

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

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Maintenance Eligibility Program Guidelines For Flood Control Facilities Constructed By Others March, 2006

Introduction

The Urban Drainage and Flood Control District's (District) policy with regard to the eligibility for District maintenance assistance of flood control facilities constructed by, or approved for construction by, local public bodies is as follows (from Resolution No. 26, Series of 1983):

1. The design of the facility must be in accordance with the "Urban Storm Drainage Criteria Manual" (USDCM).
2. The design of the facility must be approved by the District.
3. A certification acceptable to the District must be provided which certifies that construction of the completed facility has been accomplished in accordance with the approved design.
4. Satisfactory maintenance access and public access easements or rights-of-way must be provided in order to adequately maintain the facility.

When Approval of Design is Required

Any flood control facility constructed by, or approved for construction by, a local public body after March 1, 1980, must be approved by the District to be eligible for District maintenance assistance. District funded projects are eligible for District maintenance assistance.

Flood control facilities generally include components of the major drainage system. Major drainage, for the purposes of the Maintenance Eligibility Program, is defined as the system that collects, detains and conveys storm runoff for tributary basins exceeding 130 acres. Major drainage designation may also be considered for elements of a District sponsored drainageway master plan or outfall systems plan.

Approval Procedure

Local public bodies have the responsibility to submit to the District designs for proposed flood control facilities to be constructed by, or approved for construction by, the local public body. It is advisable, and highly recommended, that preliminary and final drainage studies be submitted to the District for review and comment prior to beginning final design. Early coordination with

various federal, state, regional, and local permit programs is essential to the success of any design proposal. Additional permit programs include, but are not limited to:

1. Department of the Army's Section 404 permit;
2. Local government stormwater BMP requirements;
3. State / local government construction erosion control requirements;
4. Local government floodplain development permit; and
5. FEMA conditional and final Letter of Map Revision process.

Local public bodies must submit written requests to the District for review of drainage studies and final designs. The District will not review drainage studies or final designs submitted by anyone other than the appropriate local public body. District staff will be available for consultation regarding design concepts and procedures.

As an aid to the design review, construction certification and final acceptance process, submitted final designs and engineering studies should conform to generally accepted standard of care. This means plans should:

1. Be prepared in a legible, organized and coordinated manner,
2. Include hydrologic and hydraulic data on plan, profile (profiles should be stationed in an upstream direction and coordinated with District studies) and section views,
3. Include hydrologic routing data on regional detention pond plans, and
4. Include enlarged details for all hydraulic features (outfalls, drop structures, etc.) including plan, profile and cross-section views (drawn at 1" = 20' minimum with existing and proposed contours).
5. Engineering studies should present detailed findings, as opposed to simply directing the reader to the appendix. Technical backup data should be indexed and tabbed in order to facilitate review.

District staff, or consultants retained by the District, will review drainage studies and final designs for:

1. Conformance with the USDCM;
2. Provision of adequate maintenance access;
3. Compatibility with existing District master plans;

4. Availability of adequate public right-of-way; and
5. Compliance with local floodplain regulations.

Any deficiencies in the drainage studies or final designs will be identified in a letter to the referring agency. The deficiencies must be corrected and revised documents submitted for review and approval. District review is limited in scope with respect to technical backup and hydrology / hydraulic models.

Acceptable drainage studies will be approved by letter to the referring agency. Acceptable final designs (construction plans and specifications) will be approved by an "Approval of Design" memorandum (Attachment 1). Design approval will expire if construction does not begin within two years.

Certification Procedure

The flood control facility must be constructed in substantial conformance with the District approved design before it will be deemed eligible for District maintenance assistance. The following procedure will be utilized to assure satisfactory construction.

The local public body must provide a set of the approved plans and specifications; notify the District of the proposed date of start of construction; and must provide names, addresses and phone numbers of the contractor and owner (developer).

