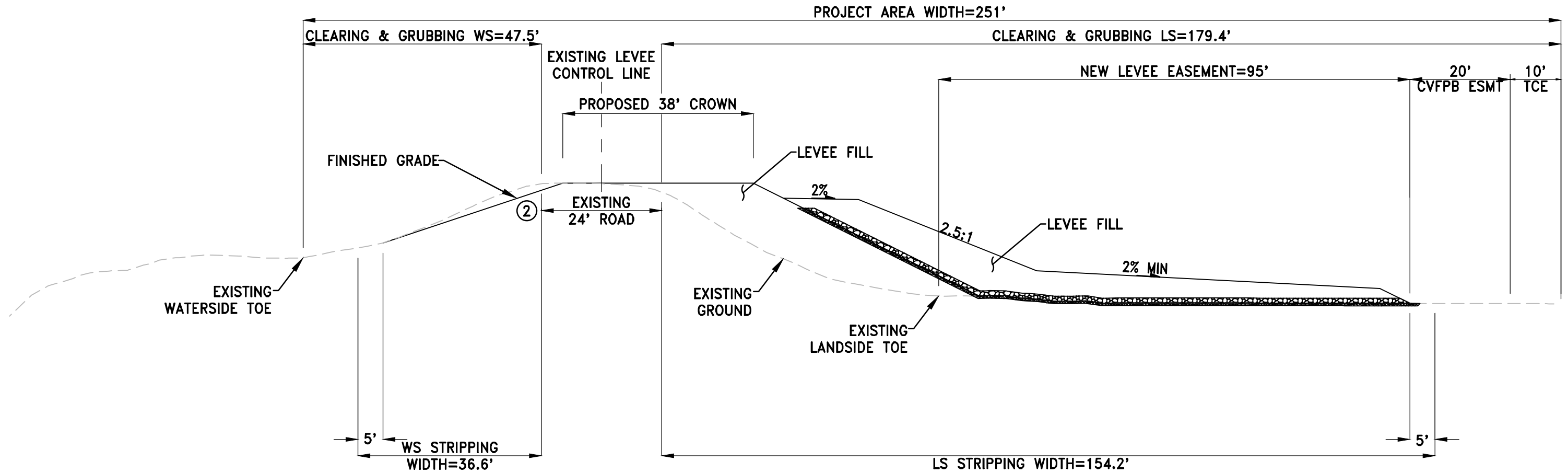


ATTACHMENT J
Cost Estimate Cross Sections

FEATHER RIVER EAST LEVEE REACH D
STA 0+00 TO STA 531+55

WATERSIDE

LANDSIDE



LEVEE FILL AREA = 1072 SF
DRAIN ROCK AREA = 123 SF
FILTER SAND AREA = 64 SF

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

SCALE: 1"=20'

NOTES

- ① EXISTING GROUND SURFACE USES CVFED LIDAR DATA (2008)
- ② EXISTING 24' PATROL ROAD NOT INCLUDED IN STRIPPING AND CLEARING & GRUBBING WIDTH. 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.

