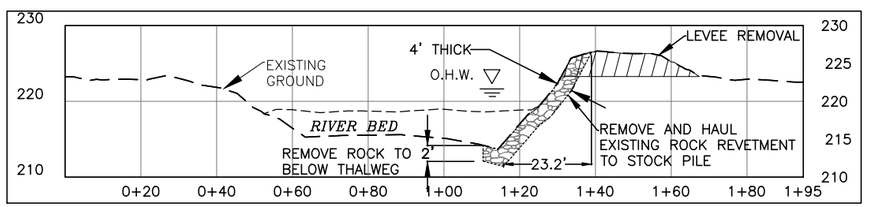
BACKWATER GRADING BANK AND CHANNEL

SHEET **C7** OF **22** SHEETS

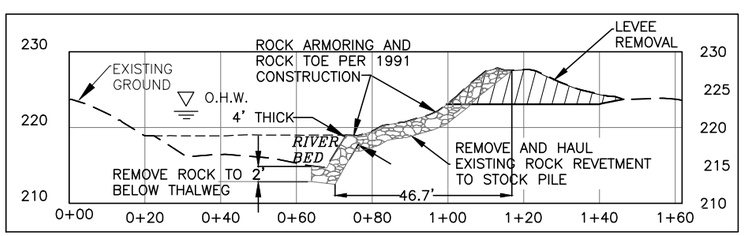
2006-27



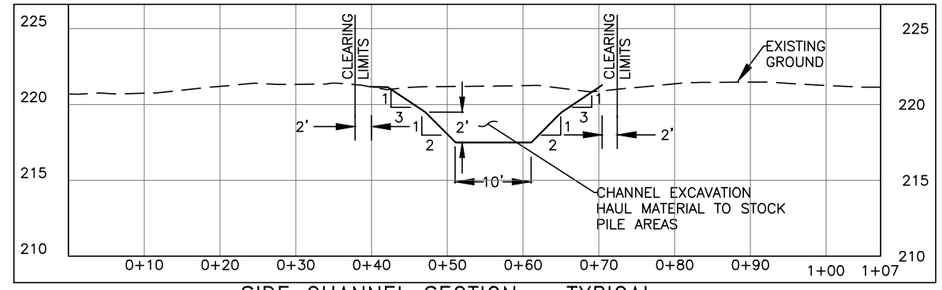
LEVEE SECTION w/BATHYMETRY
STA. 2+26 (A / C3)
SCALE: 1"=20' HORIZ., 1"=10' VERT.



LEVEE SECTION w/BATHYMETRY
STA. 5+00 (B / C3)
SCALE: 1"=20' HORIZ., 1"=10' VERT.



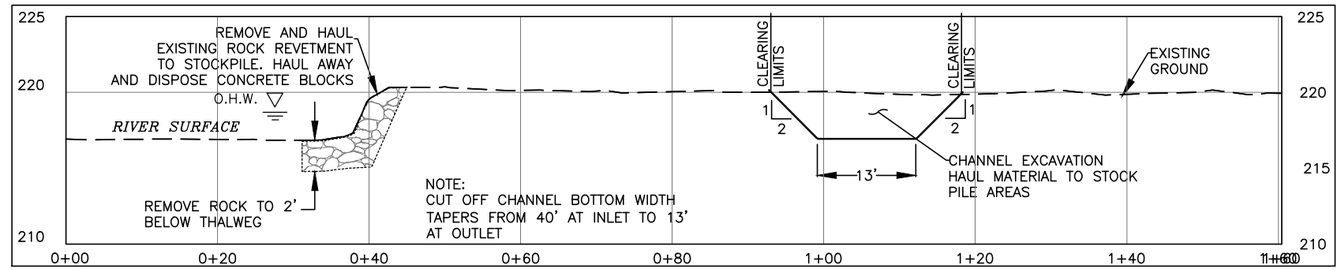
LEVEE SECTION w/BATHYMETRY
STA. 5+50 TO 9+25 (APPROX.) (C / C3)
SCALE: 1"=20' HORIZ., 1"=10' VERT.



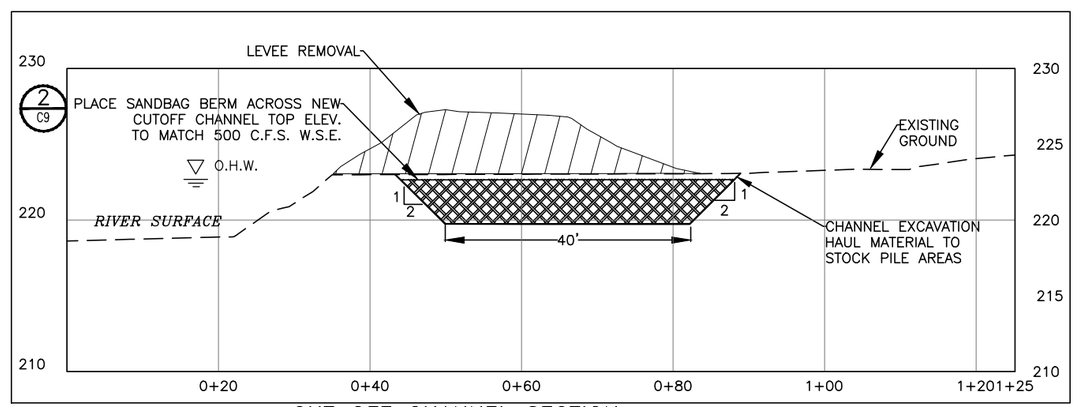
SIDE CHANNEL SECTION – TYPICAL
STA. 0+00 – 10+45 (F / C4)
SCALE: 1"=10' HORIZ., 1"=5' VERT.

SIDE CHANNEL – SLOPE TABLE			
BEGIN STA.	END STA.	SIDE SLOPE	CHANNEL BOTTOM WIDTH
0+00	10+45	2:1	10'

NOTE:
ALL SECTION VIEWS LOOK DOWNSTREAM



CUT OFF CHANNEL SECTION–STA. 2+20
TYPICAL BETWEEN STA. 0+00 TO 7+55
AND EXISTING REVETMENT REMOVAL (G / C5)
SCALE: 1"=10' HORIZ., 1"=5' VERT.



CUT OFF CHANNEL SECTION
STA. 9+00 (H / C3,C5)
SCALE: 1"=10' HORIZ., 1"=5' VERT.

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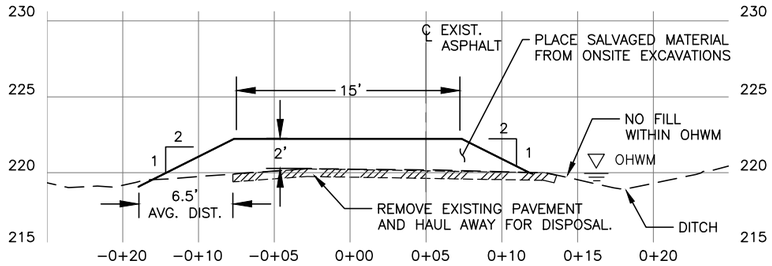
RAINBOW BEND
LEVEE REMOVAL
AND FLOODPLAIN RECONNECTION
CROSS SECTIONS AND DETAILS

SHEET **C8** OF **22** SHEETS

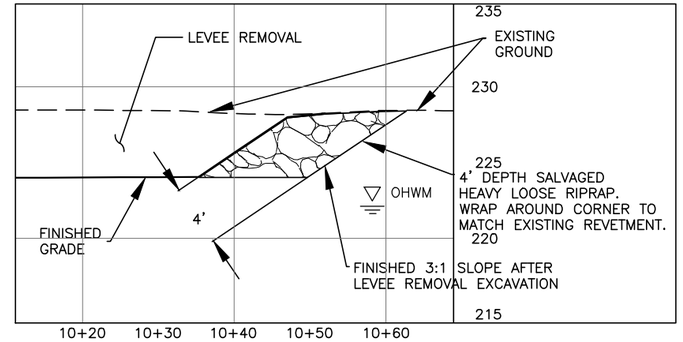
2006-27



203RD ROAD FILL PRISM SECTION STA. 0+40–STA. 10+89

SCALE: 1"=5' HORIZ, 1"=5 VERT.

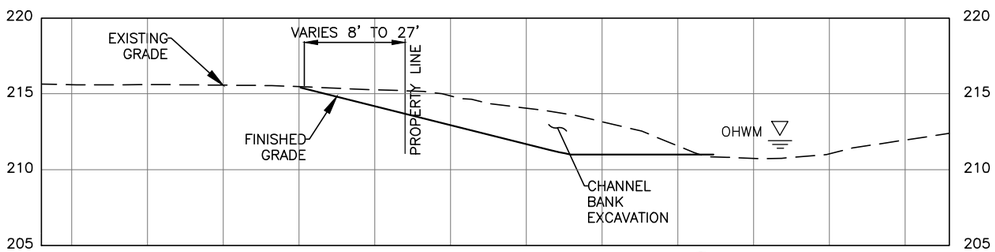
J / C6



NEW REVETMENT DETAIL

SCALE: 1"=10' HORIZ., 1"=5' VERT.

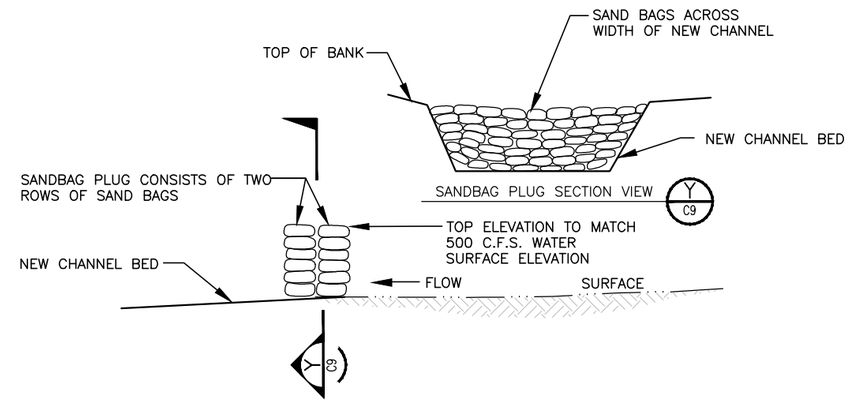
1 / C3



BACKWATER BANK GRADING FEATURE

SCALE: 1"=5' HORIZ., 1"=5' VERT.

