

**ATTACHMENT J**

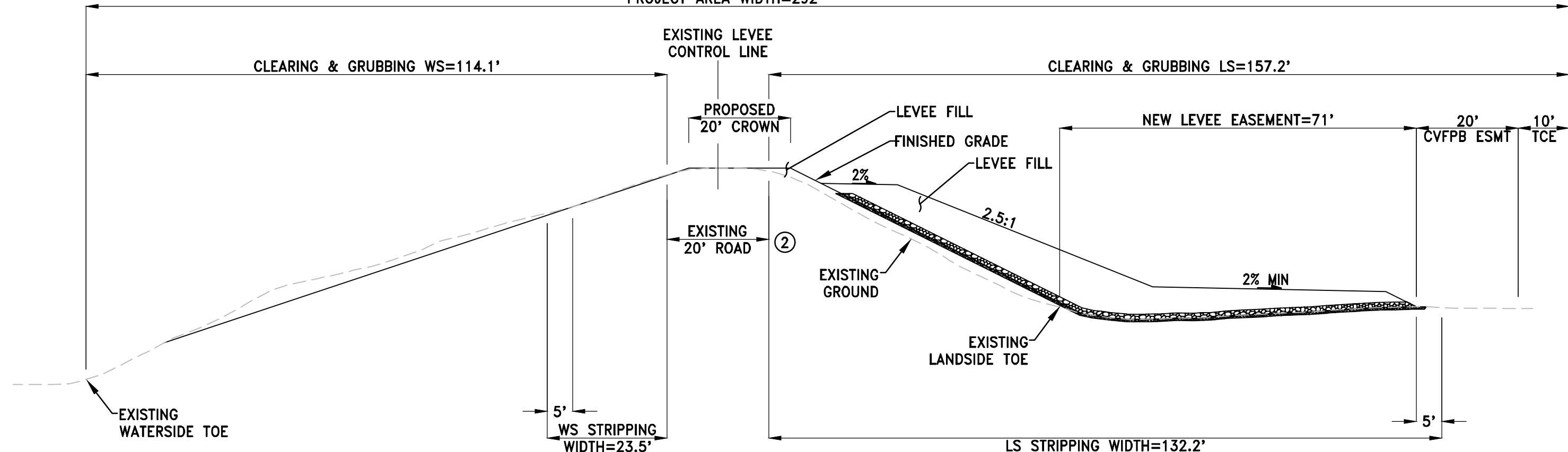
**Cost Estimate Cross Sections**

BEAR RIVER EAST LEVEE REACH C  
STA 0+00 TO STA 85+00

WATERSIDE

LANDSIDE

PROJECT AREA WIDTH=292'



LEVEE FILL AREA = 874 SF  
DRAIN ROCK AREA = 117 SF  
FILTER SAND AREA = 61 SF

60' WIDE COMBINATION SEEPAGE/STABILITY BERM W/ GEOMETRY FIX

SCALE: 1"=20'

