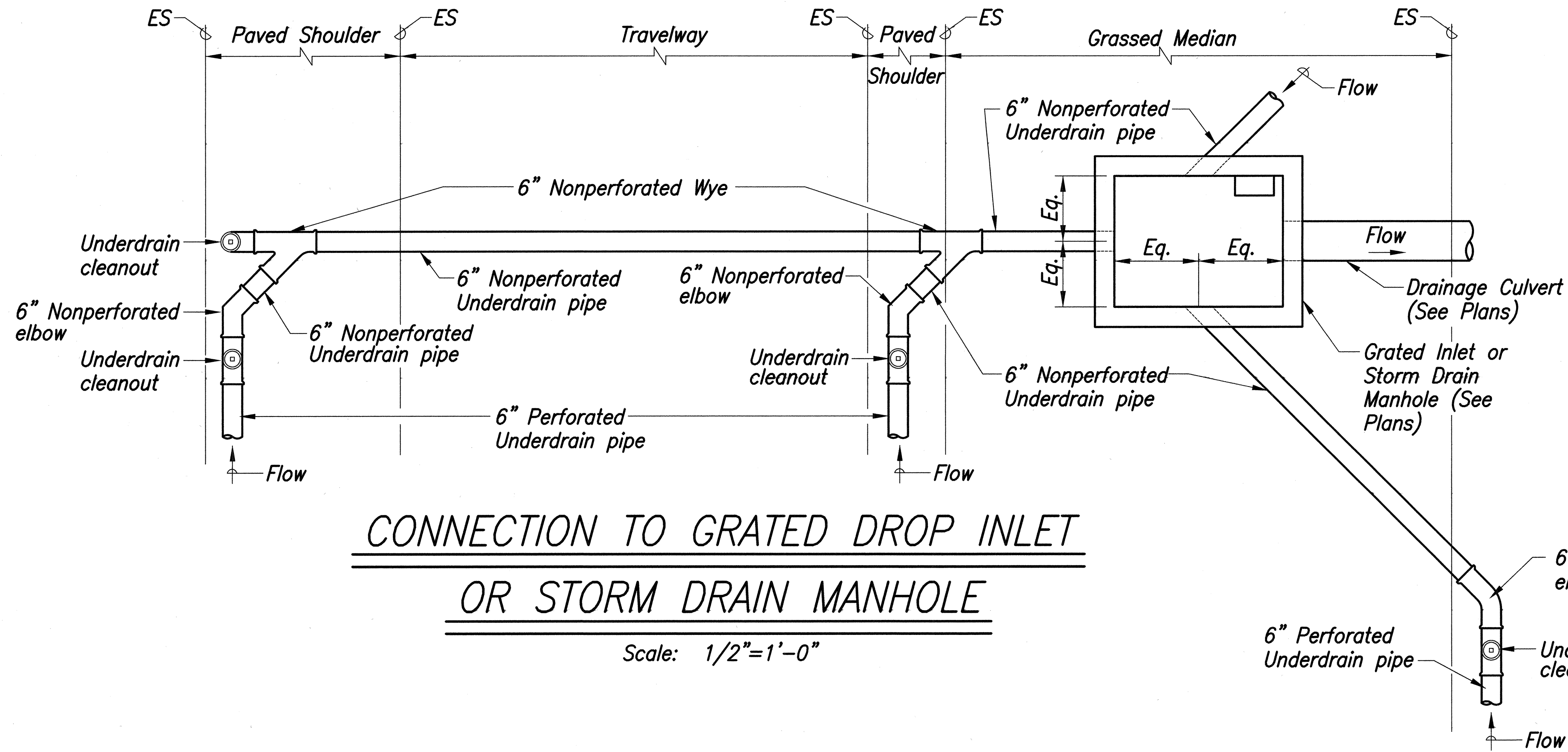
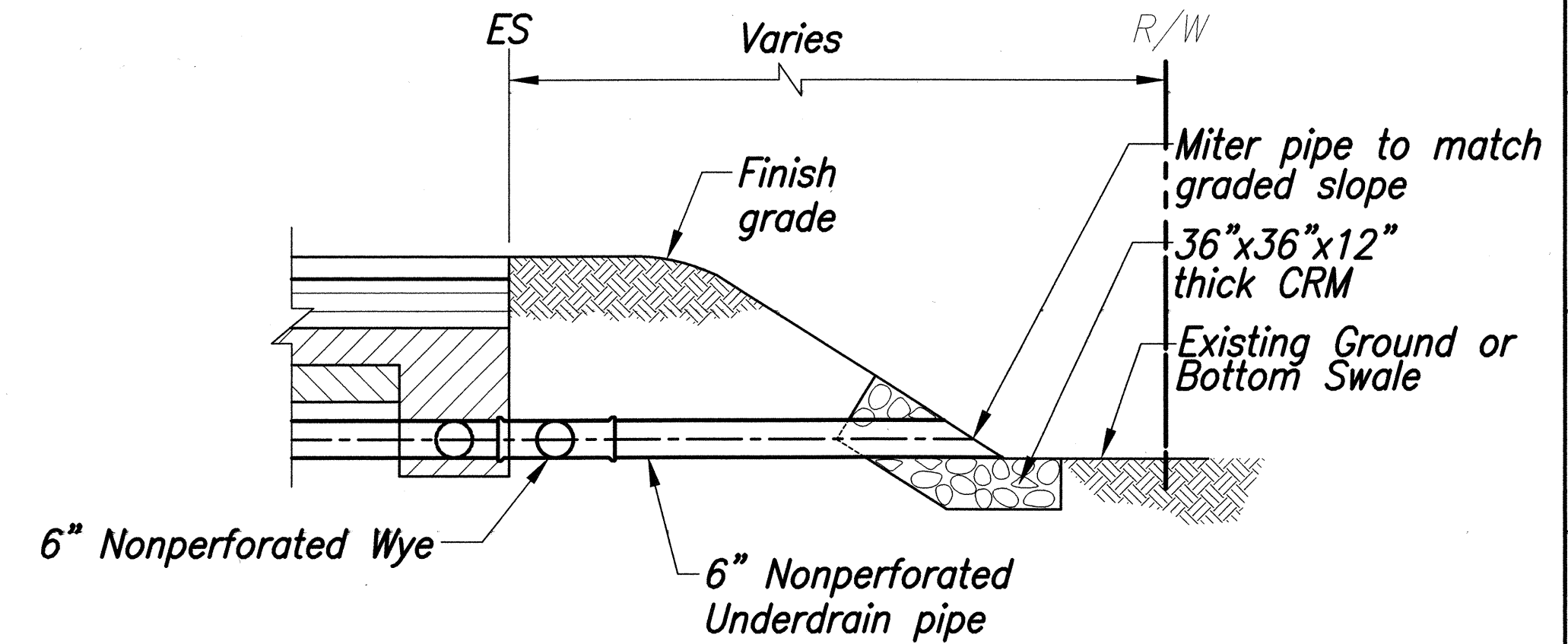


| FED. ROAD DIST. NO. | STATE | FEDERAL - AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------------------|-------------|-----------|--------------|
| HAWAII | HAW. | NH-A311(3) | 2002 | 65 | 159 |