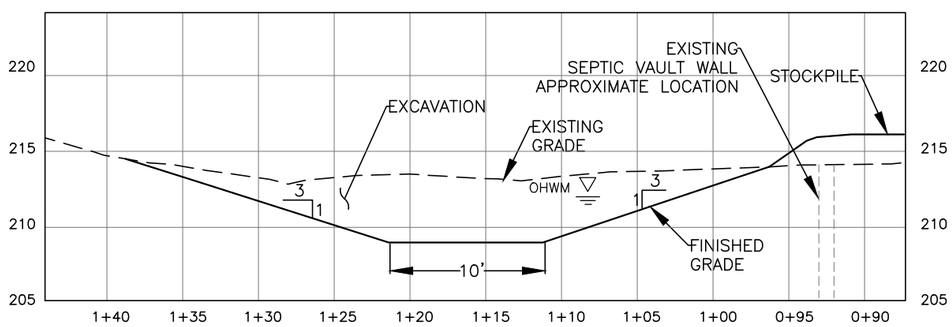
K / C7



SANDBAG PLUG DETAIL

NOT TO SCALE

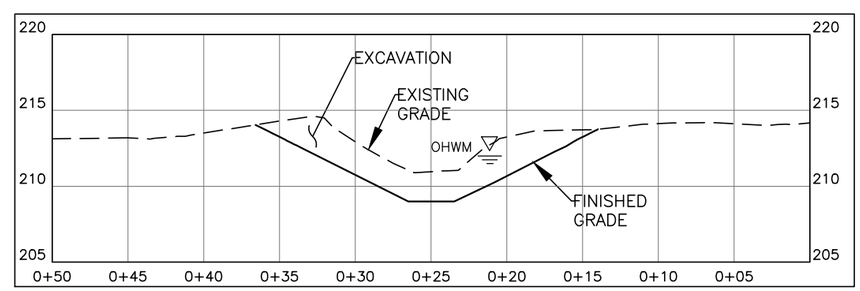
2 / C3,C4,C5,C8



BACKWATER CHANNEL SECTION STA. 2+77

SCALE: 1"=5' HORIZ., 1"=5' VERT.

L1 / C7



BACKWATER CHANNEL SECTION STA. 0+50

SCALE: 1"=5' HORIZ., 1"=5' VERT.

L / C7

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RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION
CROSS SECTIONS AND DETAILS

SHEET **C9** OF **22** SHEETS
2006-27

SEC. 32, TWN.23, R. 6 E, W.M.

REMOVE EXISTING BURIED SEPTIC TANK SEE DETAILS SHT. C11

EXISTING BACKWATER CHANNEL

PROPERTY LINE

NORTH TRIBUTARY

EXISTING WATER PIPELINE EASEMENT

FORMER CEDAR GROVE MOBILE HOME PARK UTILITIES

REMOVE SANITARY SEWER MANHOLES AND CONNECTING PIPES (TYPICAL)

203RD AVE SE

LARGE TREE TO BE PROTECTED

EXISTING BACKWATER CHANNEL

REMOVE EXISTING ASPHALT ACCESS ROAD AVOID DAMAGE TO TREES

REMOVE EXISTING SAND FILTER VAULT

REMOVE CATCH BASIN AND CONNECTING STORM DRAIN PIPES (TYPICAL)

REMOVE ASPHALT ON EXISTING ROADS AND HAUL AWAY TO DISPOSE

KING COUNTY PROPERTY (ENTIRE PROJECT SITE)

SE 180TH ST

EXISTING PUMP

EXISTING DIRT TRAIL

EXISTING LEVEE

CEDAR GROVE RD SE

BRIDGE

BYERS RD SE

CEDAR RIVER

WETLAND D

EXISTING WATER WELL

EXISTING SIDE CHANNEL

EXISTING WPA LEVEE

KING COUNTY PROPERTY

EXISTING GUAGE

EXISTING REVETMENT

CEDAR RIVER TRAIL

SR 169/ SE MAPLE VALLEY HWY

R/W

EAC

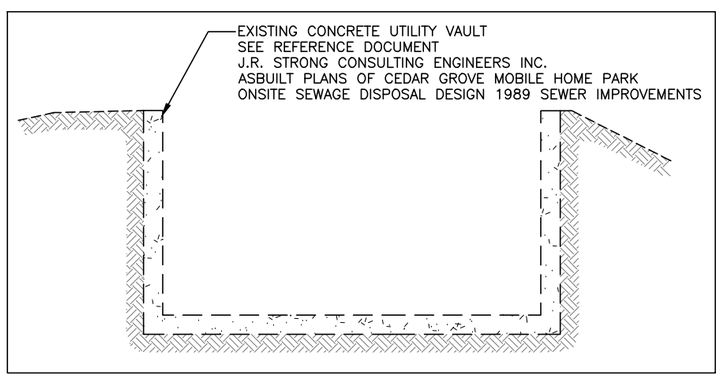
MW

OHW

WB

INTERIOR

EXTERIOR



SAND FILTER SCHEMATIC

NOT TO SCALE

SCALE IN FEET: 80 0 80 160 240

DEMOLITION PLAN SEQUENCE:

1. REMOVE, HAUL AWAY AND DISPOSE OF ALL UNDERGROUND SEPTIC TANKS AND SAND FILTER VAULT. SEE REFERENCE DOCUMENT PLANS (1989) BY DR STRONG CONSULTING ENGINEERS INC.
2. REMOVE, HAUL AWAY AND DISPOSE OF EXISTING ASPHALT PAVEMENT ON S.E. 180TH ST, 203RD AVE SE AND THE PAVED ACCESS ROADS NEAR THE PREVIOUS CEDAR GROVE MOBILE HOME PARK. AVOID DAMAGE TO TREE IN THE MIDDLE OF THE PAVED AREA NEAR THE MOBILE HOME PARK.
3. REMOVE, HAUL AWAY AND DISPOSE OF ALL EXISTING STORM DRAIN LINES AND CATCH BASINS NEAR THE PREVIOUS CEDAR GROVE MOBILE HOME PARK.
4. REMOVE, HAUL AWAY AND DISPOSE OF ALL EXISTING UTILITIES SUCH AS POWER POLES, LIGHT POSTS, GATE POSTS, CONCRETE PADS, UTILITY LIDS AND TRASH LOCATED NEAR THE THE PREVIOUS CEDAR GROVE MOBILE HOME PARK.
5. REMOVE, HAUL AWAY AND DISPOSE OF ALL WATER SYSTEM LINES, DRAIN PIPES AND OTHER UTILITY LINES IF ENCOUNTERED DURING EXCAVATION. HOWEVER, DO NOT CHASE LINES DURING REMOVAL.
6. REMOVE, HAUL AWAY AND DISPOSE 2 POWER POLES AS SHOWN ON SE 180TH ST. DISCONNECT LINE AT LIVE POWER POLE AS SHOWN.
7. FILL HOLES CREATED BY UTILITY EXCAVATIONS USING EXCAVATED MATERIAL FROM UTILITY REMOVAL.
8. REMOVE, HAUL AWAY AND DISPOSE OF BOLLARDS, FENCING POSTS AND SIGNS ON SE 180TH ST.
9. HAUL LARGE ROCKS ON SIDE OF SE 180TH ST TO STOCK PILE.
10. REMOVE, HAUL AWAY AND DISPOSE OFF CONCRETE BLOCKS AND PIECES FOUND DURING THE RAINBOW BEND REVETMENT REMOVAL.

UTILITIES TO BE REMOVED

- PAVEMENT REMOVAL
- G GAS METER
- SS SEWER MANHOLE
- CATCH BASIN
- STORM DRAIN GRATE
- W WATER METER
- T TELEPHONE RISER
- UVT UNDERGROUND TELEPHONE VAULT
- GUY WIRE ANCHOR
- GUY POLE
- UVP UNDERGROUND POWER VAULT
- POWER POLE
- P POWER METER
- P POWER RISER

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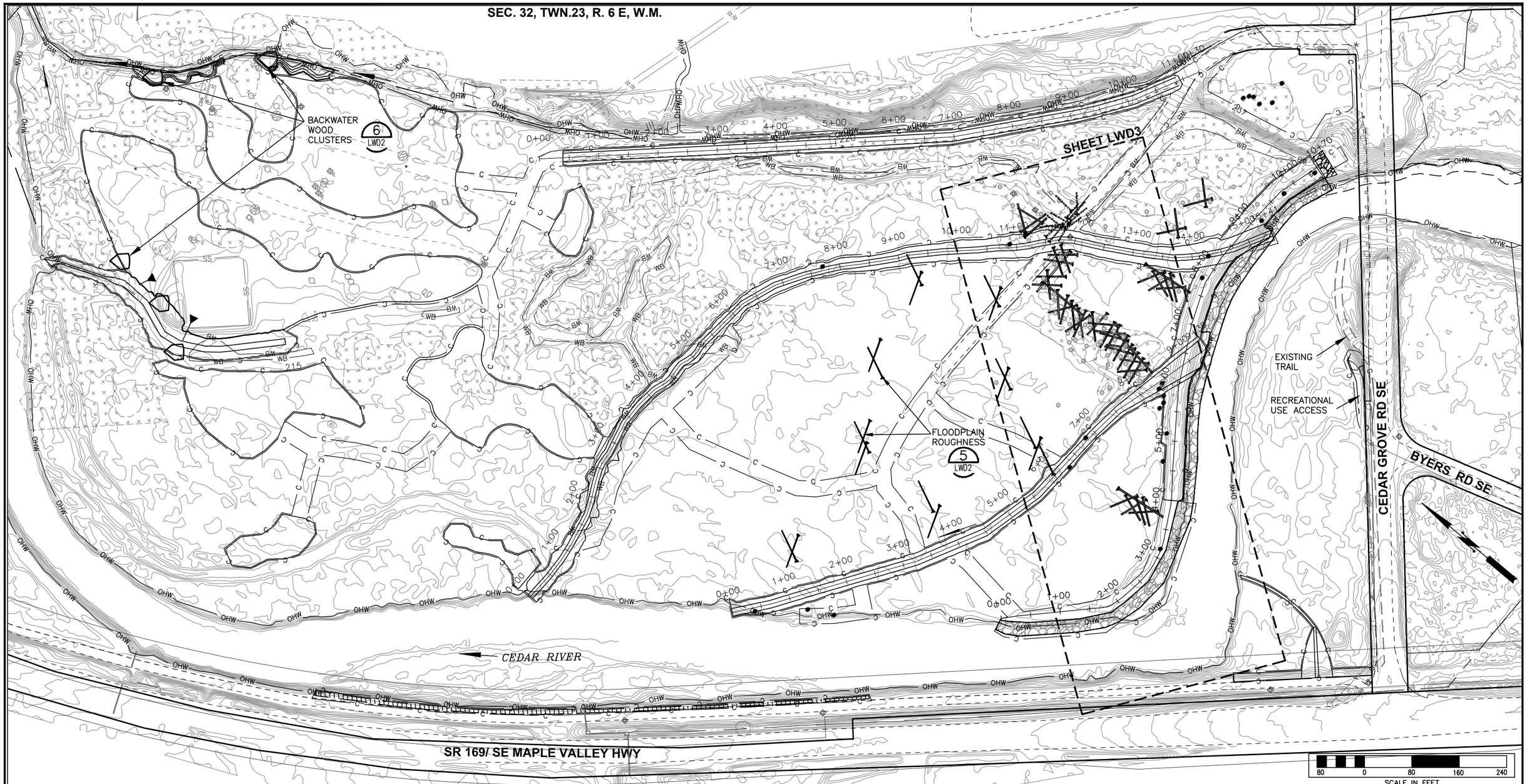
RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION