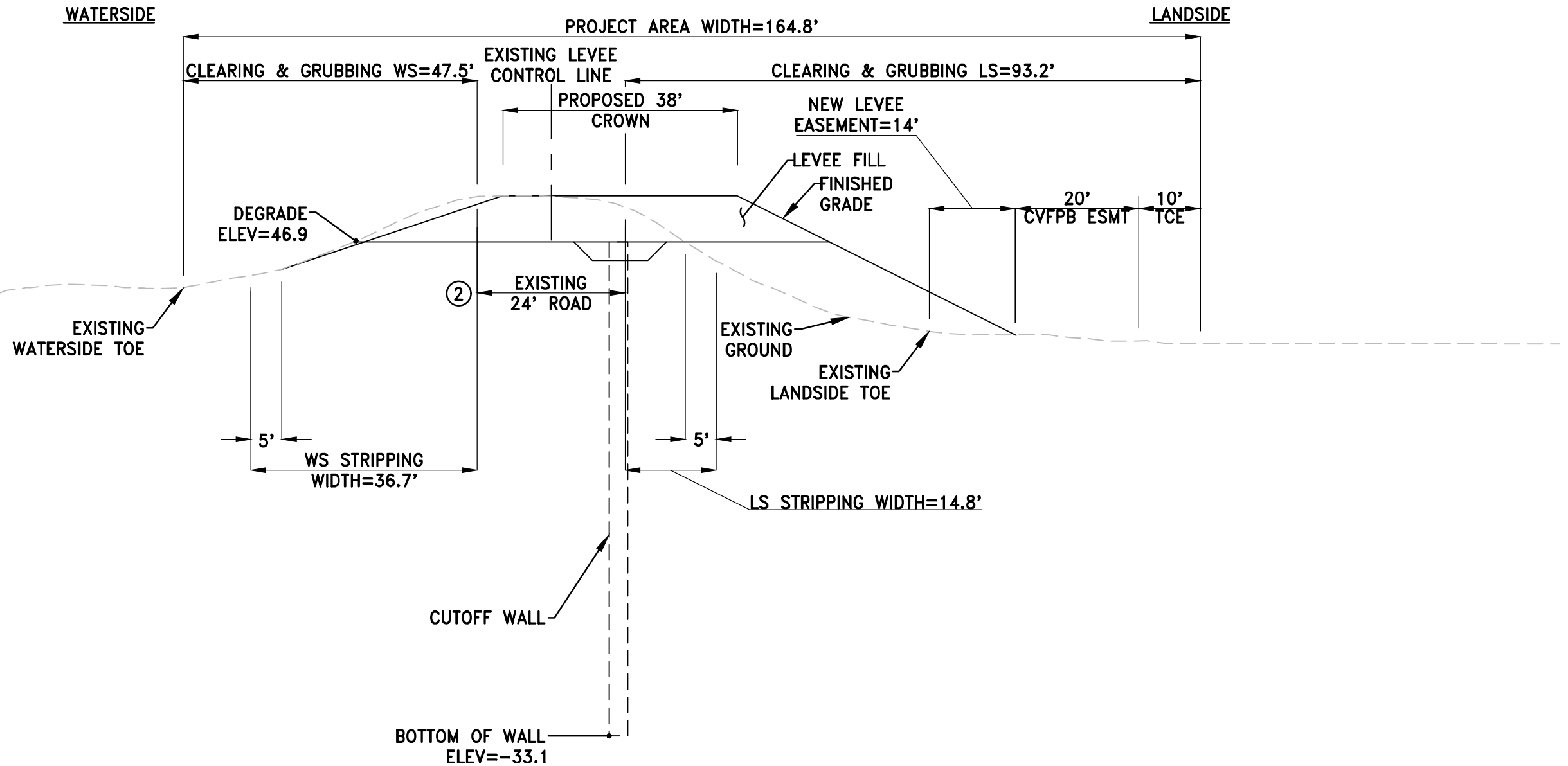
LEGEND	
---	EXISTING GROUND
—	FINISHED GRADE
▨	DRAIN ROCK
▩	FILTER SAND

**NICOLAUS FLOOD RISK REDUCTION
PROGRAM FEASIBILITY STUDY**
FEATHER RIVER EAST LEVEE REACH D
80' WIDE COMBINATION SEEPAGE/STABILITY BERM
QUANTITY ESTIMATE CROSS SECTION

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FEATHER RIVER EAST LEVEE REACH D
STA 0+00 TO STA 531+55



1/3 LEVEE DEGRADE AREA = 286 SF
CUTOFF TRENCH AREA = 24 SF
LEVEE FILL AREA = 783 SF

80' DEEP SEEPAGE CUTOFF WALL W/ GEOMETRY FIX

SCALE: 1"=20'

NOTES

- ① EXISTING GROUND SURFACE USES CVFED LIDAR DATA (2008)
- ② EXISTING 24' PATROL ROAD NOT INCLUDED IN STRIPPING AND CLEARING & GRUBBING WIDTH. 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

