



United States
Department of
Agriculture

Soil
Conservation
Service

P.O. Box 1458
Bismarck, ND
58502

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Construction ND-3

TECHNICAL NOTE - ENGINEERING ~~ND-6 (REVISED)~~

SUBJECT: GUIDELINES FOR JUDGING ACCEPTABILITY OF CONSTRUCTION OF
CONSERVATION MEASURES

Conservation measures should be constructed in a workmanship like manner. Adherence to the design shall be what a competent operator using appropriate equipment in good condition can achieve as routine. The finish shall be such that the landuser can conduct further cultural operations using regular farm equipment.

The job shall be pleasing in appearance with no objectionable mounds or depressions that would adversely affect the functioning or stability of the conservation measure.

Hydraulic grades and sections shall be uniform with smooth transitions between design reaches. There shall be no abrupt changes in section or grade within a design reach.

When judging the acceptability of construction, the entire structure should be considered as a unit. Overall structural dimensions should be the dimensions contained in the plan. The contractor should expect to build to those dimensions. A structure that has a few minor deviations from the design dimensions should be considered adequate and conforming to the plan.

The degree of compaction achieved during construction shall be considered when determining the practices ability to meet the conservation need.

Before construction of any structure with significant deviations from the design is accepted, a determination must be made that the purpose of the practice is served and that the structure "as built" is acceptable to the landowners. Concurrence must also be obtained from the person approving the design.

The following data provides guidance to indicate the accuracy that should be expected in the construction of conservation measures.

CODE

606 Drain

Flowline or grade (When considering the deviation as shown reverse grades are not desirable especially with flatter grades)

±0.3'



348	Embankments (Dams, dikes, waterspreading	
349	dikes etc.)	
350	Elevation (includes overfill)	+0.3'
356	Overfill controlled so structure will	-0.1'
378	not be "swaybacked" when settled.	
402		
410	Top Width	+1.0'
436		
557	Side Slopes	
640	Nominally to grade with no unsightly humps	
	or holes.	
	Emergency Spillway-Level Crest Section	+0.3'
	Nominally to grade with deviation of any	
	point.	
	Width (Spillway)	-1.0'
	Principal Spillway	
	Grade as planned with no neg. grades	
	Crest (Riser elev.)	+0.2'

When considering deviations as shown above the vertical distance from the crest of the riser to the emergency spillway crest and from the emergency spillway crest to the top of the dam should be as close to those shown on the design data sheet as possible to meet the hydrologic requirements for a dam.

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- 590 Drainage field ditch
 - 480 Drainage main or lateral

Flowline nominally to grade. Some ponding may be allowed.

Top and or spoil line - as planned so overflow water can return and not be ponded.

Side slopes nominally to grade with no unsightly humps or hollows.

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- 404 Floodway
 - 412 Grassed waterway or outlet

Depth (centerline or toe)

+0.2'

Top Width

+10% Waterways

Do not allow low points at the toe of the slope on trapezoidal waterways if these low points alternate back and forth from side to side as this will allow low flows to "snake" down the waterway.

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- 320 Irrigation canal or lateral
 - 388 Irrigation field ditch
 - 368

Water surface

+0.1'

Water surface must be sufficient for irrigation of all the designed area.

464 Irrigation land leveling

For design grade 0.0 - 0.4%

+0.1 with no reverse grades.

For design grades over 0.4%

+0.2 with no reverse grades.

432 Irrigation pipeline

Flowline grade

No reverse grades greater than 1/2 pipe diameter.

378 Pond (excavated)

552 Irrigation pit or regulation reservoir (excavated only)

Bottom Length

+5'

Bottom Width

+2'

Depth

Nominally as planned with bottom irregularities of no more than

+1'

Side Slopes

As planned with no unsightly humps or hollows.

587 Structure for water control

Grade or flowline

+0.1'

362 Diversion

600 Terrace, gradient

602 Terrace, level

604 Terrace, parallel

As planned with deviation from design grade and depth of

-0.1'

+0.2'

Concrete Structures

Concrete For small simple structures where failure would not seriously impair conservation systems and or result in personal or public damage. This type of structure may be built by a landowner using unskilled help.

Wall thickness (floor or slab)

+2"

-1"

For structures where failure would be a threat to conservation systems or could result in personal or public damage.

Wall thickness

+5/8"

-1/4"

Reinforcing Steel

For small simple structures where failure would not seriously impair conservation systems and or result in personal or public damage. This type of structure may be built by a landowner using unskilled help.

Minimum cover of 1 1/2"

No protruding bars

For structures where failure would be a threat to conservation systems or could result in personal or public damage.

Variation from specified clear distances

Variation from specified spacing

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Filing Instructions: Remove Engineering Technical Note No. 6 dated July 28, 1972 and Engineering Technical Note No. 6 (Supp. 1) dated May 3, 1974 and replace with Technical Note - Engineering ND-6 (Revised) dated July 8, 1981.

Distribution: All Offices
All Engineers