DEMOLITION PLAN PAVING AND UTILITIES REMOVAL

SHEET C10 OF 22 SHEETS

2006-27



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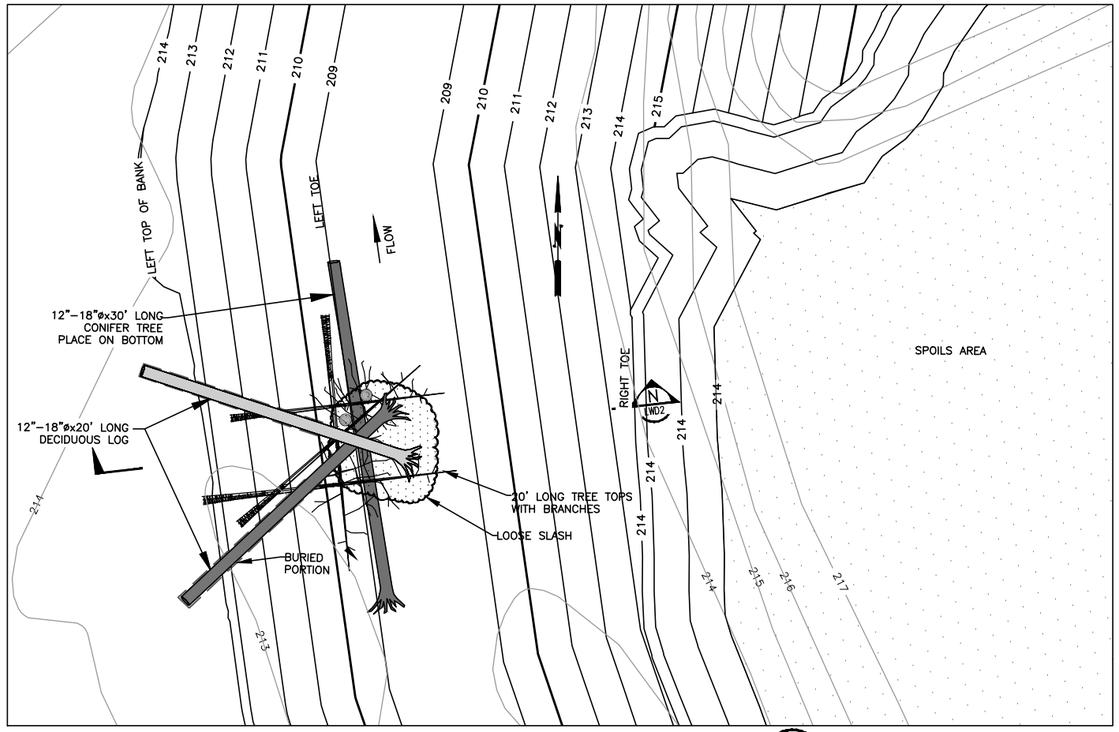
RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION

WOOD PLACEMENT PLAN

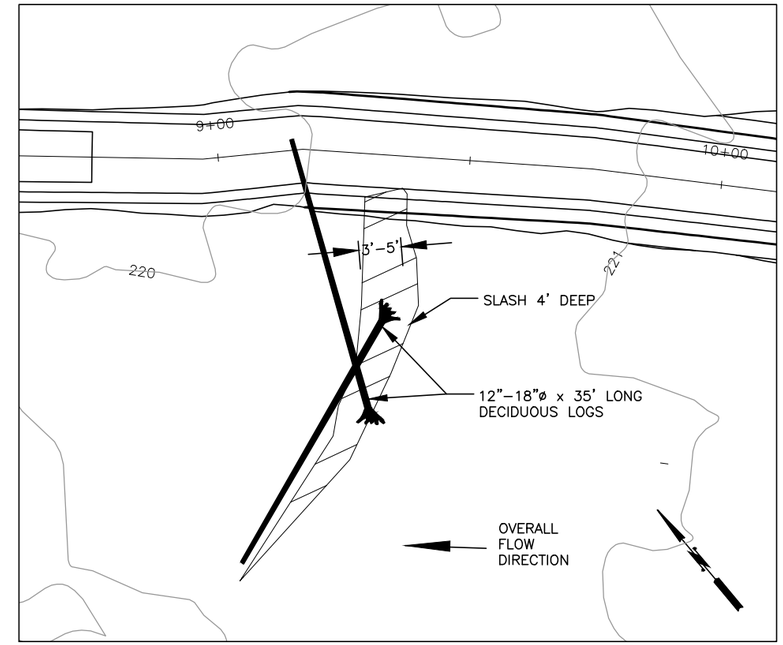
SHEET **LWD1** OF **22** SHEETS

2006-27



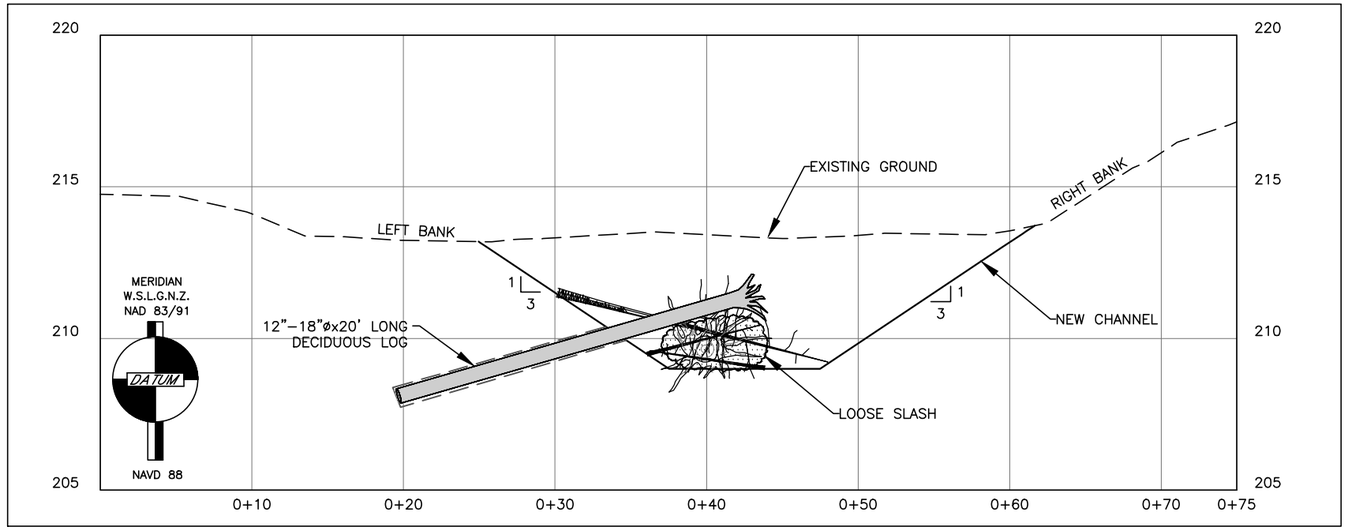
WOOD CLUSTERS–PLAN VIEW (6 / LWD1)

SCALE: 1"=5



FLOODPLAIN ROUGHNESS – PLAN VIEW (5 / LWD1)

SCALE: 1"=15'



WOOD CLUSTERS–SECTION VIEW (TYPICAL) (M / LWD2)

SCALE: 1"=5' HORIZ, 1"=2.5' VERT.

WOOD PLACEMENT		
TOTAL	SIZE	TYPE
50	24", ~50'L	LANDSBURG LOGS
4	30", ~90'L	KEY LOGS
1	30", ~90'L	LARGE SALVAGED COTTONWOOD