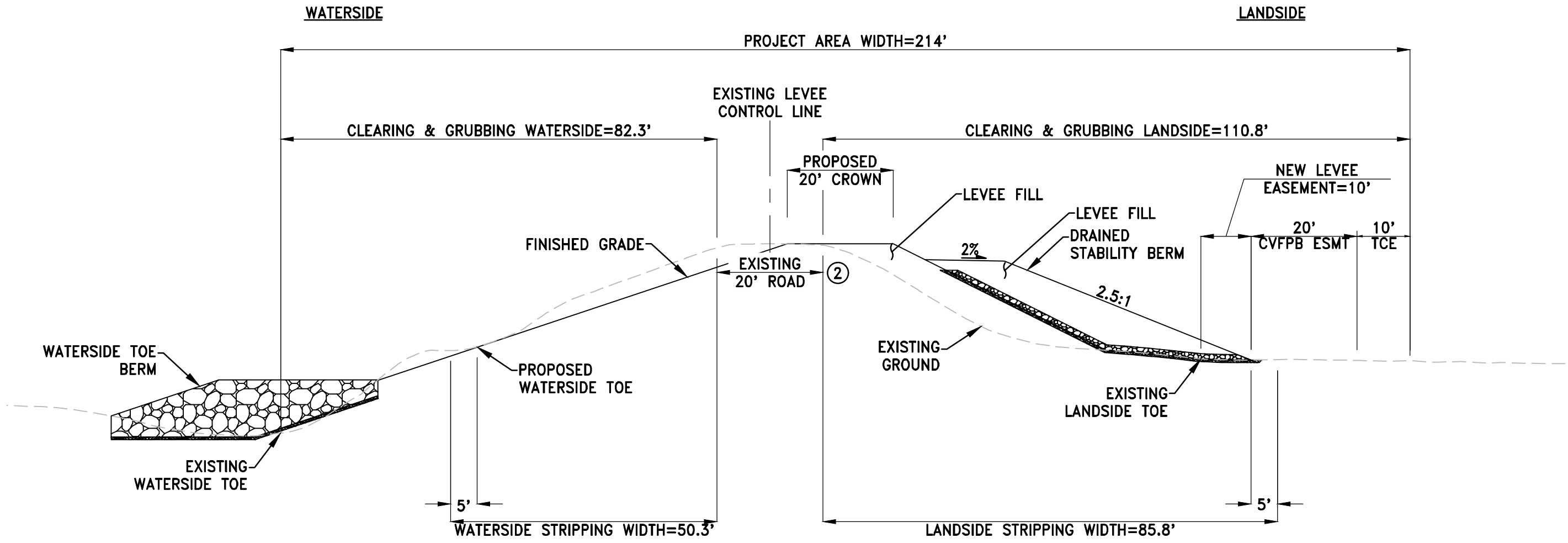
**NICOLAUS FLOOD RISK REDUCTION
PROGRAM FEASIBILITY STUDY**

FEATHER RIVER EAST LEVEE REACH D
80' DEEP SEEPAGE CUTOFF WALL
QUANTITY ESTIMATE CROSS SECTION



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FEATHER RIVER EAST LEVEE REACH C
STA 531+55 TO STA 580+40



LEVEE FILL AREA = 558 SF
DRAIN ROCK AREA = 59 SF
FILTER SAND AREA = 58 SF
TOE BERM ROCK AREA = 383 SF

30' WATERSIDE TOE BERM & 15' LANDSIDE DRAINED 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 6 FOR DRAINED STABILITY BERM TYPICAL SECTION. SEE FIGURE 8 FOR WATERSIDE TOE BERM TYPICAL SECTION

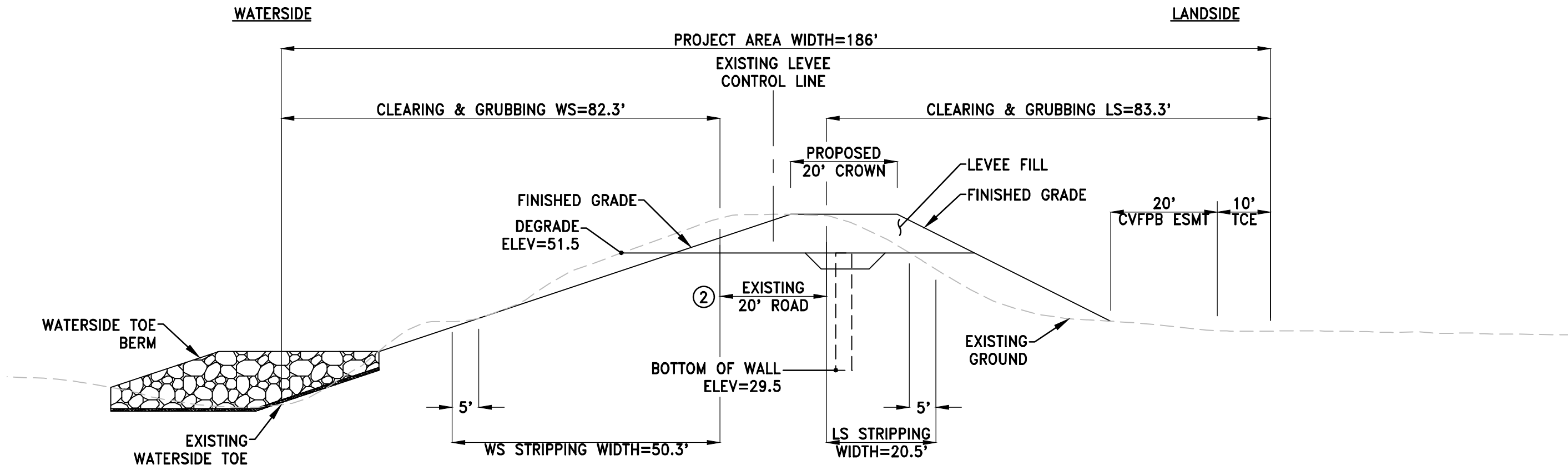
LEGEND	
---	EXISTING GROUND
—	FINISHED GRADE
[Pattern]	DRAIN ROCK
[Pattern]	FILTER SAND
[Pattern]	ROCK TOE BERM