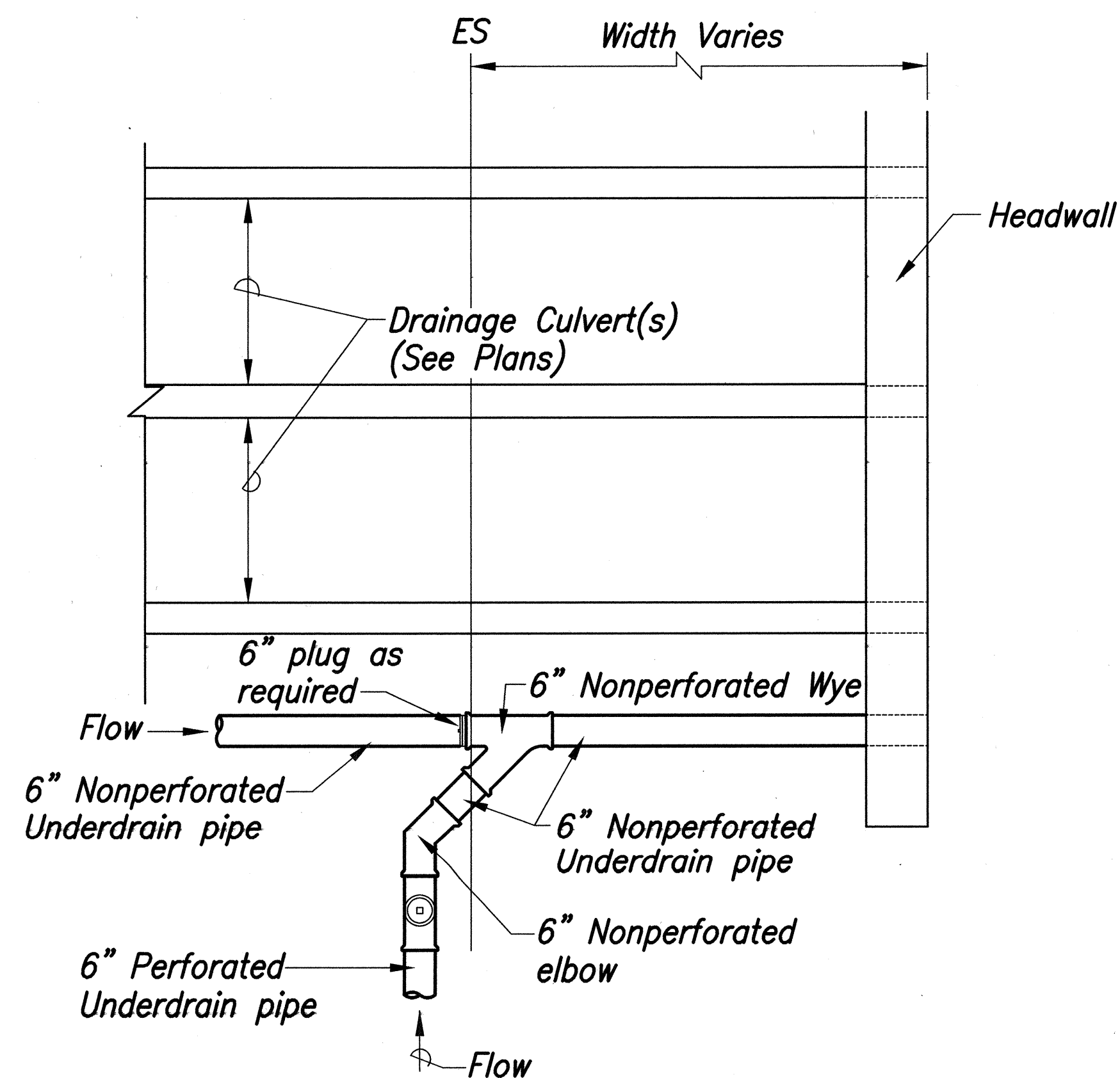
CONNECTION TO GRATED DROP INLET OR STORM DRAIN MANHOLE

Scale: 1/2"=1'-0"



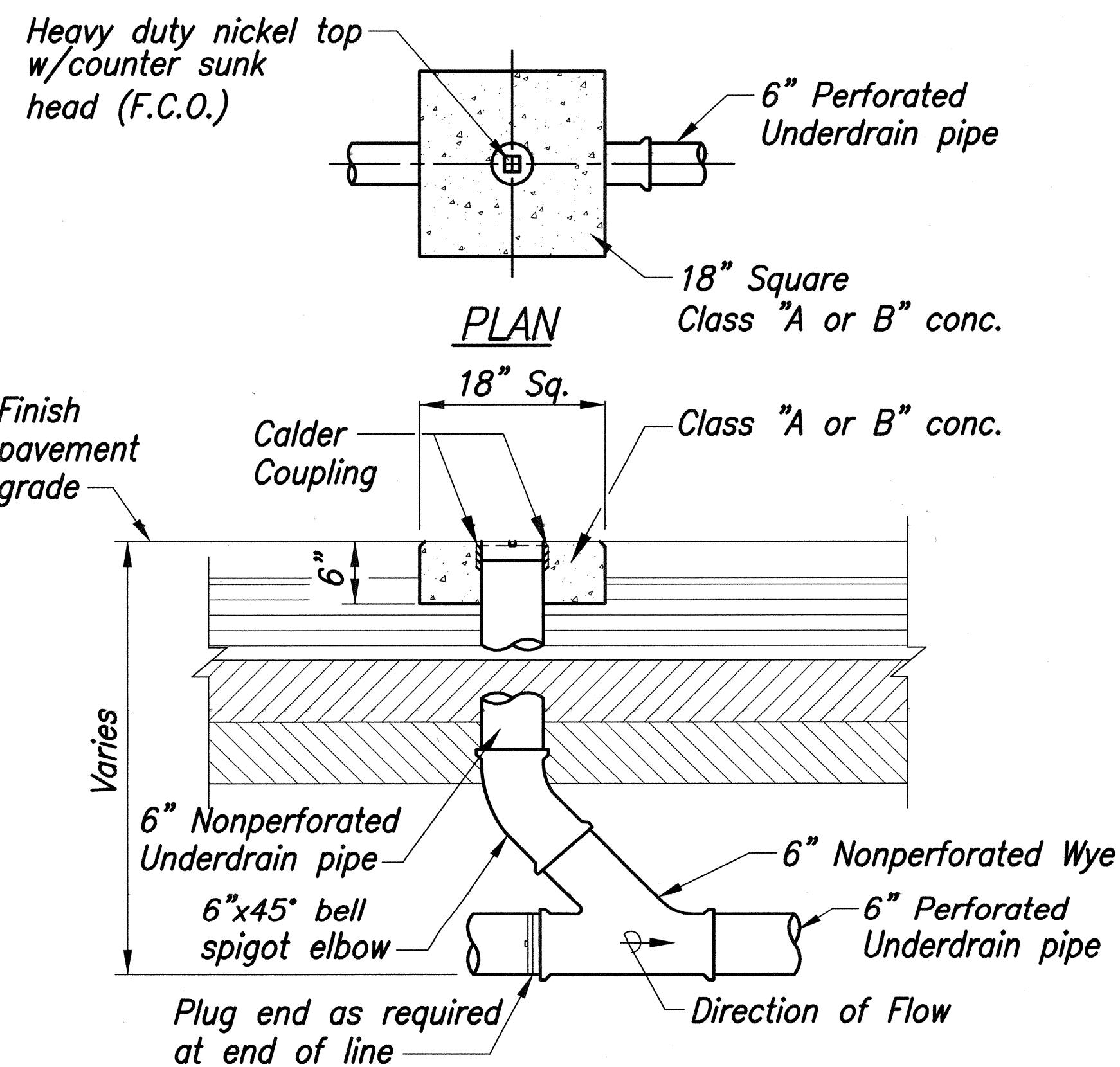
6" UNDERDRAIN OUTLET

Scale: 1/2"=1'-0"



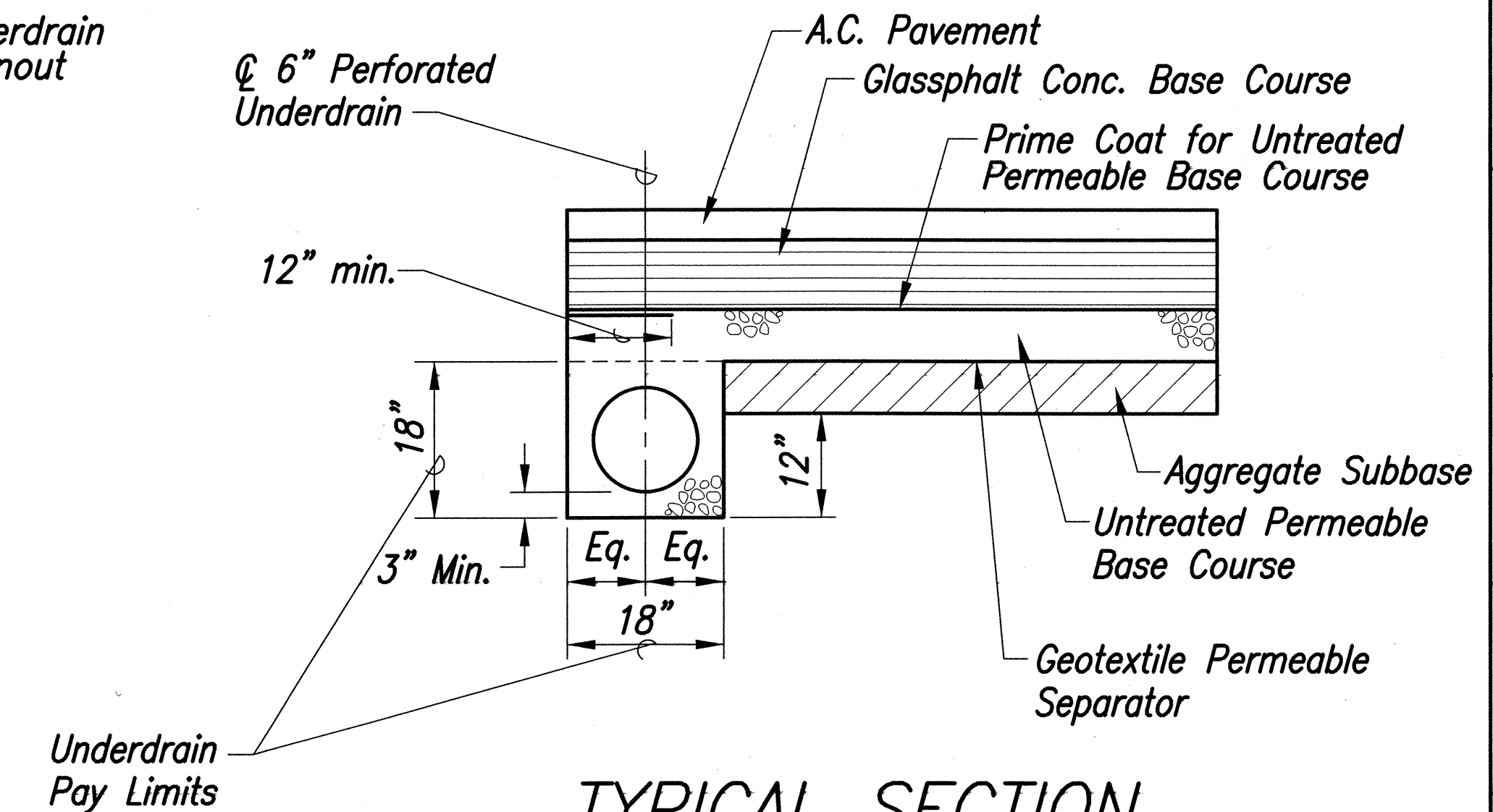
CONNECTION TO HEADWALL

Scale: 1/2"=1'-0"