TOP LOG

MIDDLE LOG

BOTTOM LOG

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WOOD PLACEMENT DETAILS

SHEET **LWD2** OF **22** SHEETS

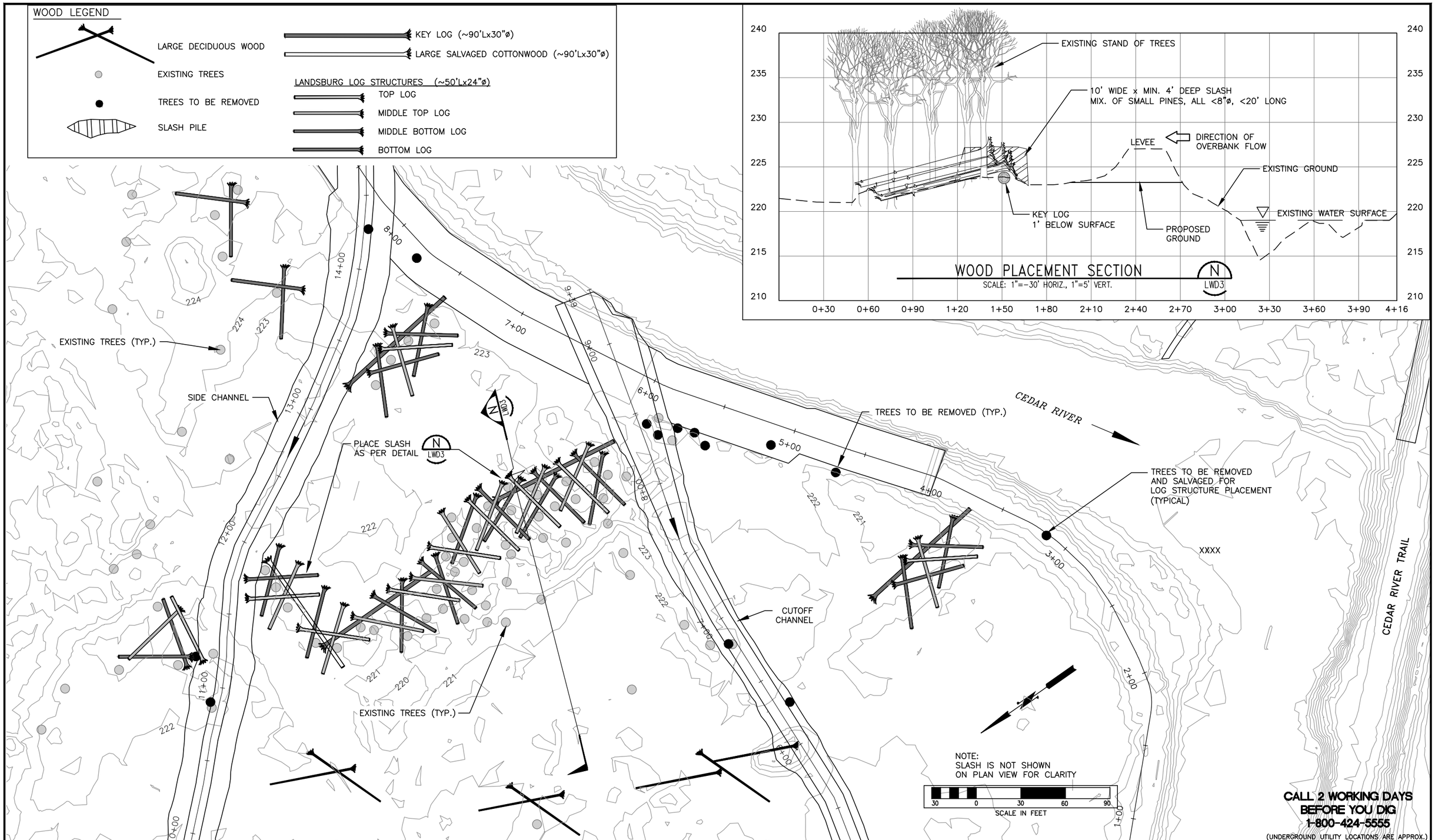
2006-27

WOOD LEGEND

- LARGE DECIDUOUS WOOD
- EXISTING TREES
- TREES TO BE REMOVED
- SLASH PILE
- KEY LOG (~90'Lx30"ø)
- LARGE SALVAGED COTTONWOOD (~90'Lx30"ø)

LANDSBURG LOG STRUCTURES (~50'Lx24"ø)

- TOP LOG
- MIDDLE TOP LOG
- MIDDLE BOTTOM LOG
- BOTTOM LOG



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WOOD PLACEMENT DETAILS

SHEET **LWD3** OF **22** SHEETS

2006-27

REMOVE EXISTING UTILITIES FOR CEDAR GROVE MOBILE HOME PARK (SEE SHT C10)

ROAD FILL (203RD ST. SE)

INSTALL HIGH VISIBILITY SILT FENCE BETWEEN DITCH AND ROAD FILL

7 TESC3 TEMPORARY CONSTRUCTION ACCESS PAD

SPOILS SITE

ROCK PLACEMENT AT BRIDGE FOOTING (SEE B1)

BACKWATER BANK GRADING

SPOILS SITE MAX. EL=216)

TEMPORARY ACCESS ROAD

8 TESC3 SILT FENCE

EXISTING REVETMENT TO REMAIN

PAVEMENT REMOVAL SEE SHT C10

PRESERVE INLAND STAGING AND TREES

SPOILS SITE

SPOILS SITE MAX. EL=216)

SIDE CHANNEL INLET

LEVEE REMOVAL

SIDE CHANNEL

FLOW DIVERSION 10 TESC2

BACKWATER CHANNEL GRADING

RECREATIONAL USE ACCESS

TEMPORARY ACCESS ROAD

CUTOFF CHANNEL INLET

P TESC2

INSTALL BULK BAGS OR EQUIVALENT FLOW DEFLECTOR

SPOILS SITE MAX. EL=216)

SPOILS SITE

REVETMENT REMOVAL

CUTOFF CHANNEL

CEDAR RIVER

CEDAR GROVE RD SE

BYERS RD SE

ROCK REVETMENT TO BE REMOVED

BOULDER CLUSTERS SEE SHT A2

INSTALL BULK BAGS OR EQUIVALENT FLOW DEFLECTOR 9 TESC2

ADAPTIVE MANAGEMENT MEASURE NEW LEFT BANK PROTECTION. SEE SHT A1.

ROCK EXTENT

CEDAR RIVER TRAIL

SR 169/MAPLE VALLEY HWY

ROCK PLACEMENT ALONG RIVERSIDE SLOPE OF CEDAR RIVER TRAIL

TEMPORARY ACCESS FOR LEFT BANK PROTECTION

80 0 80 160 240

SCALE IN FEET

SWPP LEGEND

SF SF SILT FENCE

C C CONSTRUCTION LIMITS

SILT FENCE XX TESC3

TEMPORARY EROSION AND SEDIMENT CONTROL NOTES :

1. INSTALL TEMPORARY CONSTRUCTION ACCESS PAD AS PER PLAN.
2. INSTALL SILT FENCE AT BOTTOM OF SLOPE AS PER PLAN.
3. THE ESC FACILITIES MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT LADEN WATER DOES NOT ENTER THE DRAINAGE SYSTEM OR VIOLATE APPLICABLE WATER STANDARDS. (KCC 9.04.020 AA, KCRS 7.09 D).
4. INSTALL FLOW DIVERSION MEASURES AS NEEDED FOR REVETMENT REMOVAL AT THE RAINBOW BEND LEVEE.
5. ALL IN CEDAR RIVER WATER WORK SHALL COMPLY WITH THE WASHINGTON STATE DEPARTMENT OF FISH AND WILDLIFE HYDRAULIC PERMIT APPROVAL CONDITIONS.
6. BIODEGRADABLE HYDRAULIC FLUID AND DIESEL FUEL WILL BE USED IN ALL EQUIPMENT OPERATING IN CRITICAL AREAS AND THEIR BUFFER.
7. PLACE CONSTRUCTION ACCESS ONLY AFTER PAVEMENT IS REMOVED.

CALL 2 WORKING DAYS BEFORE YOU DIG 1-800-424-5555

(UNDERGROUND UTILITY LOCATIONS ARE APPROX.)

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	60% PLANS 12/13/2012		

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PROJECT MANAGER:	JON HANSEN	12/2012
DESIGNED:	DAN EASTMAN, JOHN BETHEL	12/2012
	WILL MANSFIELD, P.E.	12/2012
	TENZING THINLEY, P.E.	12/2012
CAD DESIGN:	L. TRAXINGER	12/2012

FUNDING SOURCE No. 101349

PROJECT No. 1044405

CONTRACT No. TBD

WILLIS R. MANSFIELD STATE OF WASHINGTON 46388 REGISTERED PROFESSIONAL ENGINEER

King County
Department of Natural Resources and Parks
Water and Land Resources Division
Rural and Regional Services Section
Ecological Restoration and Engineering Services Unit
Christie True, Director

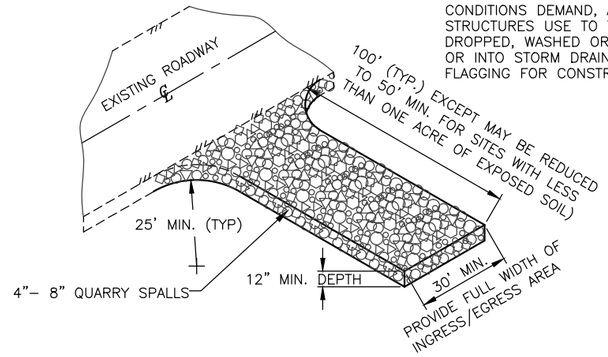
RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION

TEMPORARY EROSION AND SEDIMENT CONTROL PLAN

SHEET **TESC1** OF **22** SHEETS

2006-27

NOTE:
THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2" STONE, AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEAN-OUT OF ANY STRUCTURES USE TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY. PROVIDE FLAGGING FOR CONSTRUCTION VEHICLES ENTERING AND LEAVING SITE.



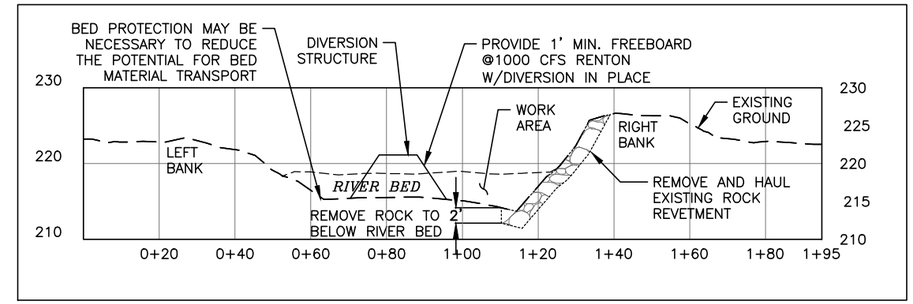
TEMPORARY CONSTRUCTION ACCESS (7 / TESC2)

NTS

CONSTRUCTION SEQUENCE/GENERAL NOTES:

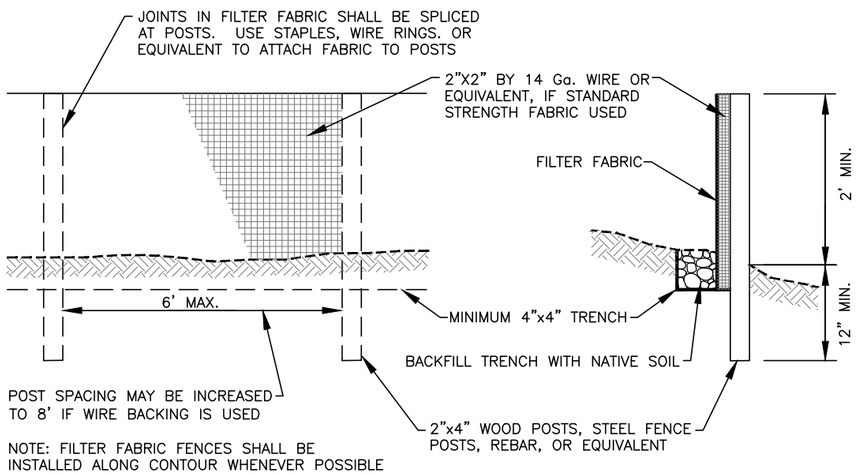
1. PRESERVE NATURAL VEGETATION, BUFFER ZONES, HIGH VISIBILITY FENCE, SURVEY AND STAKE ALL "CUT & FILL" SLOPES. INDIVIDUAL TREES TO BE PRESERVED WITHIN THE CONSTRUCTION AREA SHALL BE MARKED.