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FEATHER RIVER EAST LEVEE REACH C
30' WS TOE BERM & 15' LS STABILITY BERM
QUANTITY ESTIMATE CROSS SECTION

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FEATHER RIVER EAST LEVEE REACH C
STA 531+55 TO STA 580+40



1/3 LEVEE DEGRADE AREA = 266 SF
CUTOFF TRENCH AREA = 24 SF
LEVEE FILL AREA = 489 SF
TOE BERM ROCK AREA = 383 SF
FILTER SAND AREA = 26 SF

22' DEEP SEEPAGE CUTOFF WALL & 30' WIDE TOE BERM W/ GEOMETRY FIX

SCALE: 1"=20'

NOTES

- ① EXISTING GROUND SURFACE USES CVFED LIDAR DATA (2008)
- ② EXISTING 24' PATROL ROAD NOT INCLUDED IN STRIPPING AND CLEARING & GRUBBING WIDTH. 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

**NICOLAUS FLOOD RISK REDUCTION
PROGRAM FEASIBILITY STUDY**

FEATHER RIVER EAST LEVEE REACH C
22' DEEP CUTOFF WALL & 30' WS TOE BERM
QUANTITY ESTIMATE CROSS SECTION



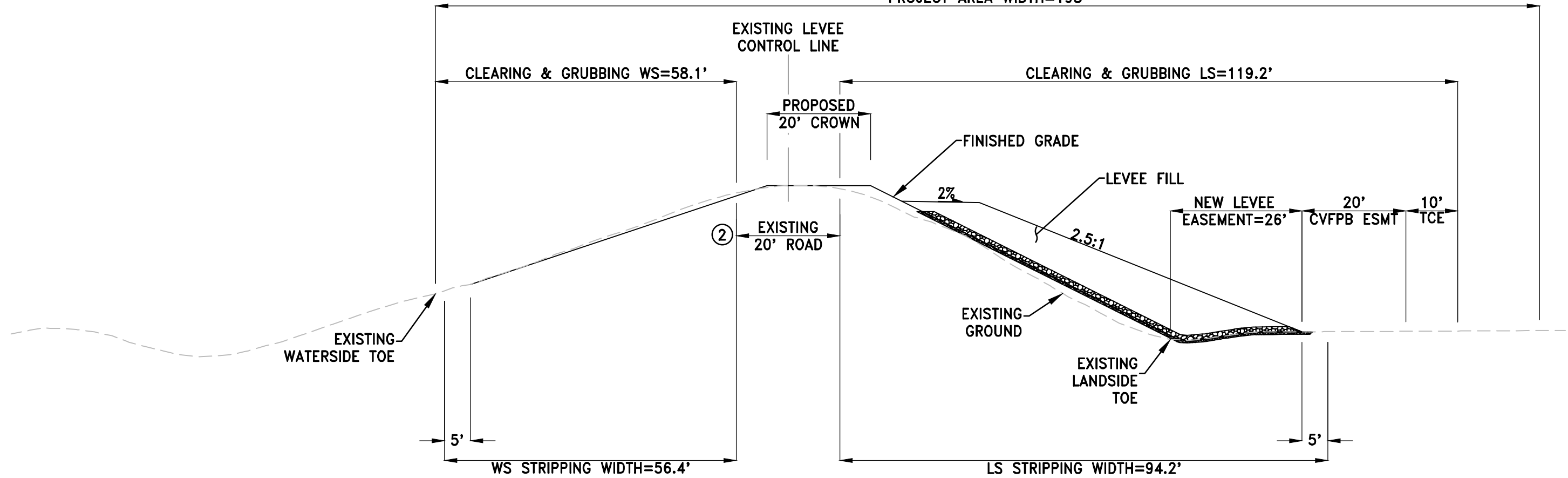
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FEATHER RIVER EAST LEVEE REACH B
STA 580+40 TO STA 640+20

WATERSIDE

LANDSIDE

PROJECT AREA WIDTH=198'



LEVEE FILL AREA = 717 SF
DRAIN ROCK AREA = 77 SF
FILTER SAND AREA = 41 SF

15' WIDE DRAINED 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 6 FOR DRAINED STABILITY BERM TYPICAL SECTION.