UNDERDRAIN CLEANOUT

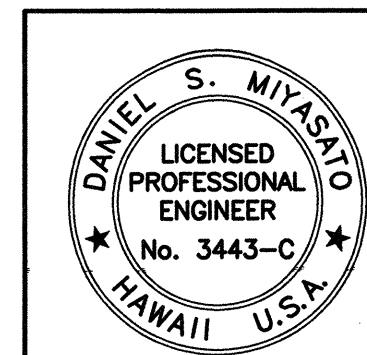
Scale: 1"=1'-0"



TYPICAL SECTION 6" PERFORATED UNDERDRAIN

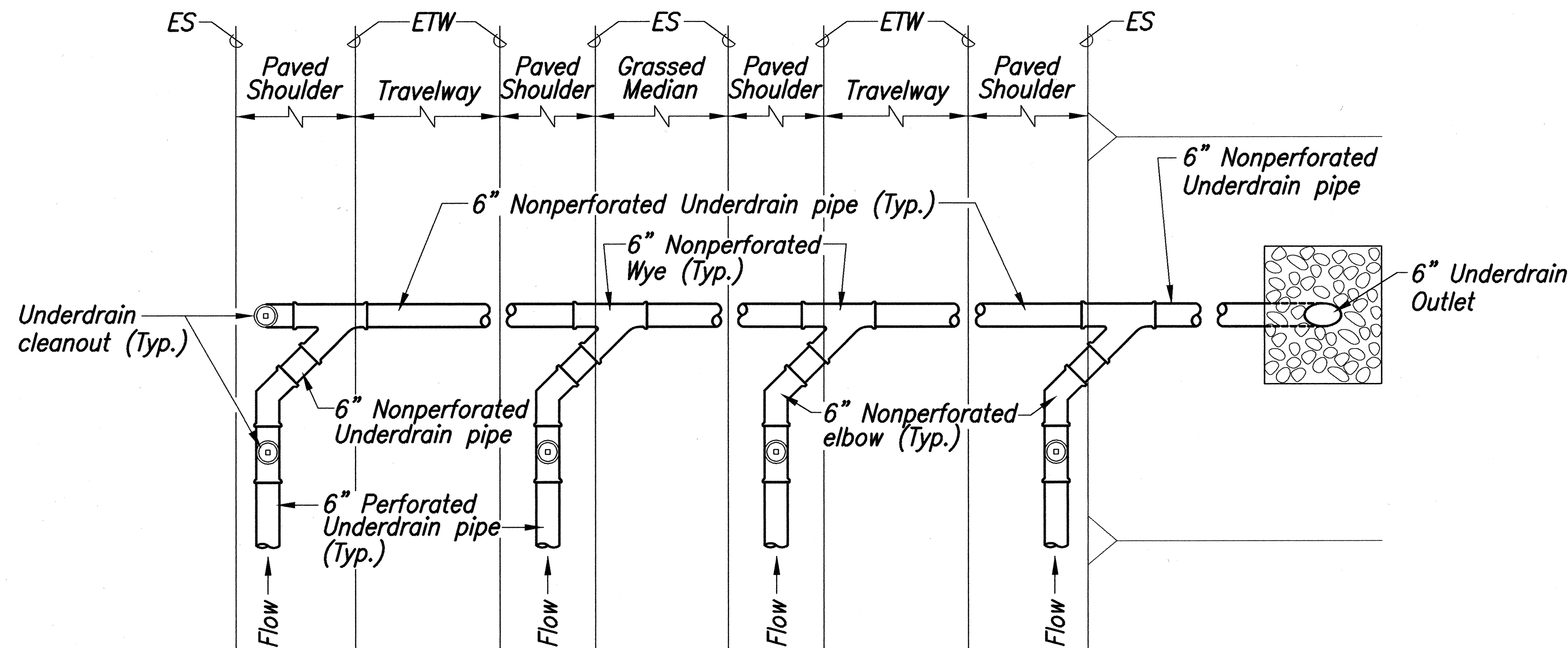
Scale: 3/4"=1'-0"

| | | |
|---------------|-------------------|------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
| NOTE BOOK | DRAWN BY | |
| | DESIGNED BY | |
| | CHECKED BY | |
| | QUANTITIES BY | |
| | CHECKED BY | |
| | No. | |



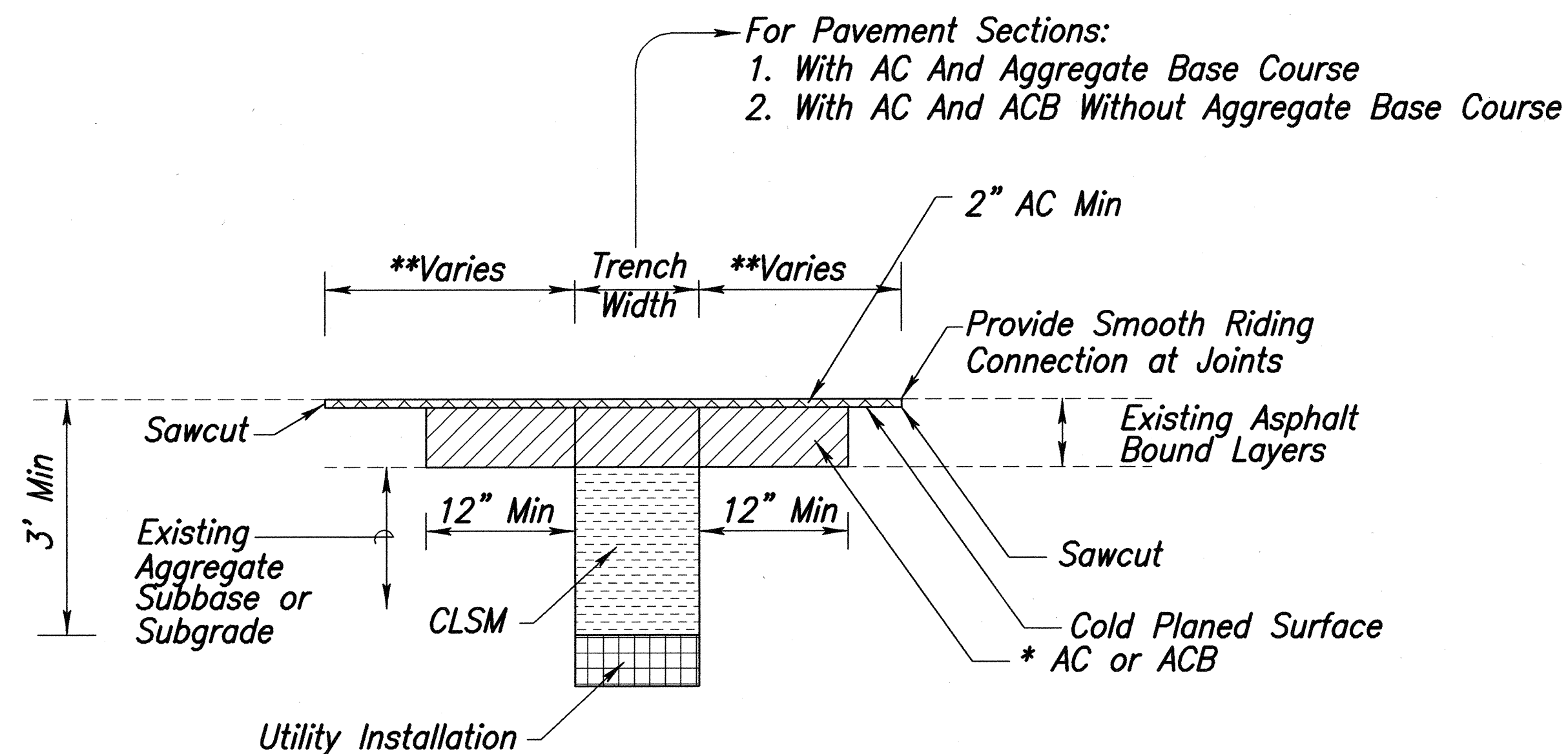
| |
|---|
| STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION MISCELLANEOUS DETAILS PUUNENE AVENUE WIDENING Kuihelani Highway to Hansen Road And MOKULELE HIGHWAY WIDENING Hansen Road to Vicinity of Cane Haul Road Crossing Federal - Aid Project No. NH-A311(3) Scale: As Noted Date: October 2001 SHEET No. 1 OF 4 SHEETS |
|---|

| FED. ROAD DIST. NO. | STATE | FEDERAL - AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------------------|-------------|-----------|--------------|
| HAWAII | HAW. | NH-A311(3) | 2002 | 66 | 159 |



CONNECTION TO UNDERDRAIN OUTLET

Scale: Not to Scale



* NOTES:

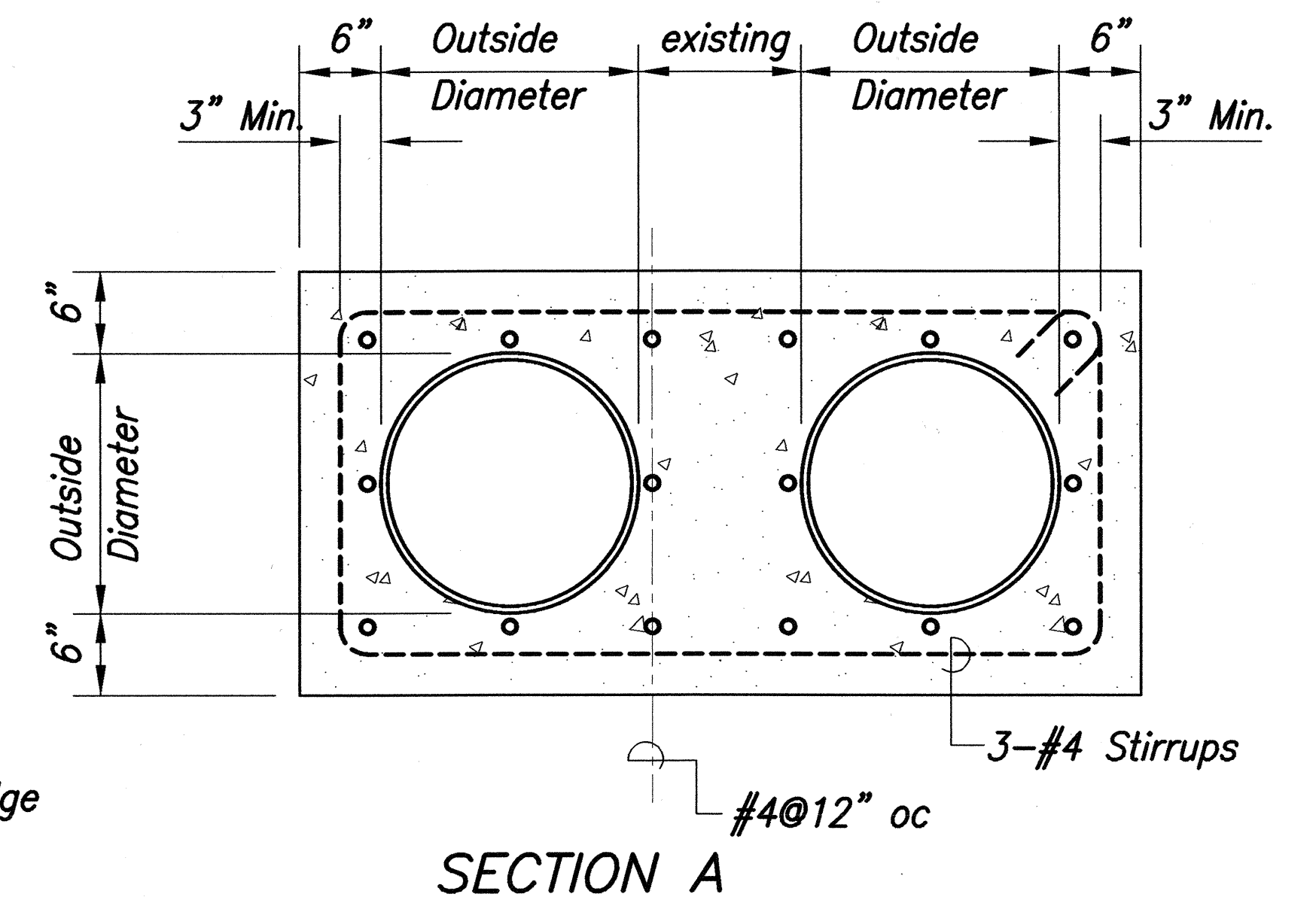
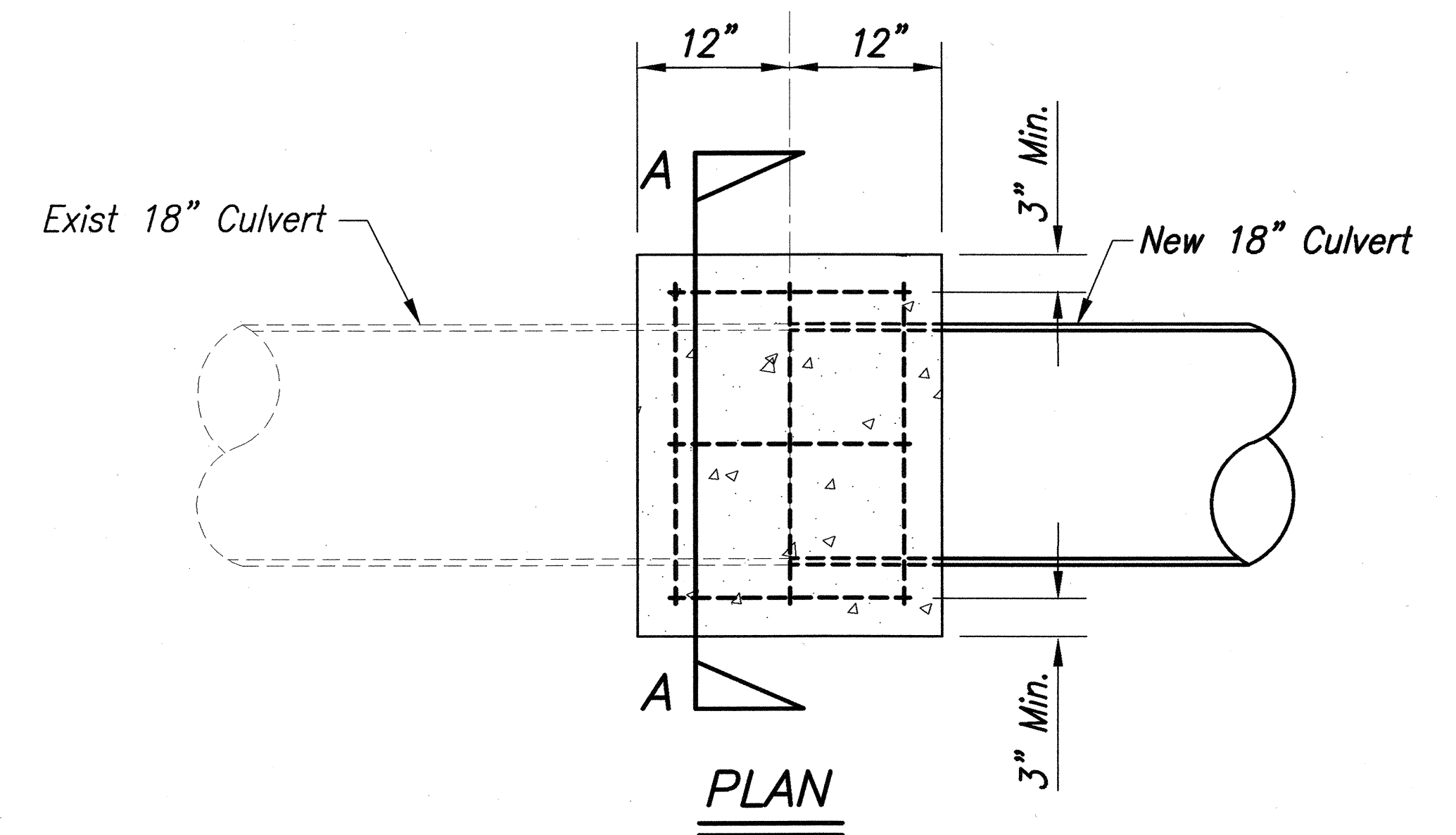
- When Thickness Less Than 8", use AC
- When Thickness 6" or Greater, use ACB or AC

** NOTES:

- If Trench Aligned Transverse to Direction of Travel 1 Foot on Each Side of Trench.
- If Trench Aligned Along Direction of Travel, to Edge of Lane in Which Edge of Trench Is Located.
- Smoothness of Paved Surfaces: The Distance From The Paved Surface to the Testing Edge of a Ten-foot Straight Edge Between Two Points of Contact Shall Not Exceed 3/16".

NOTES:

- This Trench Restoration is to be Used Wherever the Pavement is an Asphalt Surface, Including Medians and Paved Areas Between Guardrails. For Trenches Located in Unpaved Areas, the Backfill Need Not be CLSM and can be Backfilled as Specified in the Standard Specifications.
- Tack Coat Existing Asphalt Bound Material Faces Prior to Filling Excavation With Asphalt Bound Material.
- When Groundwater is Encountered in Trenches, Backfill With Gravel Conforming to ASTM C-33, Size 67, Encapsulated with Permeable Separator.



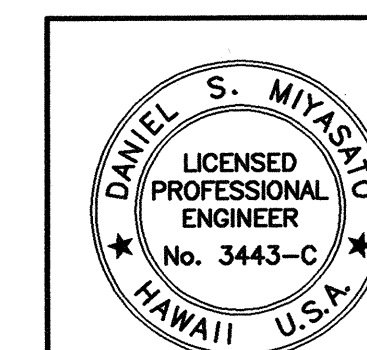
CONCRETE COLLAR DETAIL

Scale: Not to Scale

ASPHALT PAVEMENT RESTORATION OVER TRENCH EXCAVATIONS FOR EXISITNG PAVEMENTS WITHOUT PERMEABLE BASE

Not to Scale

| | |
|--------|-----------------------|
| 1/8/02 | Revise Trench Section |
| DATE | REVISION |