2. STABILIZE CONSTRUCTION ENTRANCE, CONSTRUCTION ROAD STABILIZATION, CONSTRUCTION VEHICLE ACCESS AND EXIT TO STAGING AREAS. STOCKPILING AND GRADED AREAS SHALL BE IMPLEMENTED TO TWO LIMITED DEFINED ACCESS POINTS TO ACCOMMODATE LARGE EQUIPMENT MANEUVERING. ACCESS POINTS WILL BE STABILIZED AND MAINTAINED WITH QUARRY SPALLS OR CRUSHED ROCK TO MINIMIZE THE TRANSPORT OF SEDIMENT ONTO PAVED SURFACES. WHEEL WASH OR TIRE BATHS SHOULD BE LOCATED ON SITE AS FEASIBLE AND APPLICABLE. SEDIMENT SHALL BE REMOVED FROM ROADWAYS BY SHOVELING OR PICKUP SWEEPING AND DEPOSITED IN A SEDIMENT DISPOSAL AREA. CONSTRUCTION ACCESS RESTORATION SHALL BE EQUAL TO OR BETTER THAN ITS PRE-CONSTRUCTION STATE.



FLOW DIVERSION SECTION (P / TESC1)

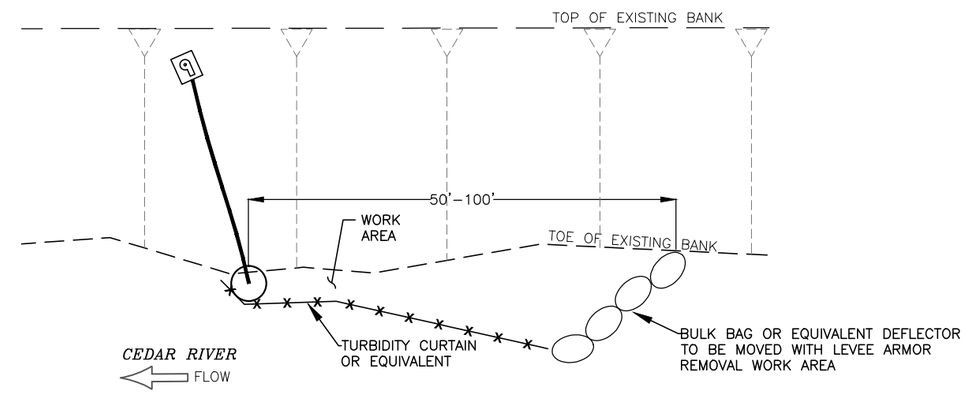
SCALE: 1"=20' HORIZ., 1"=10' VERT.



SILT FENCE DETAIL (8 / TESC2)

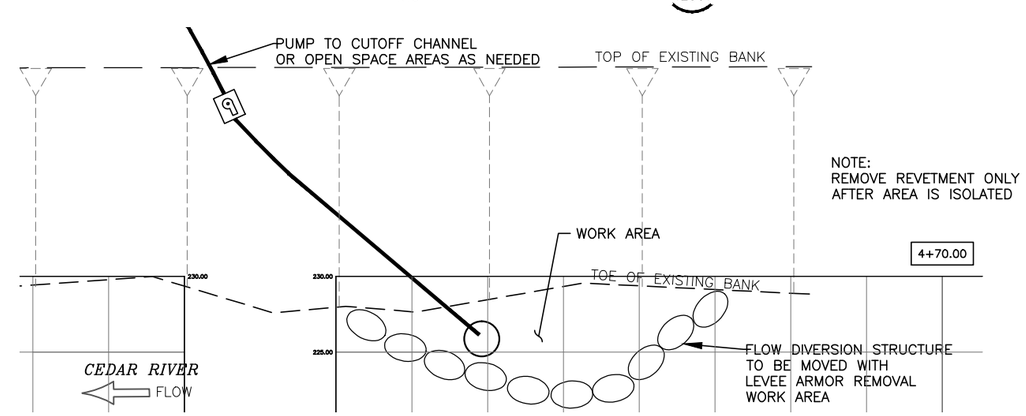
NTS

1. MAXIMIZE DETENTION OF STORMWATER BY PLACING FENCE AS FAR AWAY FROM TOE OF SLOPE AS POSSIBLE WITHOUT ENCROACHING ON SENSITIVE AREAS OR OUTSIDE OF THE CLEARING BOUNDARIES.
2. INSTALL SILT FENCING ALONG CONTOURS WHENEVER POSSIBLE.
3. INSTALL THE ENDS OF THE SILT FENCE TO POINT SLIGHTLY UP-SLOPE TO PREVENT SEDIMENT FROM FLOWING AROUND THE ENDS OF THE FENCE.
4. PERFORM MAINTENANCE IN ACCORDANCE WITH STANDARD SPECIFICATIONS 8.01.3(9)A AND 8.01.3(15).
5. BIODEGRADABLE HYDRAULIC FLUID AND DIESEL FUEL WILL BE USED IN ALL EQUIPMENT OPERATING IN CRITICAL AREAS AND THEIR BUFFER.
6. NO CONSTRUCTION EQUIPMENT SHALL BE ALLOWED WITHIN THE LIMITS OF THE ORDINARY HIGH WATER OF A STREAM, AS ESTABLISHED BY THE ENGINEER, ON ANY STREAM (NEW OR EXISTING) IN THE PROJECT AREA, UNLESS OTHERWISE APPROVED BY THE ENGINEER.



APPLICATION OF FLOW DIVERSION STRUCTURE DETAIL (TYP.) (9 / TESC1)

NTS



APPLICATION OF FLOW TRANSITION STRUCTURE DETAIL (TYP.) (10 / TESC2)

NTS

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RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION

TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS

SHEET **TESC2** OF **22** SHEETS

2006-27

SEC. 32, TWN.23, R. 6 E, W.M.

CEDAR RIVER

CEDAR GROVE RD SE

BYERS RD SE

SR 169/ SE MAPLE VALLEY HWY

80 0 80 160 240

SCALE IN FEET

NOTE:

1. REFER TO SHEET L2 FOR PLAN SCHEDULE AND LEGEND.

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LANDSCAPE DESIGN:	CINDY YOUNG	12/2012
	KATE AKYUZ	12/2012
DESIGN ENTERED:	L. TRAXINGER	12/2012

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PLANTING PLAN

SHEET **L1** OF **22** SHEETS

2006-27

Rainbow Bend Planting Plan					
HATCH	COMMON NAME	SCIENTIFIC NAME	QUANTITY	SPACING	CONDITION
	OTHER TREES				
	Western red cedar	*Thuja plicata*	750	8 feet O.C.	One gallon
	Sitka spruce	*Pinus sitchensis*	500	8 feet O.C.	One gallon
	Douglas fir	*Pseudotsuga menziesii*	300	8 feet O.C.	One gallon
	Oregon ash	*Fraxinus latifolia*	750	8 feet O.C.	One gallon
	Cascara	*Rhamnus purshiana*	200	8 feet O.C.	One gallon
	Big leaf maple	*Acer macrophyllum*	300	10 feet O.C.	One gallon
	TOTAL		**2800**		
	SHRUBS				
	Baldhip rose	*Rosa gymnocarpa*	100	5 feet O.C.	One gallon
	Red twig dogwood	*Cornus sericea*	475	6 feet O.C.	One gallon
	Twinberry	*Lonicera involucrata*	400	5 feet O.C.	One gallon
	Indian plum	*Oemlaria cerasiformis*	100	5 feet O.C.	One gallon
	Snowberry	*Symphoricarpos albus*	400	5 feet O.C.	One gallon
	Salmonberry	*Rubus spectabilis*	450	5 feet O.C.	One gallon
	Red elderberry	*Sambucus racemosa*	200	5 feet O.C.	One gallon
	Thimbleberry	*Rubus parviflorus*	600	5 feet O.C.	One gallon
	Oceanspray	*Holodiscus discolor*	50	6 feet O.C.	One gallon
	Serviceberry	*Amelanchier alnifolia*	100	5 feet O.C.	One gallon
	Vine maple	*Acer circinatum*	400	6 feet O.C.	One gallon
	TOTAL		**3275**		
	ALDER AND COTTONWOOD				
	Red alder	*Alnus rubra*	2375	5 feet O.C.	One gallon
	Black cottonwood	*Populus balsamifera*	2375	5 feet O.C.	Stakes
	TOTAL		**4750**		
	CHANNEL PLANTING				
	Willow spp.	*Salix spp.*	4700	3 feet O.C	Stakes
	Grand Total		**15525**		

EXISTING 2011/2012 PLANTING AREAS

SPOILS AREA

NATURAL RECRUITMENT AREA

NOTES:

GENERAL:
1) PLANTS WILL BE INSTALLED IN THE FALL/WINTER OF 2013.

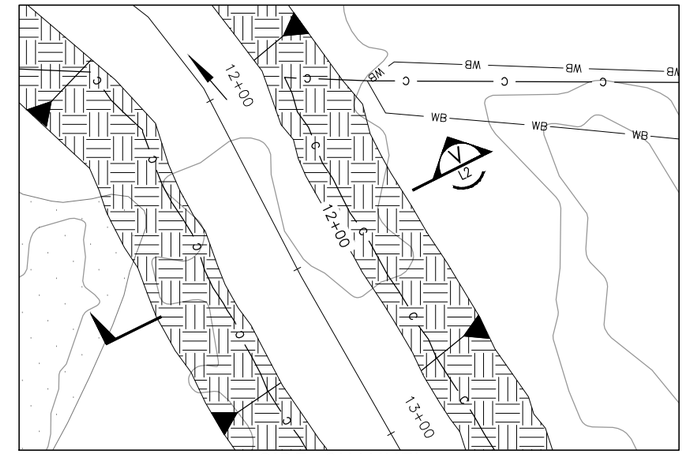
SPOILS DEPOSITS:
1) A PORTION OF THE SPOIL DEPOSITS WILL BE PLANTED WITH POTTED ALDER AND COTTONWOOD STAKES.
2) SHEET MULCH WILL BE USED AROUND THE ALDER.
3) THE REMAINDER OF THE SPOILS DEPOSIT WILL BE OBSERVED FOR NATURAL RECRUITMENT AND MAINTAINED AS NEEDED.
4) TWO ONE ACRE PLOTS ON THE SPOIL DEPOSITS WILL BE RESERVED TO TEST TREATMENTS TO ENCOURAGE NATURAL RECRUITMENT AND MAINTAINED AS NEEDED.