NOTES

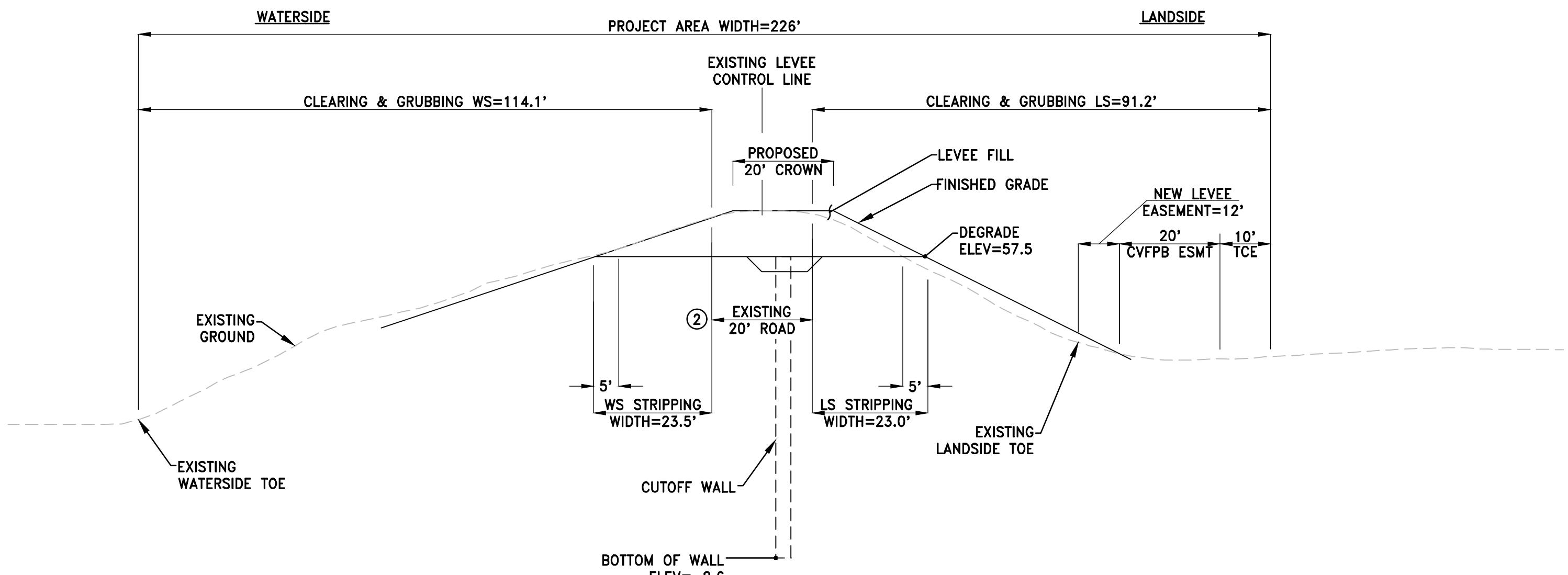
- ① EXISTING GROUND SURFACE USES CVFED LiDAR DATA (2008)
- ② EXISTING 20' PATROL ROAD NOT INCLUDED IN STRIPPING AND CLEARING & GRUBBING WIDTHS. PATROL ROAD WIDTH IS ESTIMATED PER AVAILABLE AS-BUILT INFORMATION. ACTUAL PATROL ROAD WIDTH MAY VARY
- ③ SEE FIGURE 4 FOR COMBINATION SEEPAGE/STABILITY BERM TYPICAL SECTION.
- ④ WATERSIDE ROCK SLOPE PROTECTION WAS RECOMMENDED FOR EROSION PROTECTION; HOWEVER, IT IS ASSUMED THAT EROSION WILL BE MITIGATED PER OTHER PROJECTS.

LEGEND

- EXISTING GROUND
- FINISHED GRADE
- ██████ DRAIN ROCK
- ██████ FILTER SAND

RIO OSO FLOOD RISK REDUCTION  
PROGRAM FEASIBILITY STUDY  
BEAR RIVER EAST LEVEE REACH C  
60' WIDE COMBINATION SEEPAGE/STABILITY BERM  
QUANTITY ESTIMATE CROSS SECTION

BEAR RIVER EAST LEVEE REACH C  
STA 0+00 TO STA 85+00



1/3 LEVEE DEGRADE AREA = 356 SF  
CUTOFF TRENCH AREA = 24 SF  
LEVEE FILL AREA = 595 SF

60' DEEP SEEPAGE CUTOFF WALL W/ GEOMETRY FIX

SCALE: 1"=20'

NOTES

- ① EXISTING GROUND SURFACE USES CVFED LiDAR DATA (2008)
- ② EXISTING 20' PATROL ROAD NOT INCLUDED IN STRIPPING AND CLEARING & GRUBBING WIDTHS. PATROL ROAD WIDTH IS ESTIMATED PER AVAILABLE AS-BUILT INFORMATION. ACTUAL PATROL ROAD WIDTH MAY VARY.
- ③ SEE FIGURE 5 FOR SEEPAGE CUTOFF WALL TYPICAL SECTION.
- ④ WATERSIDE ROCK SLOPE PROTECTION WAS RECOMMENDED FOR EROSION PROTECTION; HOWEVER, IT IS ASSUMED THAT EROSION WILL BE MITIGATED PER OTHER PROJECTS.