The District will have a representative (staff member or consultant) visit the site from time to time as deemed necessary to observe construction for conformance with the approved final design. Construction deficiencies will be reported in writing to the local public body, which will be responsible for taking the necessary steps to have the deficiencies corrected. Such visits will not relieve the contractor or owner of the obligation to construct the project in accordance with the approved design. Site visits are also not a substitute for local entity construction observation. It is also important that the design consultant maintain a construction phase presence in order to clarify design intent, and verify construction surveys and layout.

Upon completion of the project, representatives from the District, local public body, contractor, design consultant and owner (developer) shall conduct a walk-through inspection of the project and shall prepare a list of deficiencies (punch list). The local public body is responsible for arranging the inspection. When the punch list items have been corrected the owner (developer) or local public body should notify the District, and the District representative will conduct a final inspection.

If the construction is satisfactory, a memorandum of "Acceptance of Construction of Project for Maintenance Eligibility" (Attachment 2) will be sent to the local public body. This memorandum does not make the project eligible but gets it into the usual warranty period.

Grass-lined facilities will be eligible for maintenance assistance upon satisfactory completion of seeding in accordance with District specifications and after an adequate vegetative cover has been established.

A final "Certification of Maintenance Eligibility" memorandum (Attachment 3) will be sent to the local public body after an adequate vegetative cover is established and evidence of maintenance access is in hand.

Flood Control Facility Ownership

Legal maintenance access to the flood control facility must be provided to the District according to the following criteria:

1. Ownership of the facility by a public body which has accepted primary maintenance responsibility is preferred.
2. Ownership of the facility by a private entity (such as a homeowners association owning common areas) is acceptable provided that the public body which has accepted primary maintenance responsibility must have a public maintenance access easement which allows it to perform maintenance if the owner does not. Easements crossing individual lots are not acceptable.
3. Public body is defined as a local government (city or county), special district (such as a park district) or a metropolitan district which has a service plan that includes drainage facilities as a service which it can provide, and which also has a reliable funding source to fund long term maintenance activities.

Open Floodplain Design (Natural Channels)

When a developer chooses to stay out of the 100-year floodplain, the following requirements must be met:

1. If the total flow of the channel and floodplain is confined to an incised channel and erosion can be expected to endanger adjacent structures, 100-year check structures are required to control erosion and degradation of the channel area. See the HYDRAULIC STRUCTURES chapter of the USDCM for more information. In addition, sufficient right-of-way shall be reserved to install an equivalent trapezoidal grass-lined channel with drop structures.
2. If the floodplain is wide and the low-flow channel represents a small portion of the floodplain area, low-flow check structures are usually required, unless it can be demonstrated that the channel will remain stable as the watershed urbanizes.
3. For either of the above cases, a maintenance access trail should be provided. It should be designed according to the USDCM for grass-lined channels.

Open Floodway Design (Natural Channel With Floodplain Encroachment)

Although floodplain preservation is preferable, when the design involves preserving the floodway while filling and building on the fringe area, the developer must meet the "Open Floodplain" design requirements (above), and the fill slopes must be adequately protected against erosion with:

1. Fill slopes of 4H:1V or flatter that are vegetated according to the criteria in the REVEGETATION chapter of the USDCM.
2. Fill slopes protected by rock (not broken concrete or asphalt) riprap meeting District criteria with up to 2.5H:1V slopes.
3. Retaining walls, no taller than 3.5 feet, with adequate foundation protection.

Open Floodplain and Channel Guidelines

The design of grass-lined channels must meet the requirements of the MAJOR DRAINAGE chapter of the USDCM.

Levees (certified or uncertified) are not allowed for new development.

Concrete lined channels will not be considered for District maintenance assistance.

Grouted riprap is no longer acceptable, please refer to the MAJOR DRAINAGE chapter of the USDCM for grouted boulder guidance.

Maintenance access trails should be located above the minor event water surface elevation (usually the 2- to 10-year event, as directed by the local government) but in no event less than 2-feet (3-feet for streams with a permanent base flow). Trail profiles will typically be required for critical facilities such as roadway crossings, stream crossings and drop structures. Access trails should connect to public streets.

Grade control structures should be constructed by filling an excavated trench (12-inch minimum width) with concrete, or by installing capped sheet piling (PZ-22 minimum) if a trench is not practical. Cut-off depth should be 6-feet minimum below grade and contain at a minimum, the 2-year flow depth (2-feet minimum).