SHRUBS AND TREES:
1) SHRUBS WILL BE PLANTED OUTSIDE OF THE SPOIL DEPOSITS NEAR EXISTING TREES.
2) CONIFERS AND DECIDUOUS TREES WILL BE PLANTED OUTSIDE THE SPOIL DEPOSITS AND IN AREAS AT LEAST 10 FEET FROM EXISTING TREES.
3) SHRUBS AND TREES WILL BE WATERED AS NEEDED UP TO TWO GROWING SEASONS AFTER PLANTING.
4) SHEET MULCH WILL BE USED AS NEEDED TO SUPRESS WEEDS AND RETAIN MOISTURE.

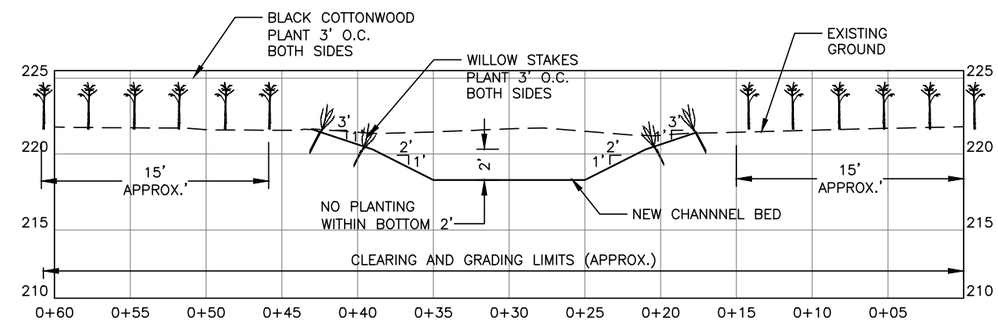
CHANNEL:
1) WILLOW STAKES WILL BE PLANTED ON THE CREATED CHANNELS.

FUTURE PLANTINGS:
1) ALDER AND COTTONWOOD WILL BE PLANTED IN THE SPOILS AFTER THE FIRST GROWING SEASON IF NATURAL RECRUITMENT IS FOUND TO BE UNSUCCESSFUL.
2) CONIFERS AND SHRUBS WILL BE PLANTED IN THE SPOILS AFTER SHADE IS CREATED BY ALDER AND COTTONWOOD (IE AFTER THE SECOND GROWING SEASON).

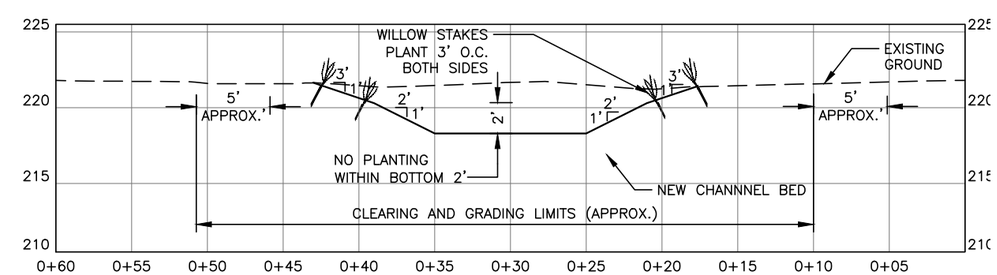
DEER EXCLUSION:
1) DEER FENCING MAY BE USED IF DEER REPELLANT SPRAY IS DEEMED INEFFECTUAL.



SIDE CHANNEL
BANK STABILIZATION PLANTING PLAN
SCALE: 1"=20' HORIZ.



SIDE CHANNEL – BANK STABILIZATION
STA. 12+00 TO 15+45
SCALE: 1"=10' HORIZ., 1"=5' VERT.
V1
L2



SIDE CHANNEL – BANK STABILIZATION
STA. 0+00 TO 12+00
SCALE: 1"=10' HORIZ., 1"=5' VERT.
V2
L2

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DESIGN ENTERED:	L. TRAXINGER	12/2012

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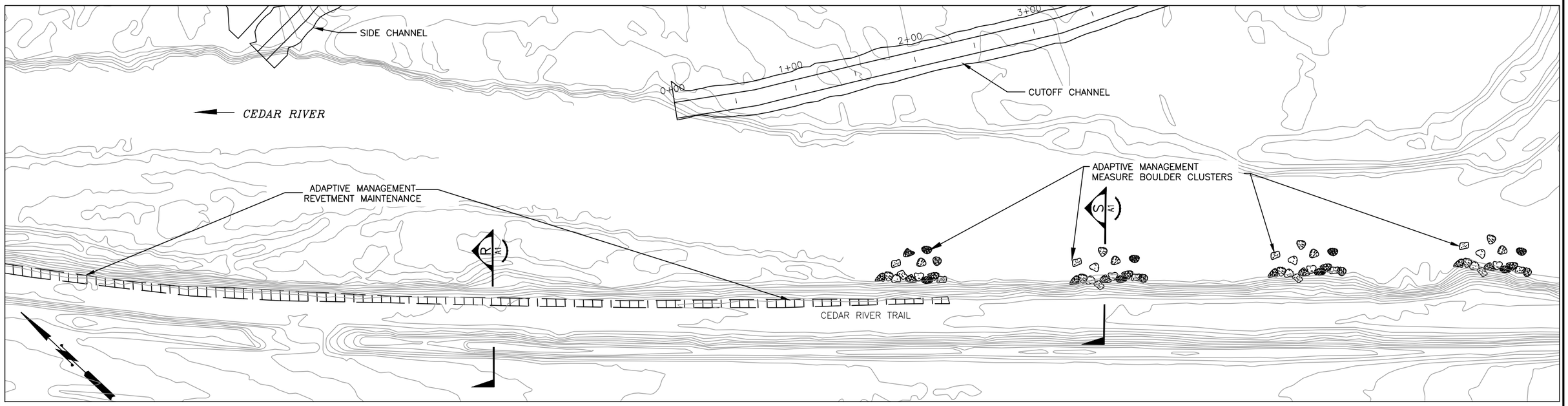
RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION
PLANTING SCHEDULE

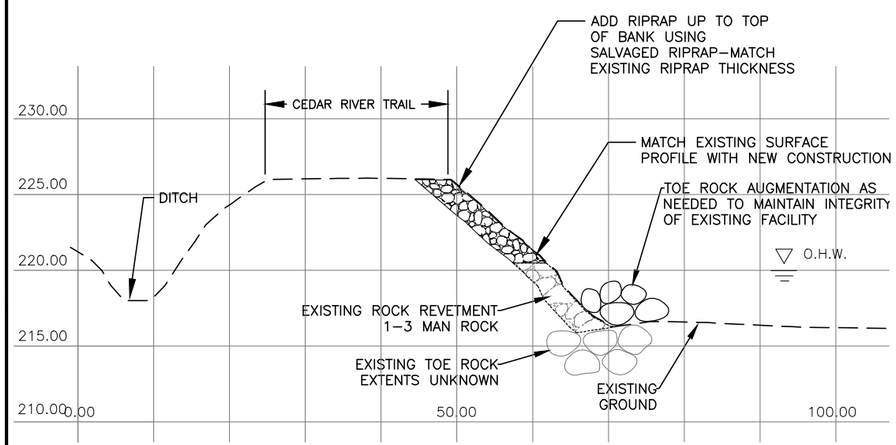
SHEET **L2** OF **22** SHEETS
2006-27



40 0 40 80 120
SCALE IN FEET

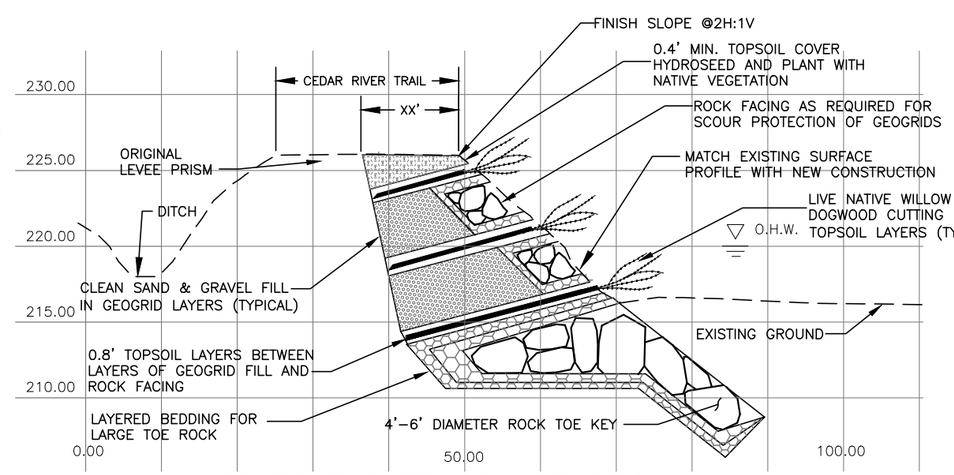
ADAPTIVE MANAGEMENT PLAN
CEDAR RIVER – LEFT BANK PROTECTION

SCALE: 1'=50' HORIZ.



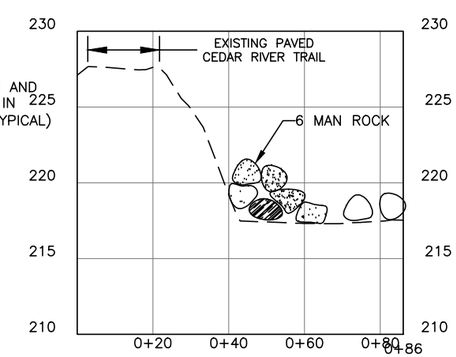
REVETMENT AUGMENTATION
ADAPTIVE MANAGEMENT MEASURE No. 1
CEDAR RIVER – LEFT BANK PROTECTION R1 A1

SCALE: 1"=10' HORIZ, 1"=5' VERT.



REVETMENT RE–CONSTRUCTION
ADAPTIVE MANAGEMENT MEASURE No. 2
CEDAR RIVER – LEFT BANK PROTECTION R2 A1

SCALE: 1"=10' HORIZ, 1"=5' VERT.



ADAPTIVE MANAGEMENT MEASURES
LEFT BANK PROTECTION BOULDER CLUSTERS S A1

SCALE: 1"=20' HORIZ., 1"=5' VERT.