LEGEND

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

**NICOLAUS FLOOD RISK REDUCTION
PROGRAM FEASIBILITY STUDY**

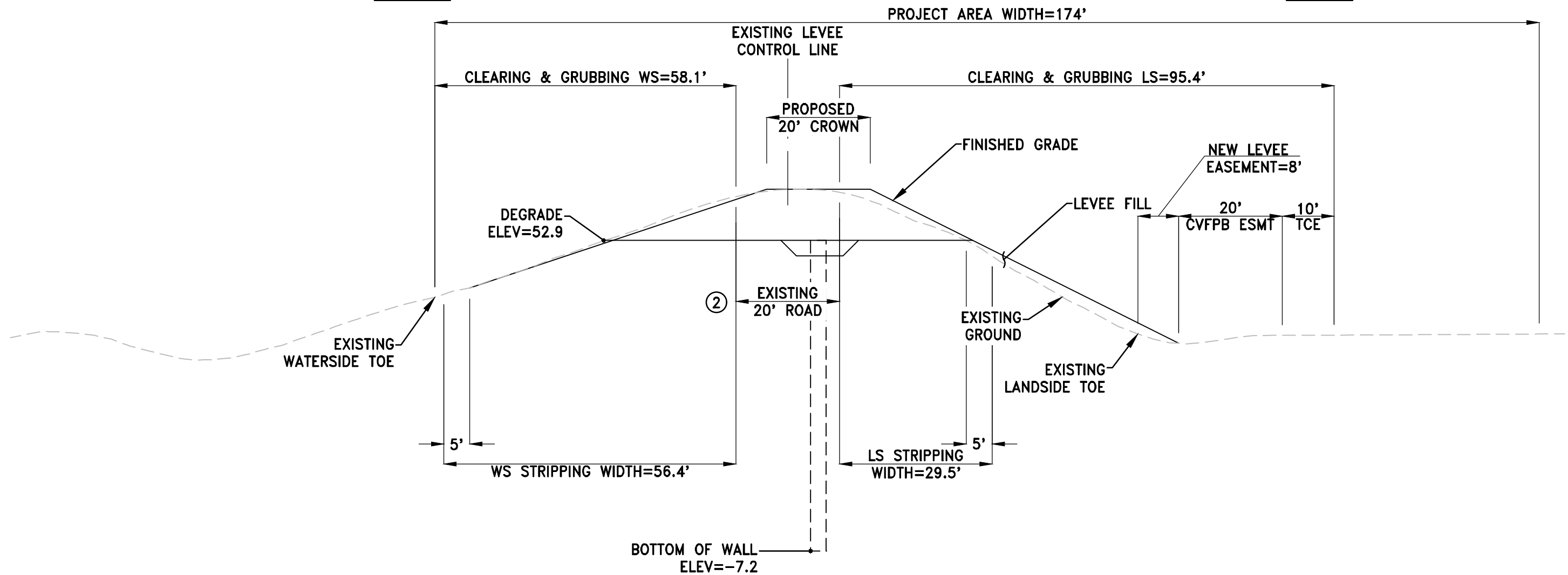
FEATHER RIVER EAST LEVEE REACH B
15' DRAINED STABILITY BERM
QUANTITY ESTIMATE CROSS SECTION



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FEATHER RIVER EAST LEVEE REACH B
STA 580+40 TO STA 640+20

WATERSIDE PROJECT AREA WIDTH=174' LANDSIDE



1/3 LEVEE DEGRADE AREA = 424 SF
CUTOFF TRENCH AREA = 24 SF
LEVEE FILL AREA = 647 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.