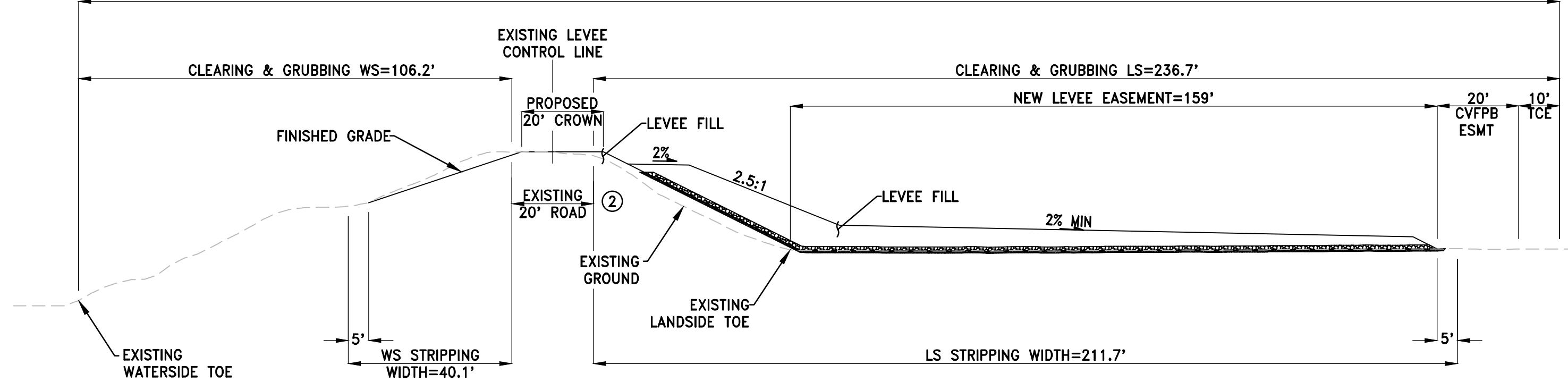
LEGEND
EXISTING GROUND
FINISHED GRADE
CUTOFF WALL EXCAVATION
CUTOFF WALL

BEAR RIVER REACH B  
 BEAR RIVER EAST LEVEE STA 85+00 TO STA 130+72  
 YANKEE SLOUGH SOUTH LEVEE STA 0+00 TO STA 4+64

WATERSIDE

LANDSIDE

PROJECT AREA WIDTH=363'



LEVEE FILL AREA = 1058 SF  
 DRAIN ROCK AREA = 197 SF  
 FILTER SAND AREA = 101 SF

150' WIDE COMBINATION SEEPAGE/STABILITY BERM W/ GEOMETRY FIX

SCALE: 1"=25'

NOTES

- ① EXISTING GROUND SURFACE USES CVFED LiDAR DATA (2008)
- ② EXISTING 20' PATROL ROAD NOT INCLUDED IN STRIPPING AND CLEARING & GRUBBING WIDTHS. PATROL ROAD WIDTH IS ESTIMATED PER AVAILABLE AS-BUILT INFORMATION. ACTUAL PATROL ROAD WIDTH MAY VARY.
- ③ SEE FIGURE 4 FOR COMBINATION SEEPAGE/STABILITY BERM TYPICAL SECTION.
- ④ WATERSIDE ROCK SLOPE PROTECTION WAS RECOMMENDED FOR EROSION PROTECTION; HOWEVER, IT IS ASSUMED THAT EROSION WILL BE MITIGATED PER OTHER PROJECTS.