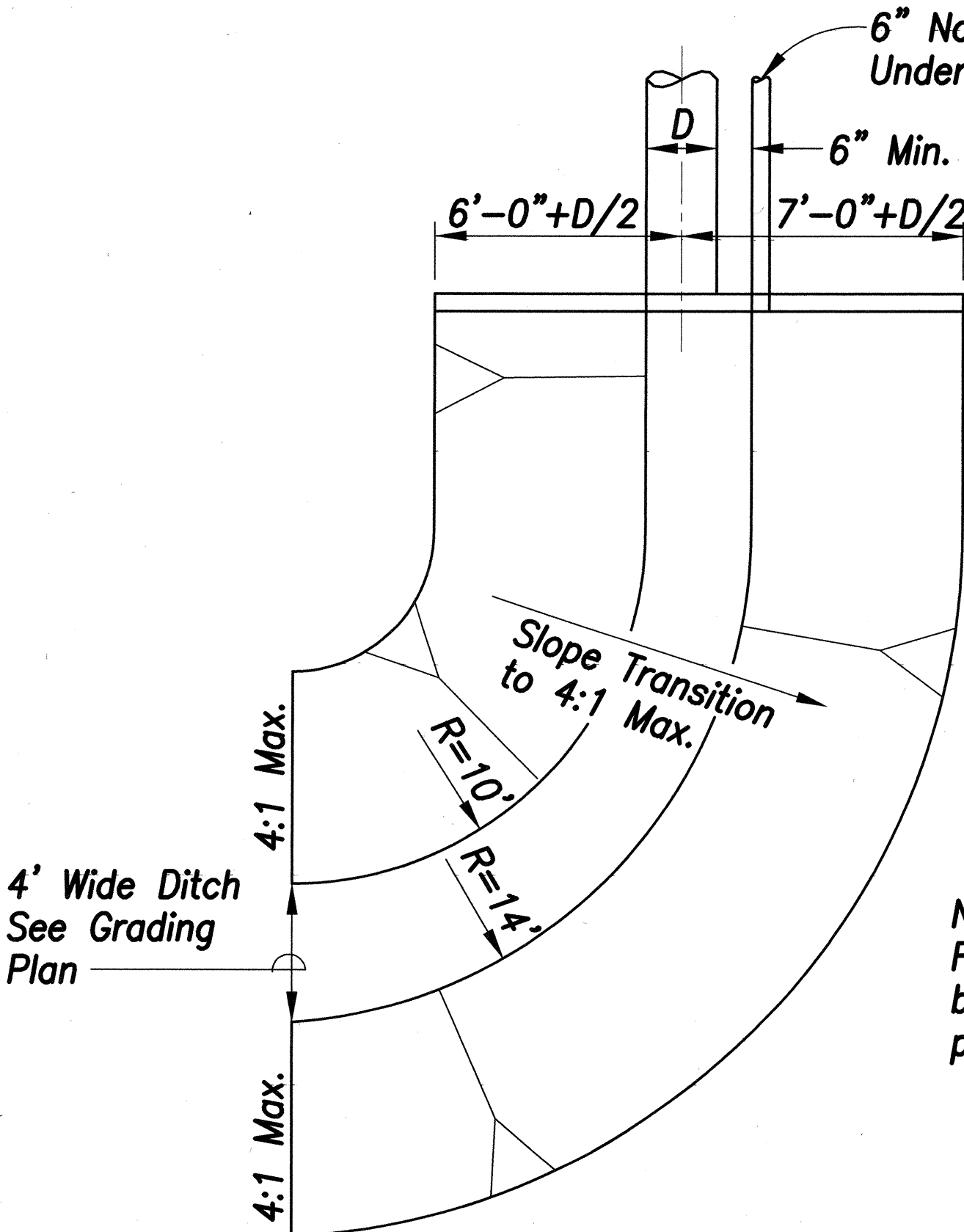
THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MISCELLANEOUS DETAILS
PUUNENE AVENUE WIDENING
Kuihelani Highway to Hansen Road
And
MOKULELE HIGHWAY WIDENING
Hansen Road to Vicinity of
Cane Haul Road Crossing
Federal - Aid Project No. NH-A311(3)
Scale: None Date: October 2001
SHEET No. 2 OF 4 SHEETS

ADD.66

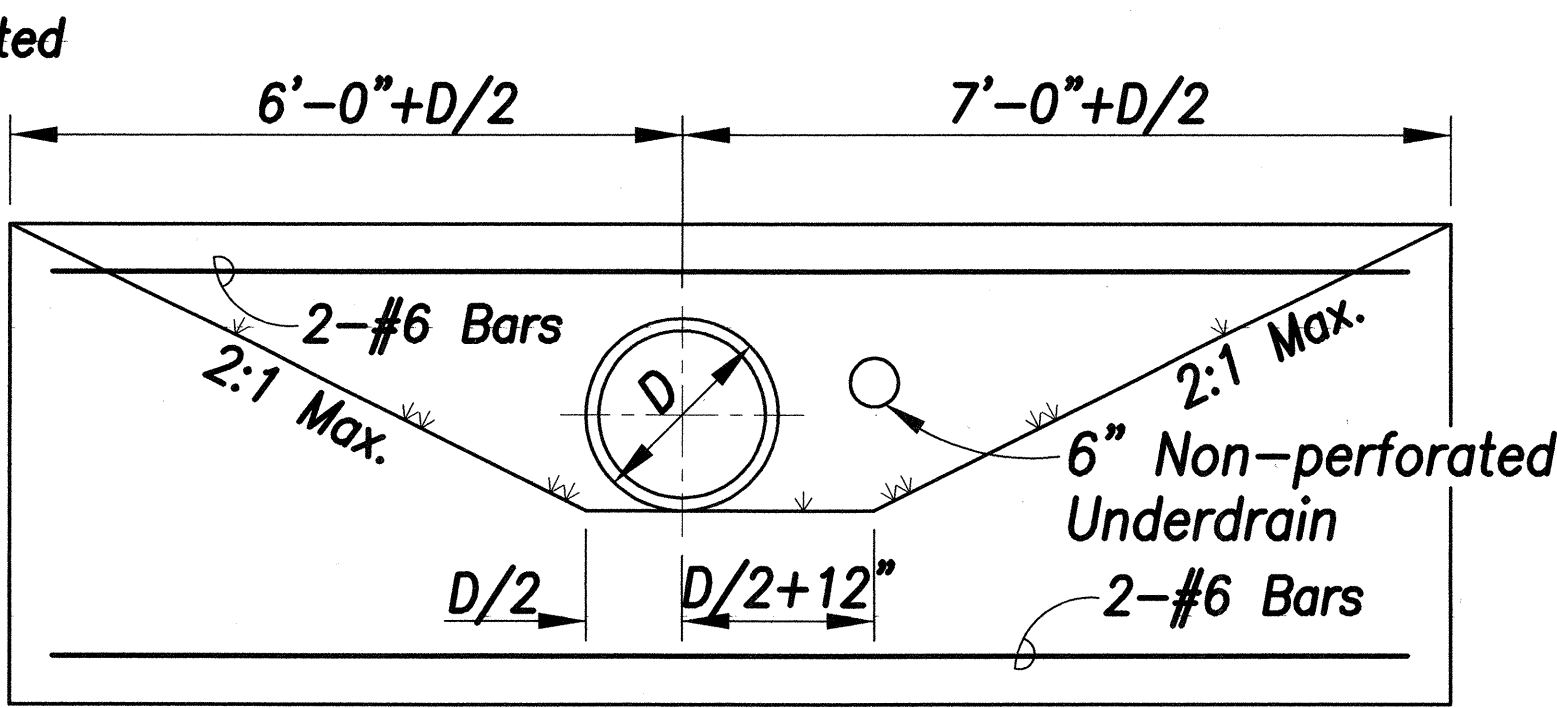
| | |
|---------------|------|
| ORIGINAL PLAN | DATE |
| DRAWN BY | |
| DESIGNED BY | |
| CHECKED BY | |
| NO. | |

| FED. ROAD DIST. NO. | STATE | FEDERAL - AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------------------|-------------|-----------|--------------|
| HAWAII | HAW. | NH-A311(3) | 2002 | 67 | 159 |

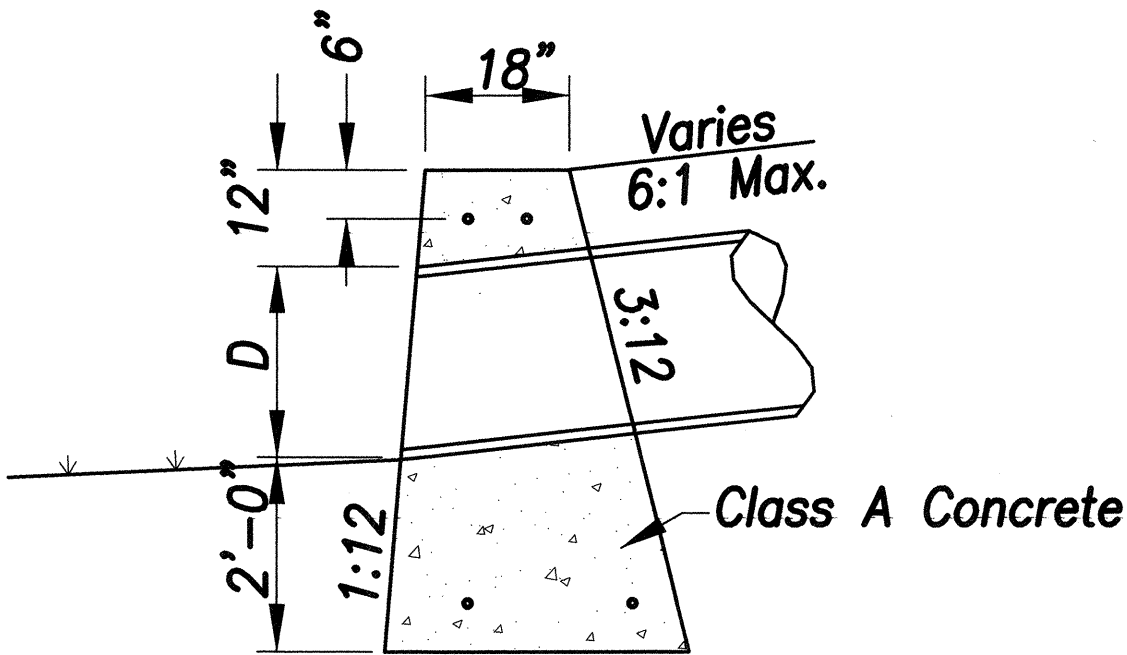


PLAN
Scale: 1/4"=1'-0"

Note:
For general notes &
bevel detail see std.
plan H-16.