LEGEND

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

**NICOLAUS FLOOD RISK REDUCTION
PROGRAM FEASIBILITY STUDY**

FEATHER RIVER EAST LEVEE REACH B
60' DEEP SEEPAGE CUTOFF WALL
QUANTITY ESTIMATE CROSS SECTION

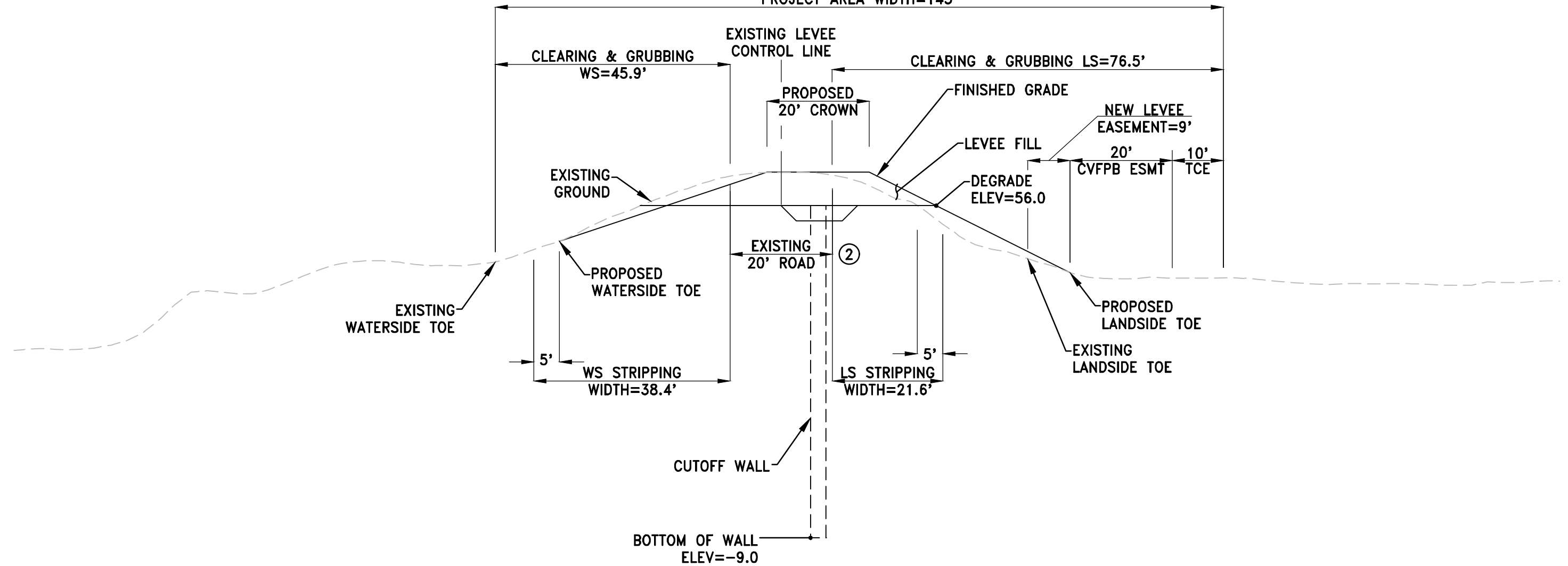
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FEATHER RIVER EAST LEVEE REACH A
STA 640+20 TO STA 700+89

WATERSIDE

LANDSIDE

PROJECT AREA WIDTH=143'