LEGEND

- EXISTING GROUND
- FINISHED GRADE
- DRAIN ROCK
- FILTER SAND

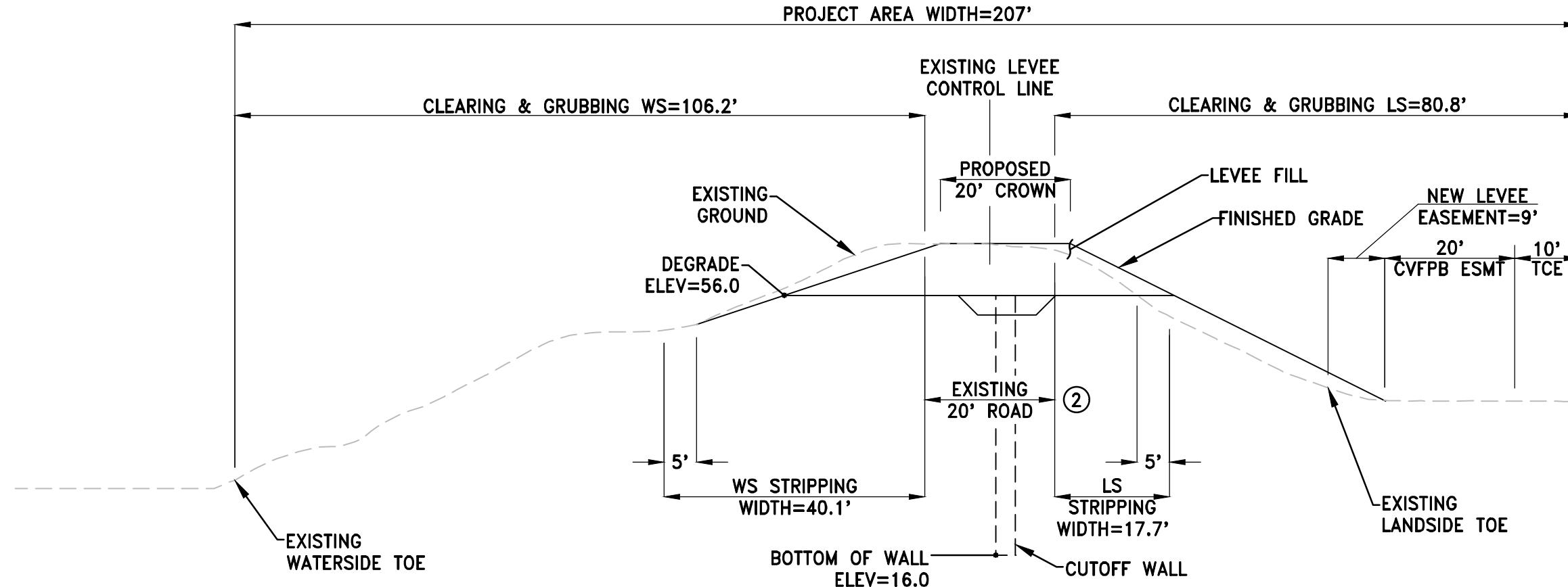
  
**WOOD RODGERS**  
 DEVELOPING INNOVATIVE DESIGN SOLUTIONS  
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 Sacramento, CA 95816 Fax 916.341.7767

**RIO OSO FLOOD RISK REDUCTION  
 PROGRAM FEASIBILITY STUDY**

BEAR RIVER EAST LEVEE REACH B  
 150' WIDE COMBINATION SEEPAGE/STABILITY BERM  
 QUANTITY ESTIMATE CROSS SECTION

BEAR RIVER REACH B  
 BEAR RIVER EAST LEVEE STA 85+00 TO STA 130+72  
 YANKEE SLOUGH SOUTH LEVEE STA 0+00 TO STA 4+64

WATERSIDE



1/3 LEVEE DEGRADE AREA = 329 SF  
 CUTOFF TRENCH AREA = 24 SF  
 LEVEE FILL AREA = 495 SF

40' DEEP SEEPAGE CUTOFF WALL W/ GEOMETRY FIX

SCALE: 1"=20'

NOTES

- ① EXISTING GROUND SURFACE USES CVFED LiDAR DATA (2008)
- ② EXISTING 20' PATROL ROAD NOT INCLUDED IN STRIPPING AND CLEARING & GRUBBING WIDTHS. PATROL ROAD WIDTH IS ESTIMATED PER AVAILABLE AS-BUILT INFORMATION. ACTUAL PATROL ROAD WIDTH MAY VARY.
- ③ SEE FIGURE 5 FOR SEEPAGE CUTOFF WALL TYPICAL SECTION.