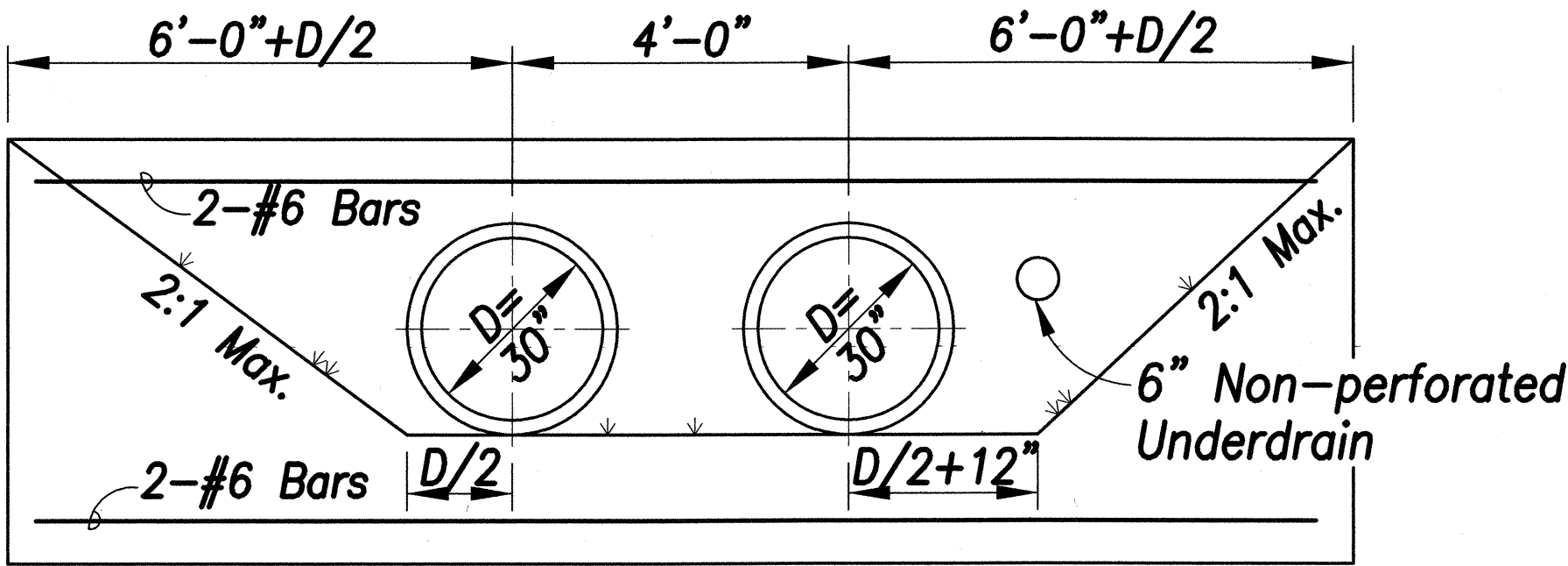


ELEVATION
Scale: 1/2"=1'-0"



SECTION
Scale: 1/2"=1'-0"

CONCRETE HEADWALL FOR SINGLE PIPE OUTLET

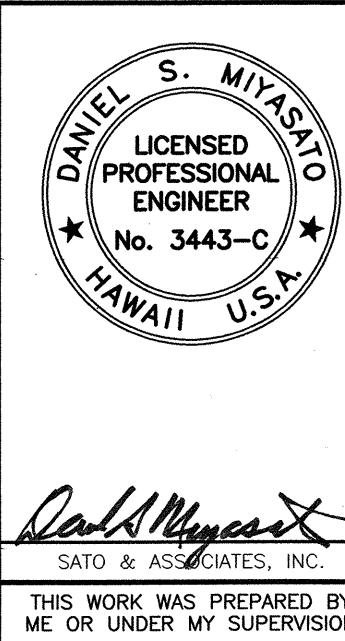


ELEVATION

CONCRETE HEADWALL FOR DUAL 30" DRAIN

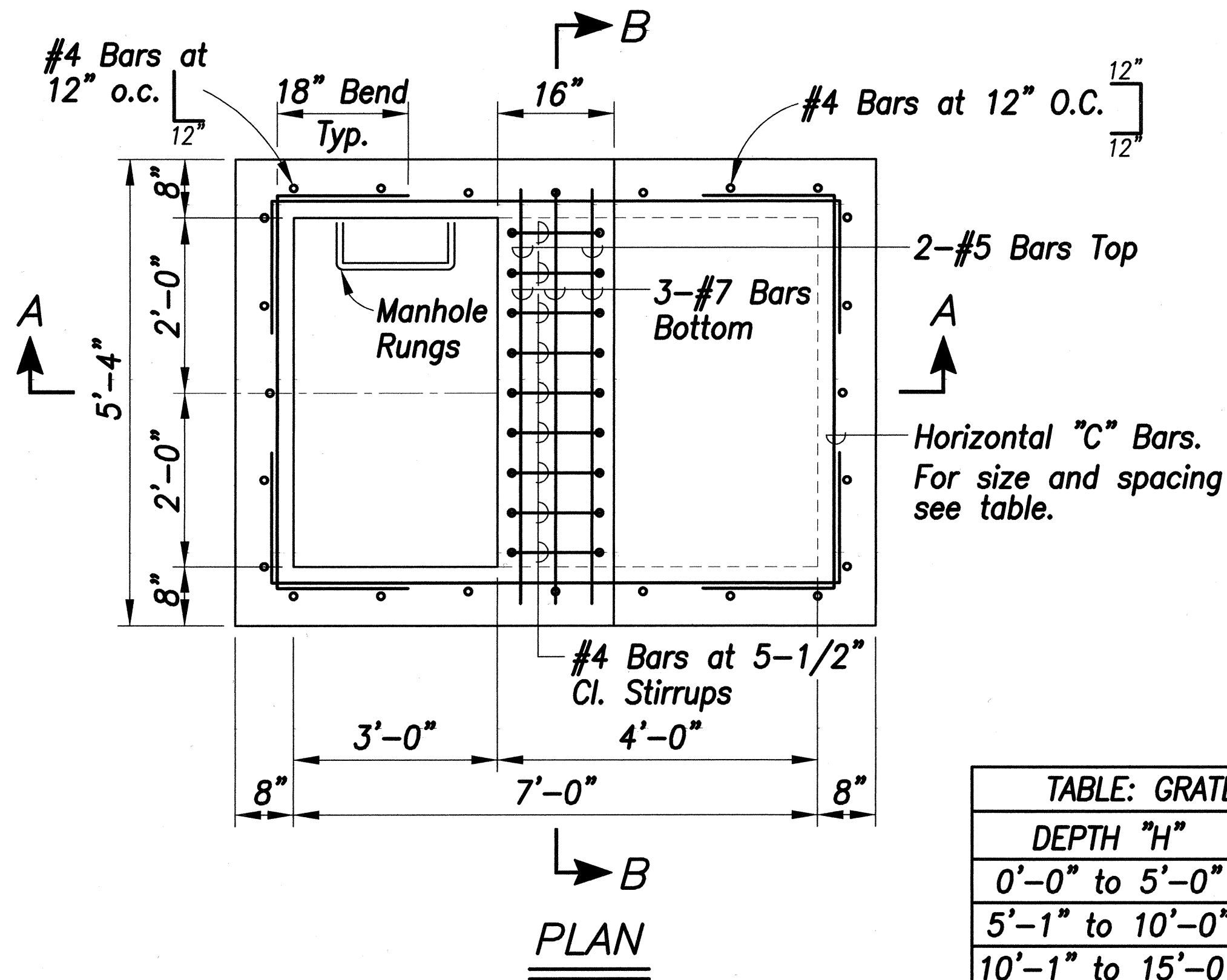
Scale: 1/2"=1'-0"

| | |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY | |
| DESIGNED BY | |
| NOTED BY | |
| CHECKED BY | |
| ORIGINAL PLAN | No. |