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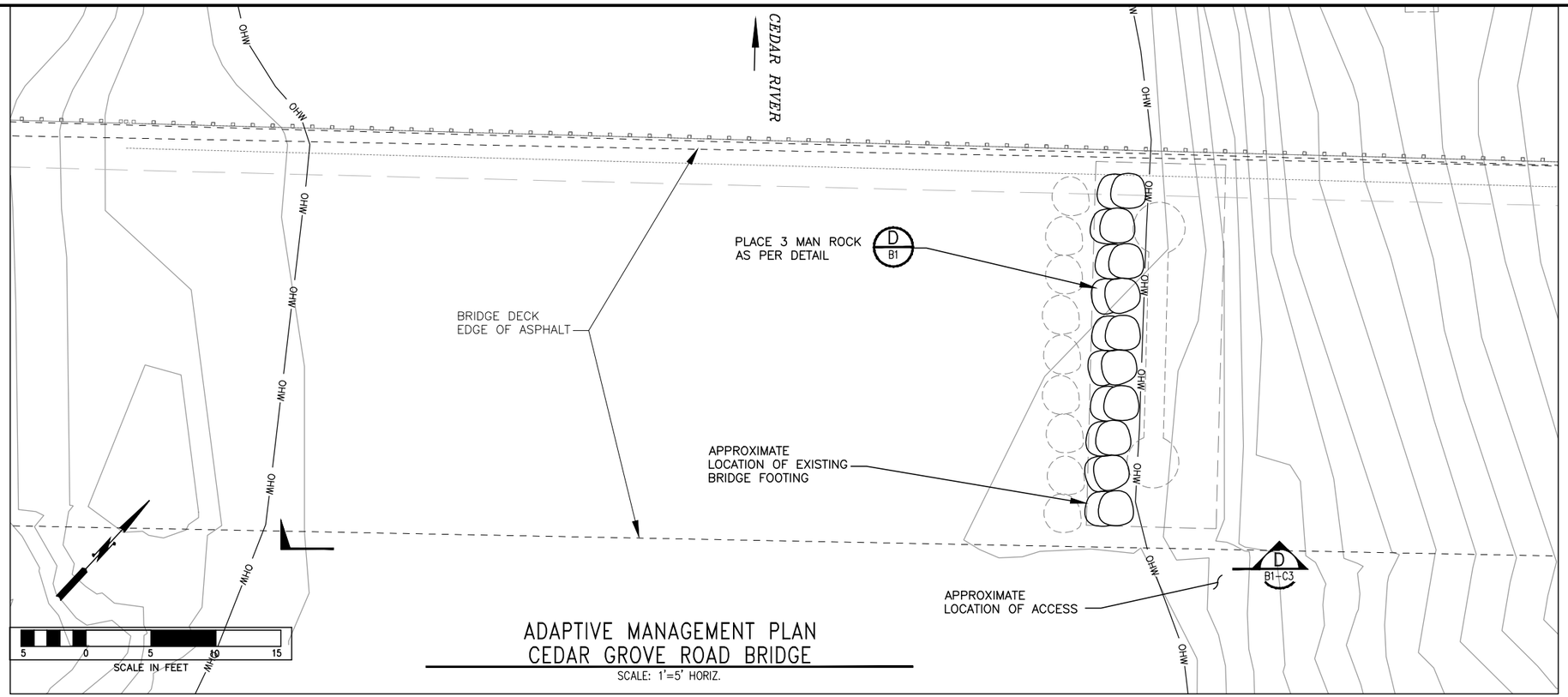
RAINBOW BEND
LEVEE REMOVAL
AND FLOODPLAIN RECONNECTION

ADAPTIVE MANAGEMENT MEASURES
PLAN AND SECTIONS

SHEET **A1** OF **22** SHEETS

2006-27



ADAPTIVE MANAGEMENT PLAN
CEDAR GROVE ROAD BRIDGE

SCALE: 1'=5' HORIZ.

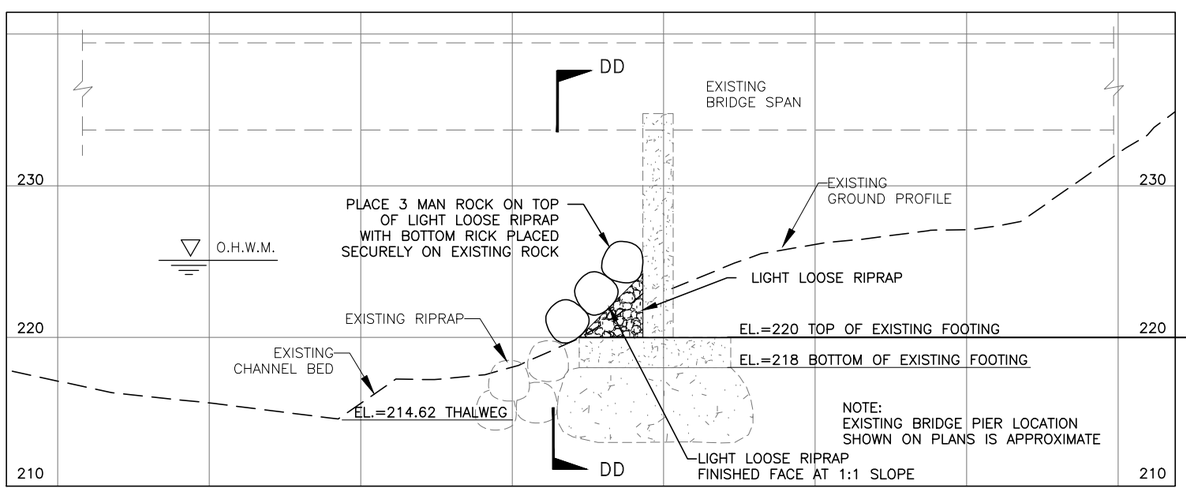
CONSTRUCTION NOTES:

1. ROCK USED SHALL BE SALVAGED REVETMENT ROCK FROM THE RAINBOW BEND LEVEE REMOVAL PROJECT.
2. CONSTRUCTION EQUIPMENT SHALL USE ACCESS FROM THE SOUTH SIDE OF THE BRIDGE.
3. DUE TO LIMITED CLEARANCE BETWEEN THE BRIDGE SPAN AND THE FOOTING, A CONSTRUCTION PAD USING 3 MAN ROCK OR LARGER WILL BE USED AT THE UPSTREAM SIDE OF THE BRIDGE FOUNDATION.
4. EQUIPMENT SPECS SHALL BE REVIEWED PRIOR TO CONSTRUCTION TO MAKE SURE THAT THE EQUIPMENT DOES NOT CAUSE DAMAGE TO THE BRIDGE SPAN DUE TO LIMITED VERTICAL CLEARANCE.
5. AVOID DAMAGE TO EXISTING PUMP AND ITS CONNECTING PIPES ON THE NORTH SIDE OF THE BRIDGE PIER.

MERIDIAN
W.S.L.G.N.Z.
NAD 83/91

DATUM

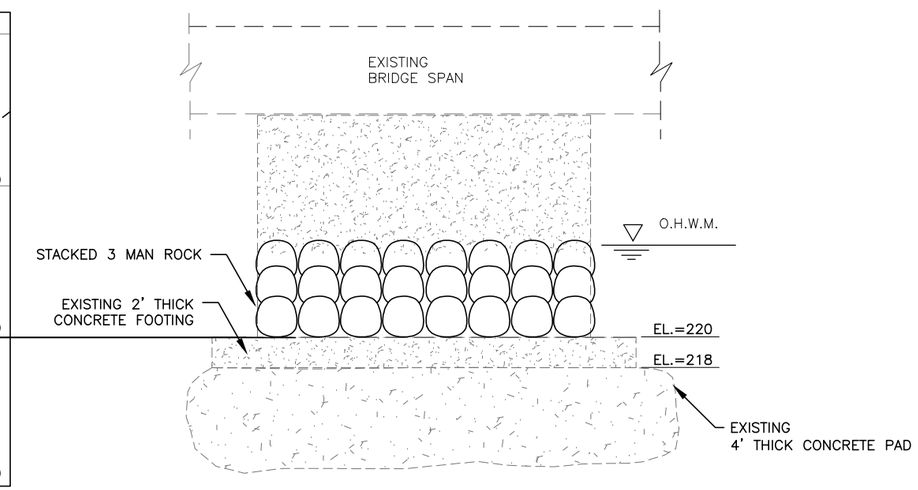
NAVD 88



ROCK ARMORING
AT CEDAR GROVE ROAD BRIDGE

SCALE: 1"=5' HORIZ., 1"=5' VERT.

D / B1



PIER – ELEVATION VIEW
AT CEDAR GROVE ROAD BRIDGE

SCALE: 1"=5' HORIZ., 1"=5' VERT.

DD / B1

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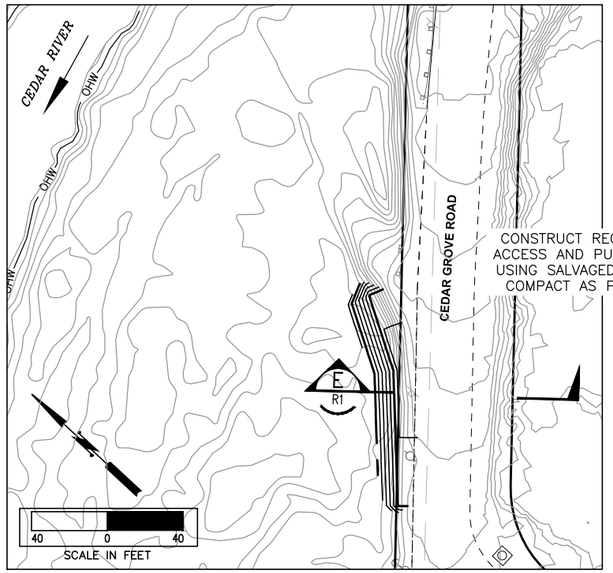
CEDAR GROVE ROAD BRIDGE PROTECTION MEASURES