LEGEND

- Existing Ground
- Existing Grade
- Cutoff Wall Excavation
- Cutoff Wall

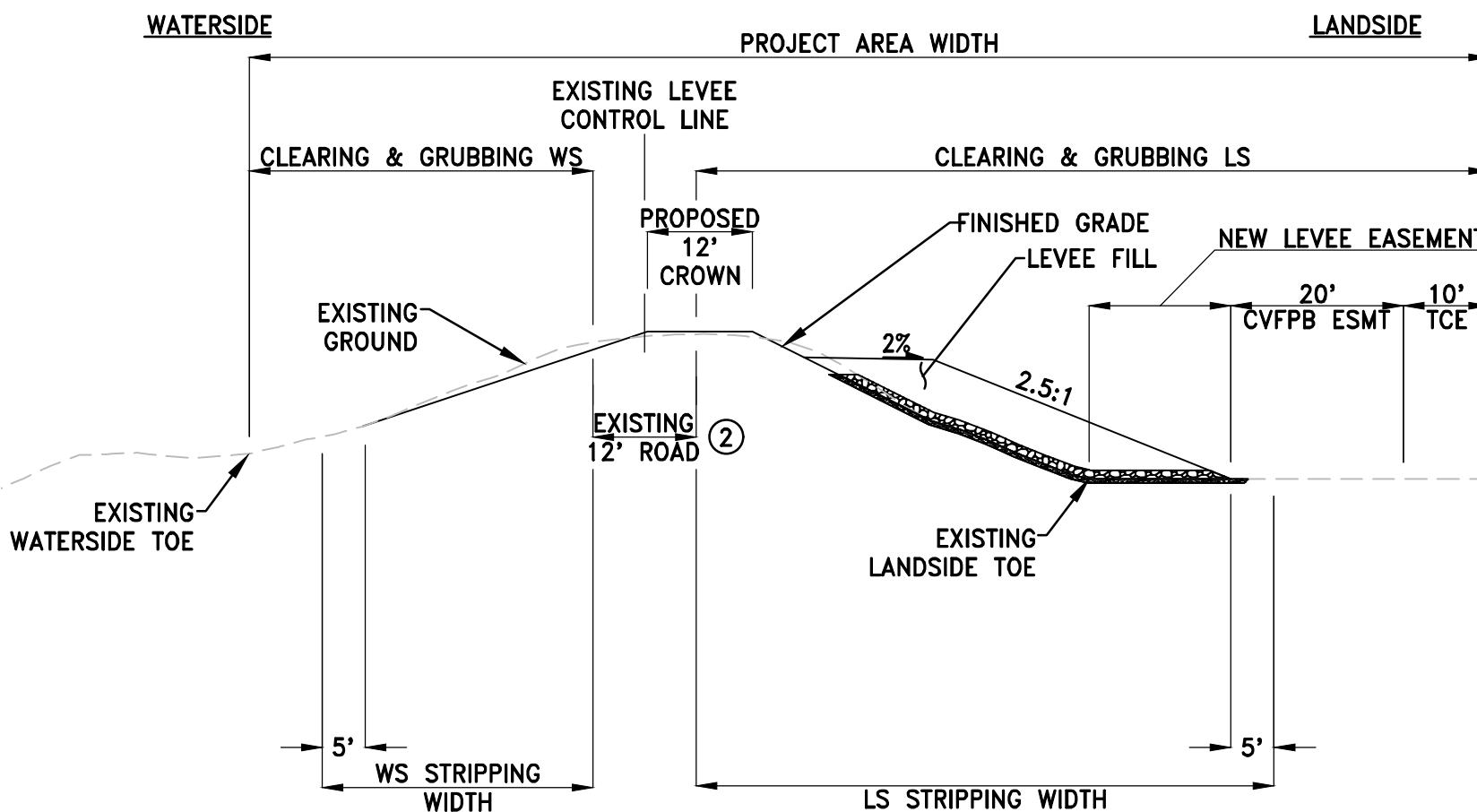
  
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**NICOLAUS FLOOD RISK REDUCTION  
 PROGRAM FEASIBILITY STUDY**  
 BEAR RIVER EAST LEVEE REACH B  
 40' DEEP SEEPAGE CUTOFF WALL  
 QUANTITY ESTIMATE CROSS SECTION