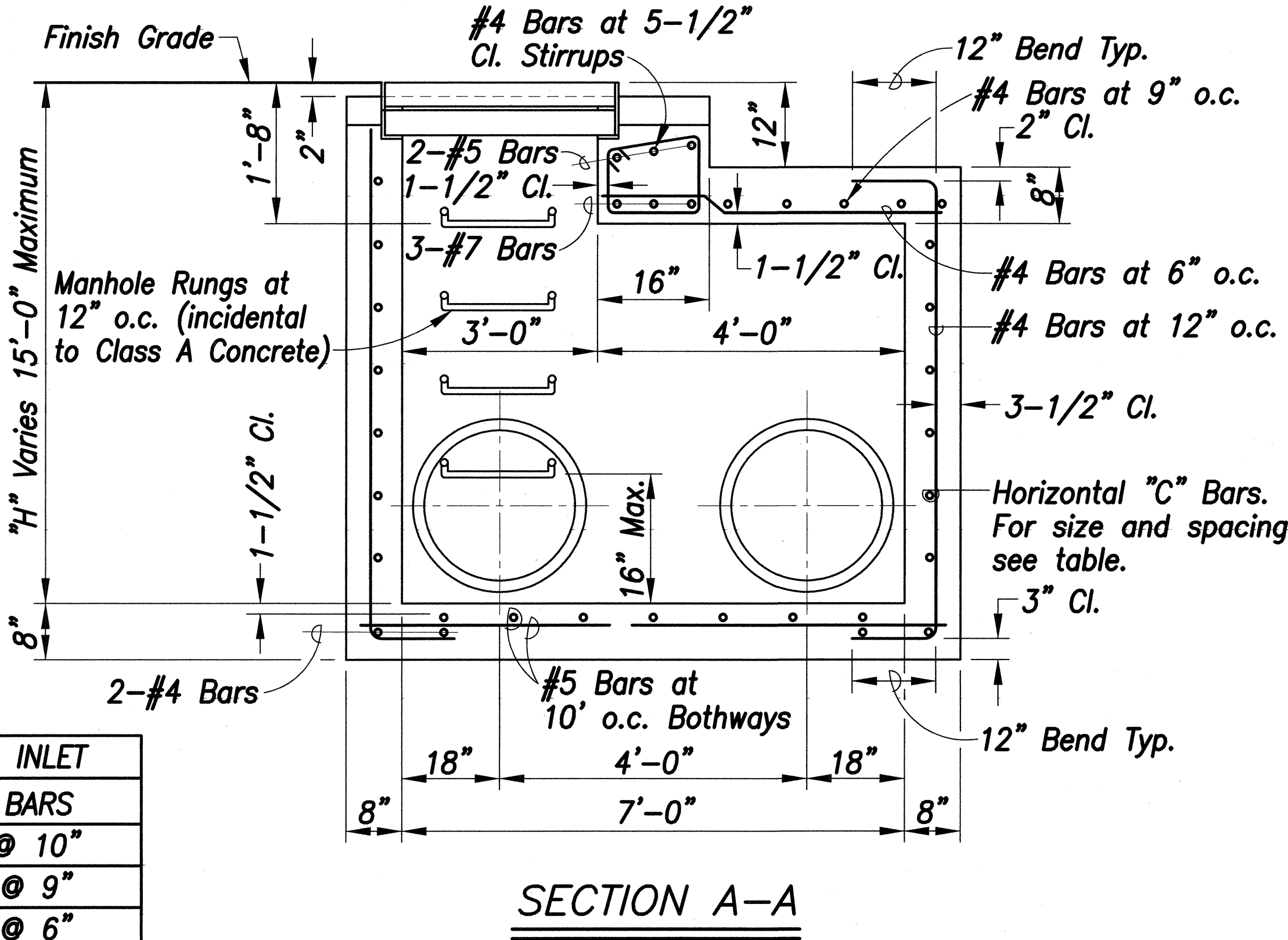


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MISCELLANEOUS DETAILS
*PUUNENE AVENUE WIDENING
Kuihelani Highway to Hansen Road
And
MOKULELE HIGHWAY WIDENING
Hansen Road to Vicinity of
Cane Haul Road Crossing
Federal - Aid Project No. NH-A311(3)*
Scale: As Noted Date: October 2001
SHEET No. 3 OF 4 SHEETS

| FED. ROAD DIST. NO. | STATE | FEDERAL - AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-------------------------|-------------|-----------|--------------|
| HAWAII | HAW. | NH-A311(3) | 2002 | 68 | 159 |

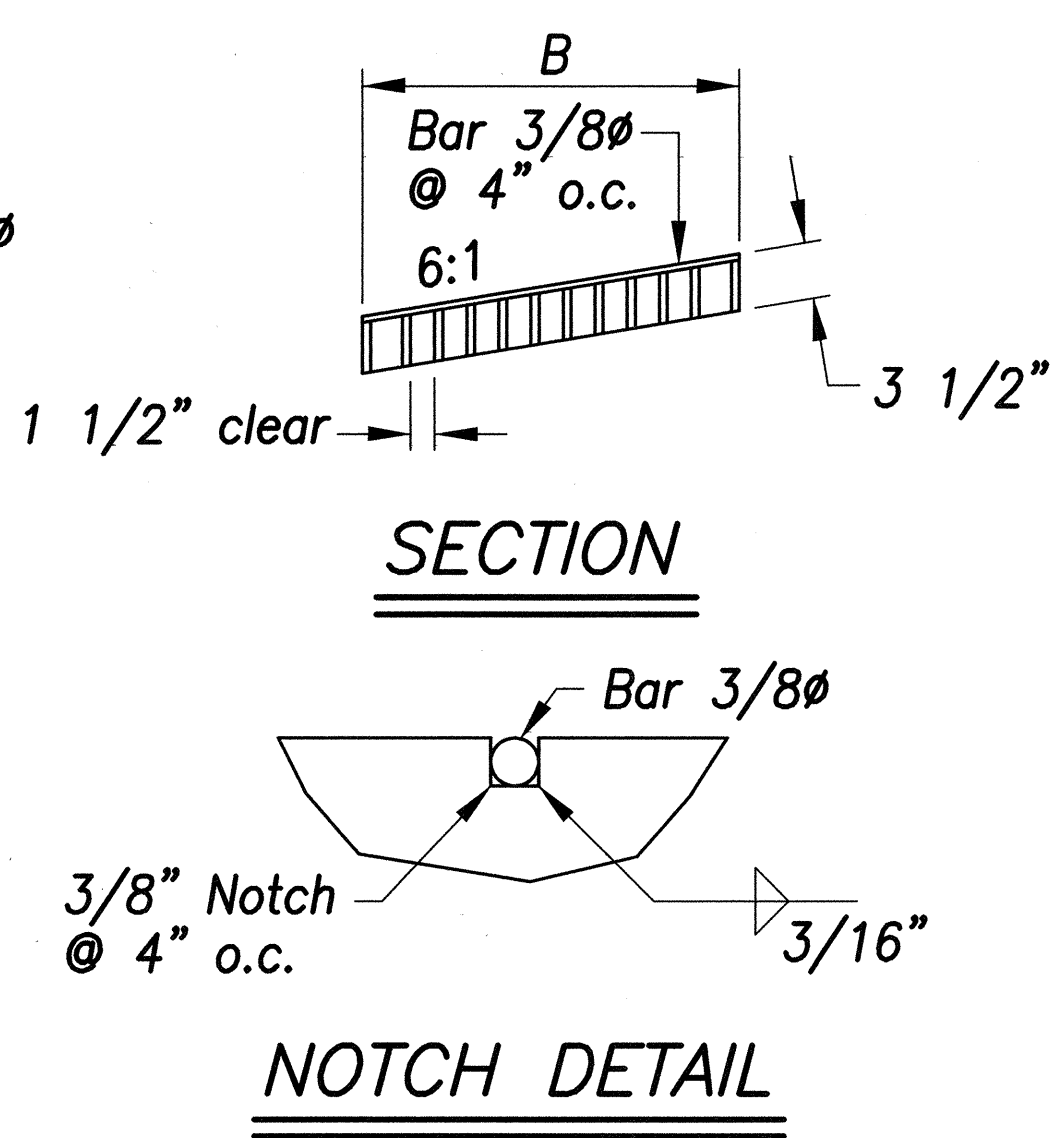
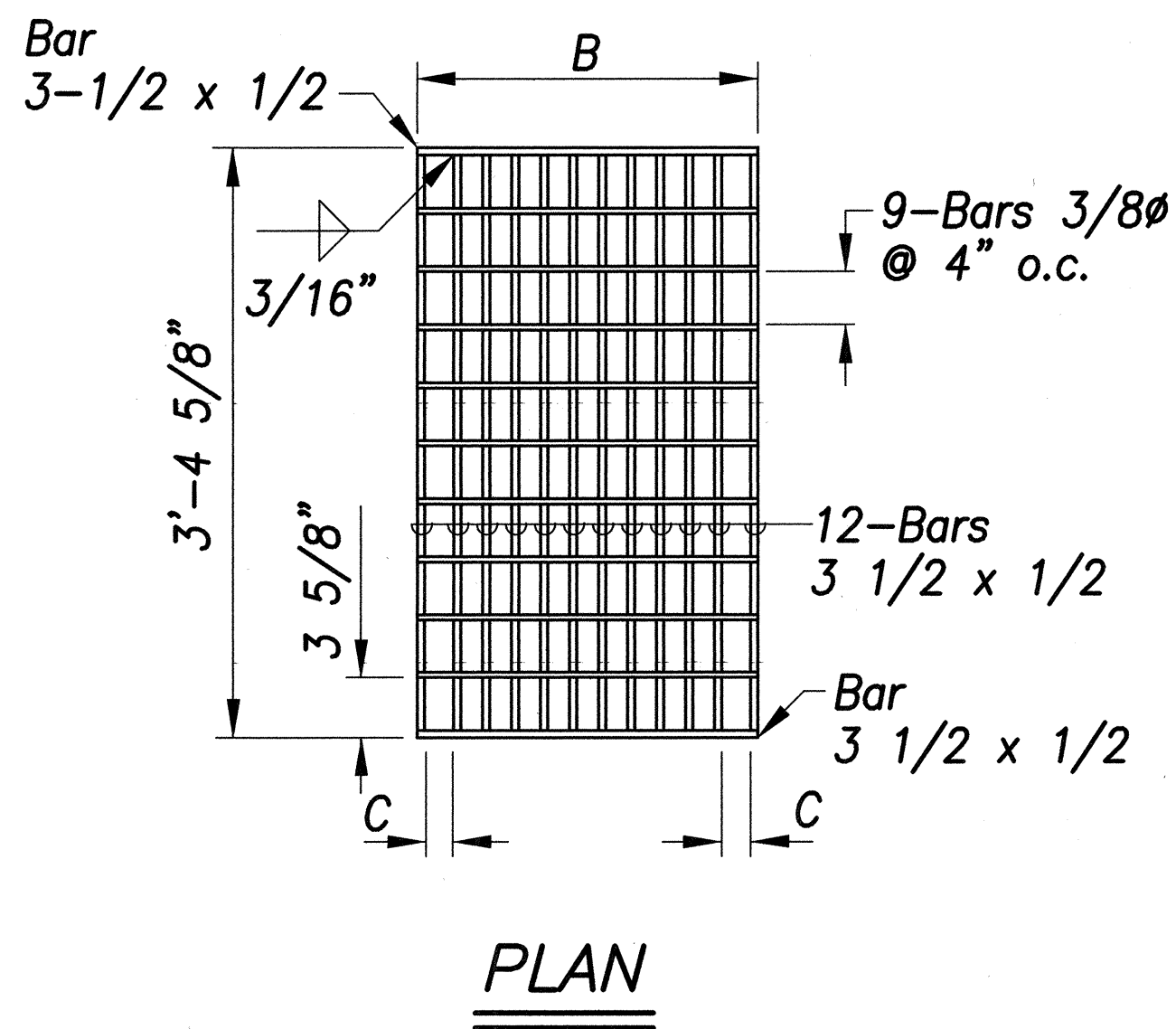


| TABLE: GRATED DROP INLET | |
|--------------------------|----------|
| DEPTH "H" | "C" BARS |
| 0'-0" to 5'-0" | #4 @ 10" |
| 5'-1" to 10'-0" | #5 @ 9" |
| 10'-1" to 15'-0" | #5 @ 6" |