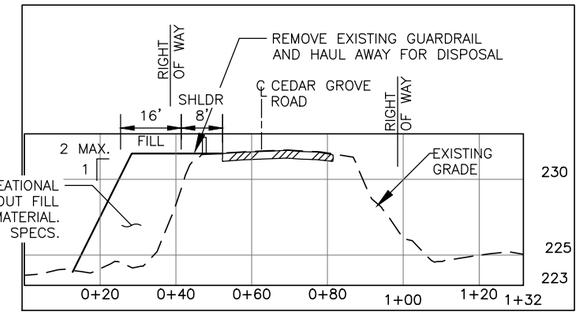
SHEET **B1** OF **22** SHEETS

2006-27



RECREATIONAL USE ACCESS TRAIL AND VEHICLE PULLOUT PLAN
NEAR CEDAR GROVE ROAD

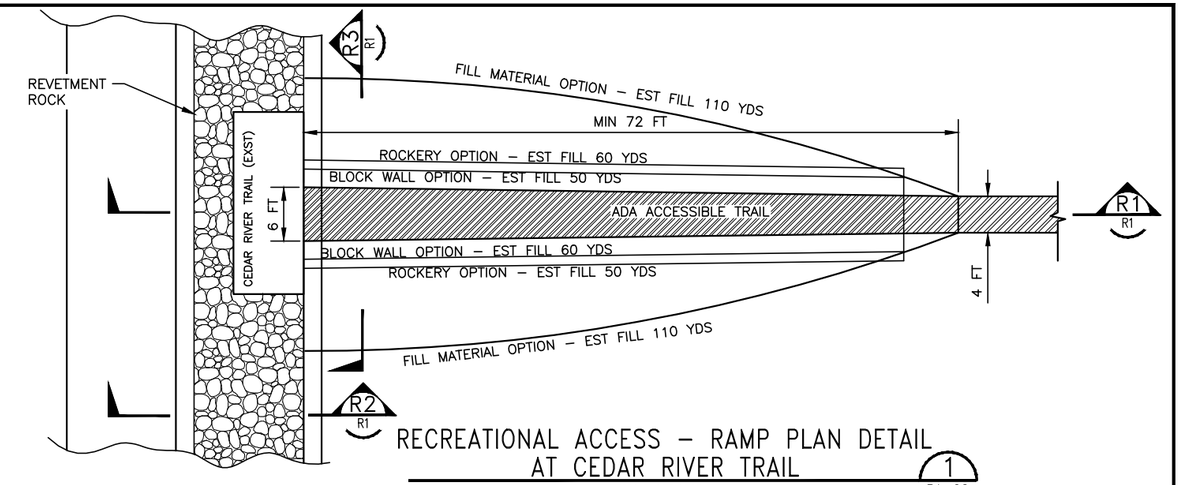
SCALE: 1"=40' HORIZ.,



RECREATIONAL ACCESS AND PULLOUT FILL
CEDAR GROVE ROAD

SCALE: 1"=20' HORIZ., 1"=5' VERT.

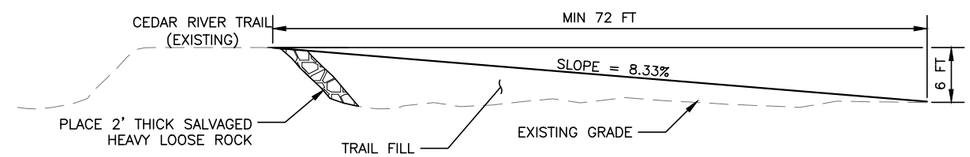
E
C3–C5



RECREATIONAL ACCESS – RAMP PLAN DETAIL
AT CEDAR RIVER TRAIL

NOT TO SCALE

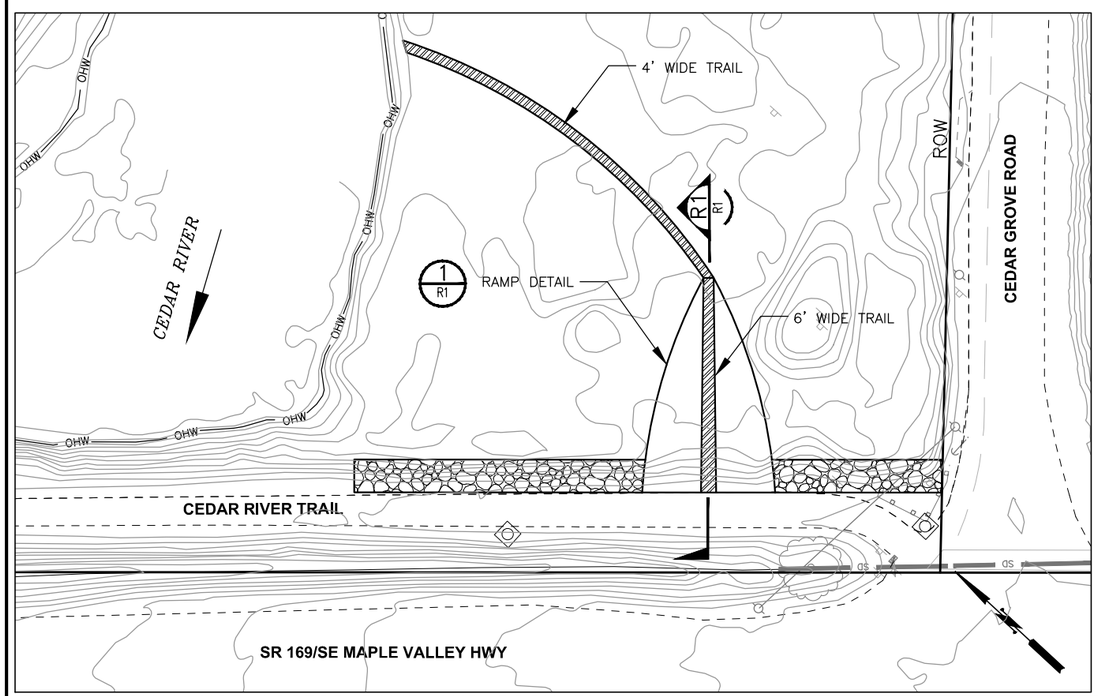
1
R1–C2



RAMP SECTION

NOT TO SCALE

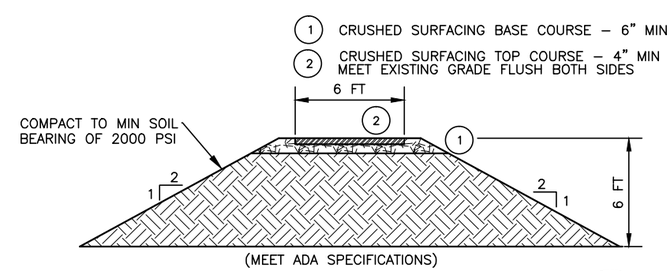
R1
R1



RECREATIONAL USE ACCESS RAMP AND ROCK PLACMENT PLAN
NEAR CEDAR RIVER TRAIL

SCALE: 1"=30' HORIZ.,

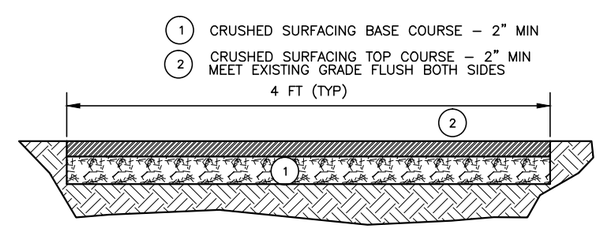
30 0 30 30 60
SCALE IN FEET



RAMP SECTION

NOT TO SCALE

R2
R1



TRAIL SECTION – TYPICAL

NOT TO SCALE

R3
R1

GENERAL NOTES

1. ALL TRAIL CONSTRUCTION SHALL INCLUDE STANDARD CLEARING LIMITS AS FOLLOWS: BRUSH AND BRANCHES ABOVE 36" ABOVE GROUND LEVEL SHALL BE REMOVED TO A HEIGHT OF 11' WITHIN 3' OF TRAIL. ALL VEGETATION BELOW 36" FT. SHALL BE CUT BACK TO THE WIDTH OF THE TRAIL. FALLEN LOGS SHALL BE CUT FLUSH AT THE EDGE OF THE TRAIL.
2. FOLLOWING CLEARING WITHIN THE DESIGNED TRAIL CORRIDOR REMOVE ALL ROOTS AND ORGANIC DEBRIS TO A DEPTH OF 6" PRIOR TO IMPORTED CRUSHED ROCK. ESTABLISH DESIGN CROSS–SLOPE IN SUBGRADE MATERIALS, SLOPE OR CROWN AS DIRECTED.
3. IN AREAS OF SIGNIFICANT TREE ROOTS, EXCAVATE ONLY 4" TO SUBGRADE AND COMPACT. PROVIDE 4" BASE COURSE AND 2" TOP COURSE PER SPECIFICATION. ROLL/COMPACT EDGES OF FINISH PATH TO BLEND BACK TO ADJACENT GRADE. FINISHING GRADE OF PATH WILL BE FLUSH OR SLIGHT ELEVATED/CROWNED ABOVE ADJACENT SURFACES.
4. IMPORT CRUSHED ROCK FOLLOWING ENGINEER APPROVAL OF PREPARED TRAIL BED. TAPER EDGES AT A 45 DEG. ANGLE INTO THE SUBGRADE. TOP GRADE FLUSH WITH FINISH GRADE WHERE DESIRED. PROVIDE COMPLETE MECHANICAL COMPACTION WHENEVER PRACTICAL.
5. PERFORM SITE RESTORATION AND REVEGETATION UPON COMPLETION OF TRAIL WORK.

CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-424-5555
(UNDERGROUND UTILITY LOCATIONS ARE APPROX.)

FIELD BOOK:		
SURVEYED:	K.C. LIDAR	03–2010
SURVEY BASE MAP:	K.C. LIDAR	03–2010
CHECKED:		

NUM.	REVISION	BY	DATE
	60% PLANS 12/13/2012		

NUM.	RECORD CHANGES APPROVED	BY	DATE

APPROVED:	WILL R. MANSFIELD, P.E.	12/2012
PROJECT MANAGER:	JON HANSEN	12/2012
DESIGNED:	DAN EASTMAN, JOHN BETHEL	12/2012
	WILL MANSFIELD, P.E.	12/2012
	TENZING THINLEY, P.E.	12/2012
CAD DESIGN:	L. TRAXINGER	12/2012

FUNDING SOURCE No. 101349
PROJECT No. 1044405
CONTRACT No. TBD

WILLIS R. MANSFIELD
STATE OF WASHINGTON
46388
REGISTERED
PROFESSIONAL ENGINEER

King County
Department of Natural Resources and Parks
Water and Land Resources Division
Rural and Regional Services Section
Ecological Restoration and Engineering Services Unit
Christie True, Director

RAINBOW BEND LEVEE REMOVAL AND FLOODPLAIN RECONNECTION

RECREATIONAL USE ACCESS TRAIL AND VEHICLE PULLOUT FILL NEAR CEDAR GROVE ROAD

SHEET R1 OF 22 SHEETS

2006-27