1/3 LEVEE DEGRADE AREA = 237 SF
CUTOFF TRENCH AREA = 24 SF
LEVEE FILL AREA = 396 SF

65' 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**

FEATHER RIVER EAST LEVEE REACH A
65' DEEP SEEPAGE CUTOFF WALL
QUANTITY ESTIMATE CROSS SECTION



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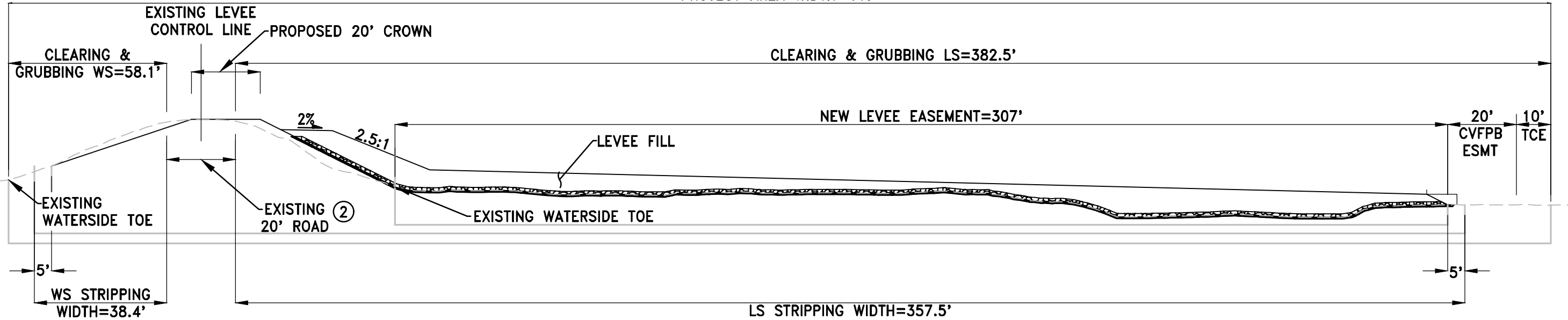
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FEATHER RIVER EAST LEVEE REACH A
STA 640+20 TO STA 700+89

WATERSIDE

LANDSIDE

PROJECT AREA WIDTH=449'



LEVEE FILL AREA = 1719 SF
DRAIN ROCK AREA = 339 SF
FILTER SAND AREA = 172 SF

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

SCALE: 1"=30'

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.

LEGEND

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

**NICOLAUS FLOOD RISK REDUCTION
PROGRAM FEASIBILITY STUDY**

FEATHER RIVER EAST LEVEE REACH A
300' COMBINATION SEEPAGE/STABILITY BERM
QUANTITY ESTIMATE CROSS SECTION



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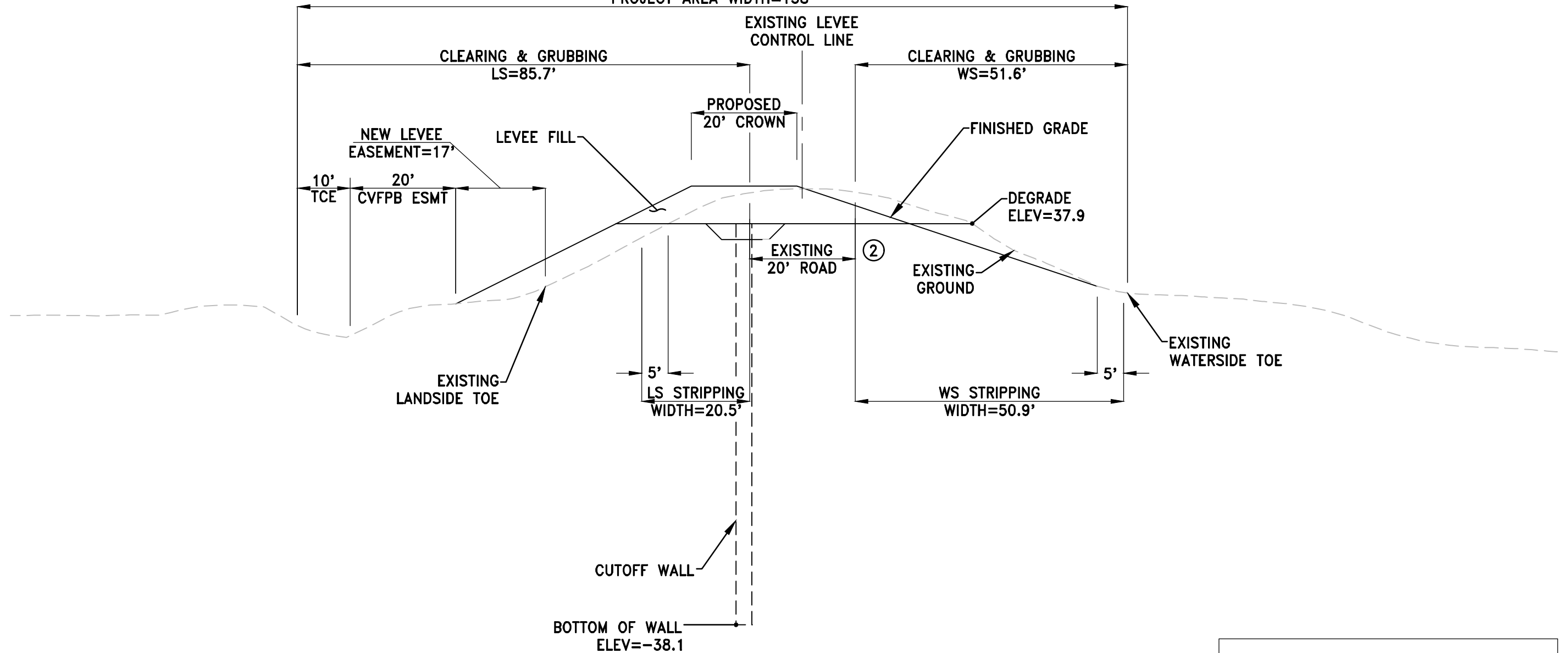
NATOMAS CROSS CANAL NORTH LEVEE REACH A