YANKEE SLOUGH SOUTH LEVEE  
REACH A.1: STA 4+64 TO STA 38+30  
REACH A.2: STA 38+30 TO STA 231+17

YANKEE SLOUGH REACH A.1  
NEW LEVEE EASEMENT = 18 FT  
LS STRIPPING WIDTH = 95.1 FT  
WS STRIPPING WIDTH = 51.7 FT  
CLEARING & GRUBBING LS = 120.1 FT  
CLEARING & GRUBBING WS = 46.7 FT  
PROJECT AREA WIDTH AREA = 179 FT  
LEVEE FILL AREA = 353 SF  
DRAIN ROCK AREA = 46 SF  
FILTER SAND AREA = 26 SF

YANKEE SLOUGH REACH A.2  
NEW LEVEE EASEMENT = 17 FT  
LS STRIPPING WIDTH = 31.5 FT  
WS STRIPPING WIDTH = 67.1 FT  
CLEARING & GRUBBING LS = 39.9 FT  
CLEARING & GRUBBING WS = 92.1 FT  
PROJECT AREA WIDTH AREA = 145 FT  
LEVEE FILL AREA = 344 SF  
DRAIN ROCK AREA = 46 SF  
FILTER SAND AREA = 26 SF



15' WIDE DRAINED STABILITY BERM W/ GEOMETRY FIX

SCALE: N.T.S.

NOTES

- ① EXISTING GROUND SURFACE USES CVFED LiDAR DATA (2008)
- ② EXISTING 12' PATROL ROAD NOT INCLUDED IN STRIPPING AND CLEARING & GRUBBING WIDTHS. PATROL ROAD WIDTH IS ESTIMATED PER AVAILABLE AS-BUILT INFORMATION. ACTUAL PATROL ROAD WIDTH MAY VARY
- ③ SEE FIGURE 6 FOR DRAINED STABILITY BERM TYPICAL SECTION.

<b>LEGEND</b>
----- EXISTING GROUND
_____ FINISHED GRADE
██████ DRAIN ROCK
██████ FILTER SAND

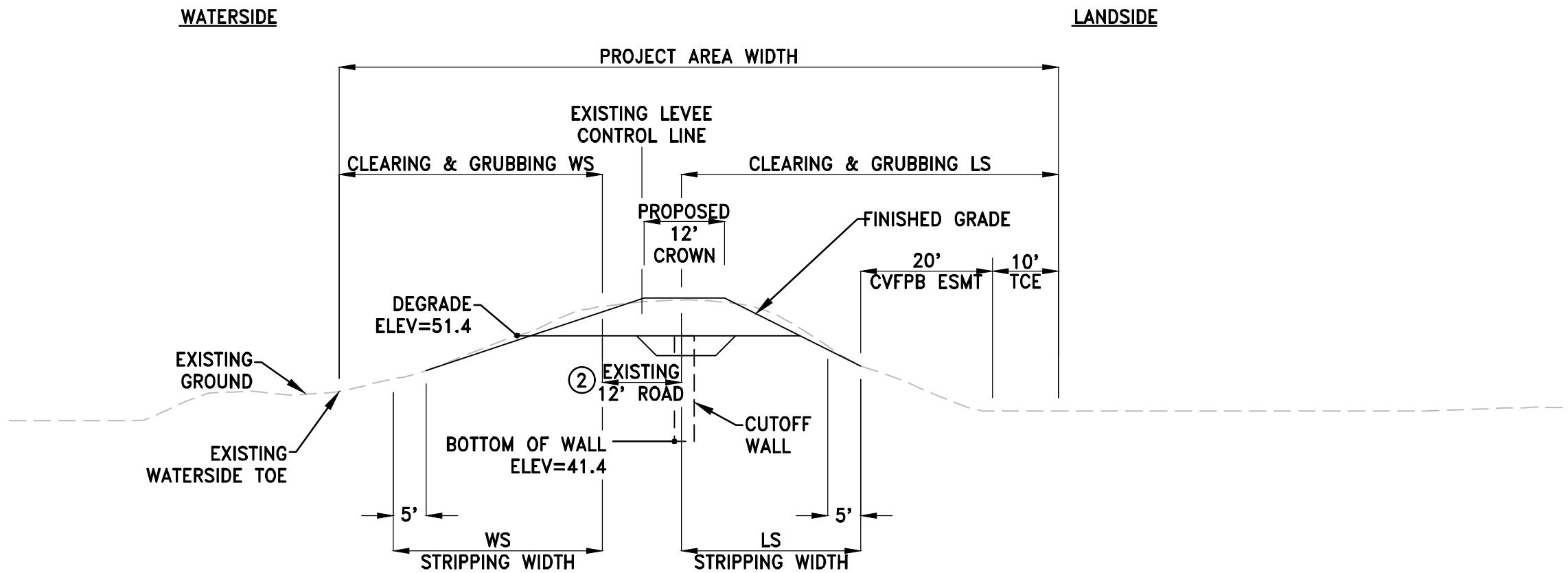
**RIO OSO FLOOD RISK REDUCTION  
PROGRAM FEASIBILITY STUDY**