MODIFIED TYPE 61614 GRATED DROP INLET

Scale: 3/4"=1'-0"

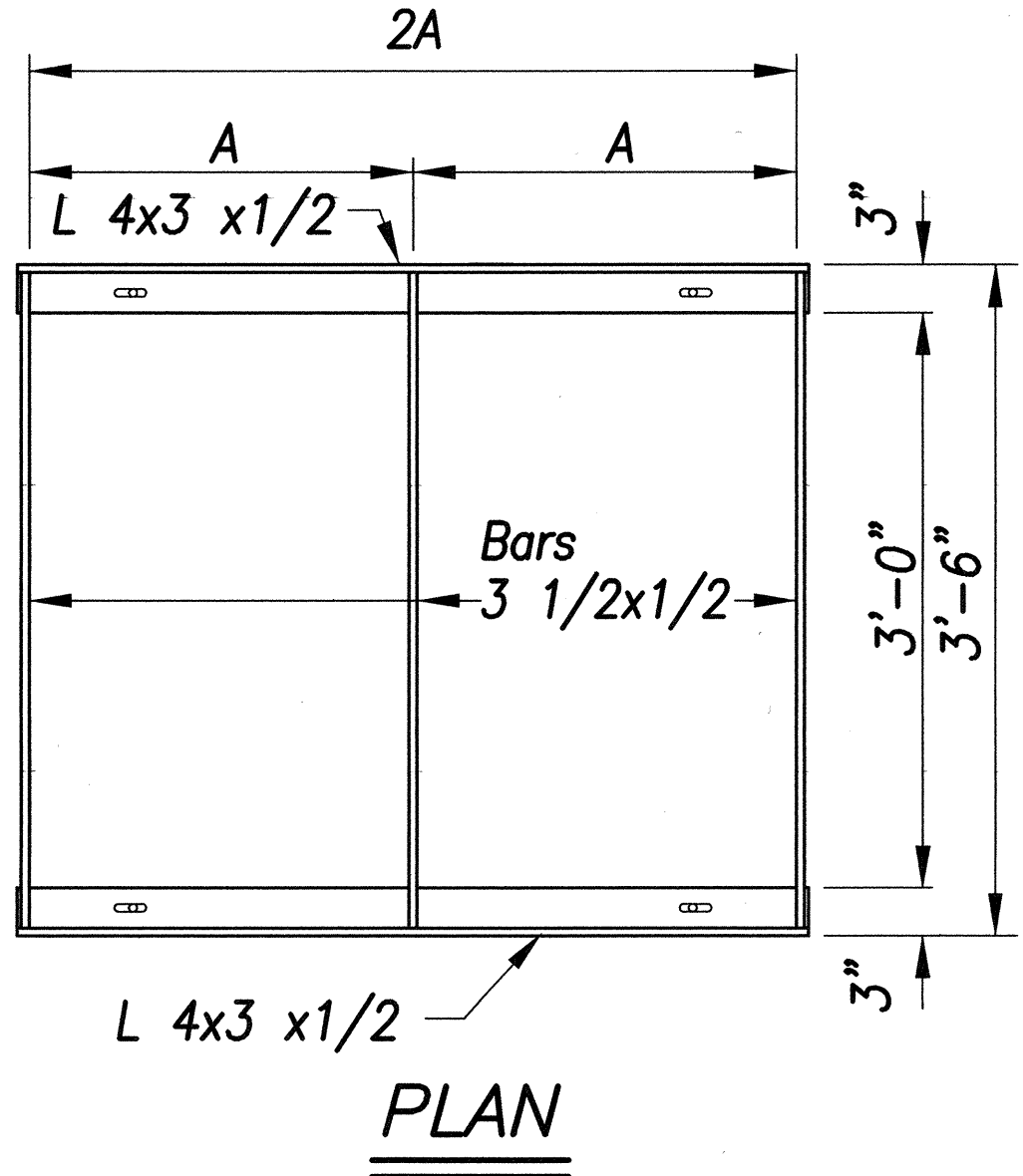


GRATE

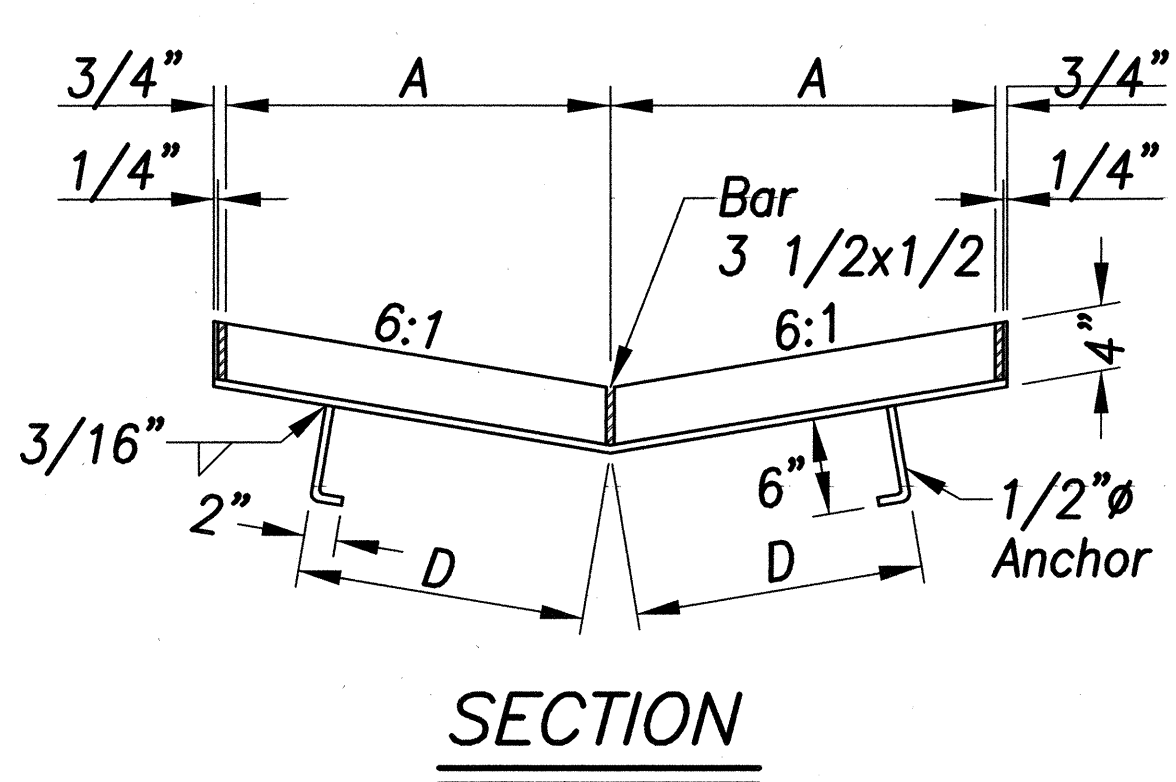
| DIMENSIONS | | | | | |
|------------|----------|-------|------------|----------|-------|
| TYPE | NO. BARS | A | B | C | D |
| 61614P | 12 | 2'-0" | 1'-11 1/2" | 2" | 1'-6" |
| 61616P | 18 | 3'-0" | 2'-11 3/8" | 1 15/16" | 2'-0" |

TYPE 61614P & 61616P STEEL GRATES

Scale: 1"=1'-0"



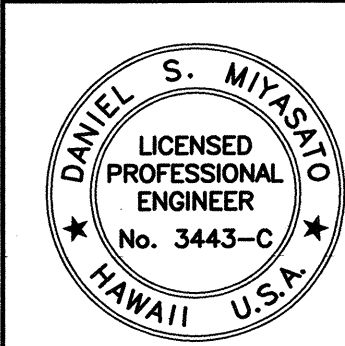
FRAME



GENERAL NOTES

1. Frames and Grates shall be hot dip galvanized after fabrication
2. All welds 3/8" unless otherwise noted
3. Use in locations off the road bed on all types of highways. (Pedestrian safe)

| | |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY | |
| DESIGNED BY | |
| QUANTITIES BY | |
| CHECKED BY | |
| ORIGINAL PLAN | |
| NOTE BOOK | |
| No. | |



SATO & ASSOCIATES, INC.
THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MISCELLANEOUS DETAILS
PUUNENE AVENUE WIDENING
Kuihelani Highway to Hansen Road
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Federal - Aid Project No. NH-A311(3)
Scale: As Noted Date: October 2001
SHEET No. 4 OF 4 SHEETS