STA 0+00 TO STA 284+80

PROJECT AREA WIDTH=158'

LANDSIDE

WATERSIDE



1/3 LEVEE DEGRADE AREA = 257 SF
 CUTOFF TRENCH AREA = 24 SF
 LEVEE FILL AREA = 472 SF

76' 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

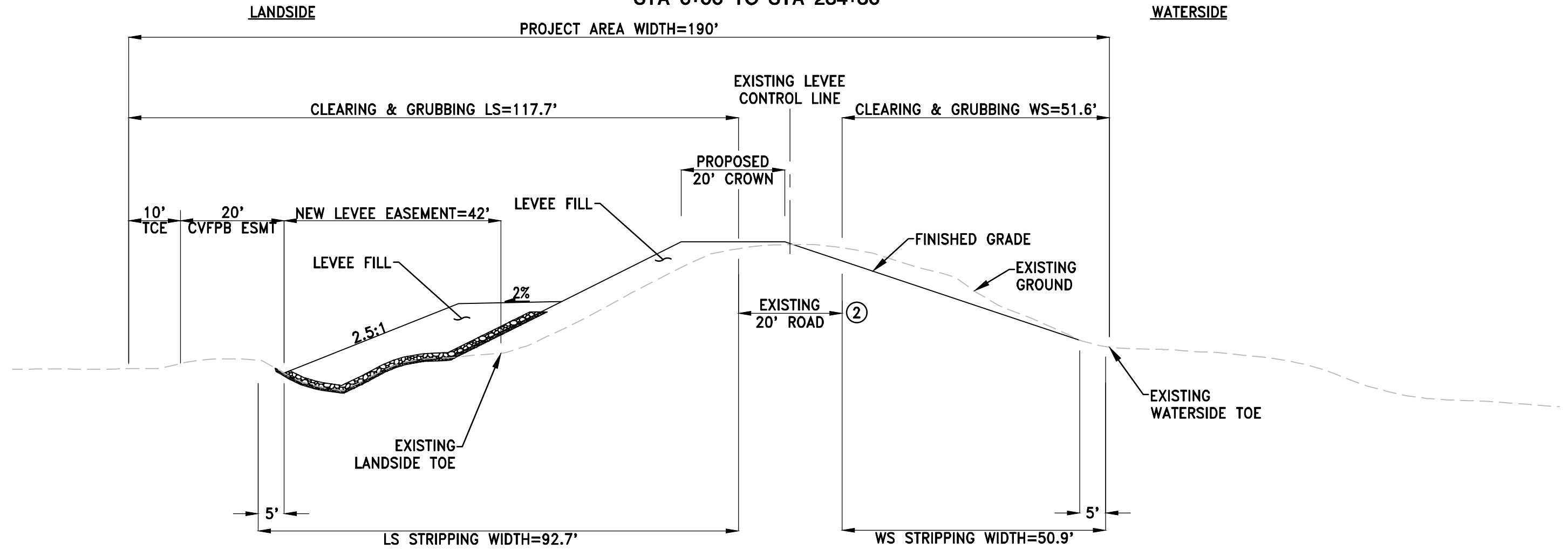
NATOMAS CROSS CANAL NORTH LEVEE REACH A
 76' DEEP SEEPAGE CUTOFF WALL
 QUANTITY ESTIMATE CROSS SECTION



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NATOMAS CROSS CANAL NORTH LEVEE REACH A
STA 0+00 TO STA 284+80



LEVEE FILL AREA = 533 SF
DRAIN ROCK AREA = 52 SF
FILTER SAND AREA = 29 SF

20' WIDE DRAINED 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 6 FOR DRAINED STABILITY BERM TYPICAL SECTION.

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

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**NICOLAUS FLOOD RISK REDUCTION
PROGRAM FEASIBILITY STUDY**
NATOMAS CROSS CANAL NORTH LEVEE REACH A
20' DRAINED STABILITY BERM
QUANTITY ESTIMATE CROSS SECTION

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