YANKEE SLOUGH S LEVEE REACHES A.1 & A.2  
15' WIDE DRAINED STABILITY BERM  
QUANTITY ESTIMATE CROSS SECTION

YANKEE SLOUGH SOUTH LEVEE  
REACH A.1: STA 4+64 TO STA 38+30  
REACH A.2: STA 38+30 TO STA 231+17

YANKEE SLOUGH REACH A.1  
LS STRIPPING WIDTH = 55.7 FT  
WS STRIPPING WIDTH = 51.7 FT  
CLEARING & GRUBBING LS = 95.2 FT  
CLEARING & GRUBBING WS = 46.7 FT  
PROJECT AREA WIDTH = 154 FT  
DEGRADE ELEV = 57.6  
BOTTOM OF WALL ELEV = 41.6  
1/3 LEVEE DEGRADE AREA = 326 SF  
CUTOFF TRENCH AREA = 24 SF  
LEVEE FILL AREA = 399 SF

YANKEE SLOUGH REACH A.2  
LS STRIPPING WIDTH = 24.8 FT  
WS STRIPPING WIDTH = 31.7 FT  
CLEARING & GRUBBING LS = 57.2 FT  
CLEARING & GRUBBING WS = 39.9 FT  
PROJECT AREA WIDTH = 110 FT  
DEGRADE ELEV = 57.4  
BOTTOM OF WALL ELEV = 41.4  
1/3 LEVEE DEGRADE AREA = 171 SF  
CUTOFF TRENCH AREA = 24 SF  
LEVEE FILL AREA = 283 SF



16' DEEP SEEPAGE CUTOFF WALL W/ GEOMETRY FIX

SCALE: 1"=20'

NOTES

- ① EXISTING GROUND SURFACE USES CVFED LiDAR DATA (2008)
- ② EXISTING 20' PATROL ROAD NOT INCLUDED IN STRIPPING AND CLEARING & GRUBBING WIDTHS. PATROL ROAD WIDTH IS ESTIMATED PER AVAILABLE AS-BUILT INFORMATION. ACTUAL PATROL ROAD WIDTH MAY VARY.
- ③ SEE FIGURE 5 FOR SEEPAGE CUTOFF WALL TYPICAL SECTION.

LEGEND
----- EXISTING GROUND
— FINISHED GRADE
— CUTOFF WALL EXCAVATION
— CUTOFF WALL

NICOLAUS FLOOD RISK REDUCTION  
PROGRAM FEASIBILITY STUDY

YANKEE SLOUGH S LEVEE REACH REACH A.1-A.2  
16' DEEP SEEPAGE CUTOFF WALL  
QUANTITY ESTIMATE CROSS SECTION