Regional Flood Control (Detention) Pond Design

The construction design for a regional detention pond must meet the following criteria:

1. A pond will be recognized by the District as a "regional facility" provided it meets the following standards:
 - a. Controls the entire major drainage basin tributary to the pond;

- b. Controls at least 130 acres or is part of an overall basin master plan; and
 - c. Has a demonstrated beneficial downstream effect.
2. Proposals to replace a master planned regional detention pond with multiple smaller ponds must demonstrate that the master planned regional pond is no longer feasible (not just inconvenient) and that short term capital investment and long term maintenance costs of the replacement ponds and connecting conveyance facilities will not be significantly higher than those anticipated for the master planned facilities.
 3. Flood attenuation at existing detention ponds may be acknowledged provided the facility meets all the criteria listed above and:
 - a. Is located on property meeting facility ownership criteria;
 - b. Was originally designated as a flood control facility; and
 - c. Is operated and maintained according to the original intent.
 4. Non-regional detention and/or water quality ponds (on-site ponds) may not be located on the major drainageway.
 5. Trickle or low flow channels may not be required for wetland bottom or "wet" water quality ponds (see below), but the District will provide only limited maintenance of these areas.
 6. District maintenance will be limited to the level required for the facility to function as a detention pond. No formal park level of maintenance will be performed. However, formal park-use of detention facilities will not be discouraged, and in fact will be encouraged.

Regional Water Quality Pond Design

Tributary basins should range between 130 acres and 640 acres. Designs outside the specified range will require prior consultation with District staff. Operation and maintenance plans are now required for all regional water quality ponds. The following policies apply to water quality facilities:

1. "Dry" water quality ponds constructed within the flood pool of larger flood control facilities will be considered for eligibility for 100% District maintenance funding provided they are designed for the entire tributary drainage area and designed in accordance with the appropriate sections of Volume 3 of the USDCM.
2. "Dry" water quality ponds designed and constructed specifically for water quality purposes will be eligible for 100% District funded maintenance provided that they are

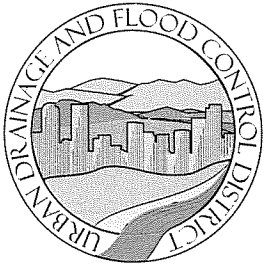
regional in nature, designed for the entire tributary watershed, and designed in accordance with the appropriate sections of Volume 3 of the USDCM.

3. "Wet" water quality ponds (those with a permanent pool), whether constructed within a larger flood control facility or as a primary water quality facility, will be eligible for 100% District funded maintenance of all hydraulic features (such as outlet works) and removal of sediment above the normal water surface elevation; and will be eligible for 25% District funding of sediment removal below the normal high water line; provided that they meet the standards of being regional facilities designed for the entire tributary area and designed in accordance with the appropriate sections of Volume 3 of the USDCM.

Closed Conduits

Conduits will generally not be eligible for District maintenance assistance. However, the following criteria can be followed by anyone considering conduits:

1. At this time, because of funding limitations, local storm sewer systems will not be considered for District maintenance eligibility unless District funds were used in the construction of the facility. In any case, crosspans, inlets and connector pipes will not be eligible. Outlets of local storm sewer systems to eligible channels or ponds will be considered for maintenance eligibility if adequate erosion protection is provided.
2. Major drainageways placed in conduits by developers (in other words, not a remedial project) will not be considered for District maintenance eligibility.
3. For major drainageways with very steep longitudinal slopes (2.5%) the District will consider, on a case-by-case basis, conduits which are designed for the 100-year discharge and which also have an unobstructed 100-year open space swale (i.e., not a roadway) over the top of the pipe. The swale need not meet District grass-lined channel criteria.
4. For roadway crossings the District will review the entrance and exit design for maintenance eligibility. Therefore, all culvert features except the barrel section will be considered for District maintenance eligibility.

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www.udfcd.org

MEMORANDUM

TO:

FROM: Bill DeGroot, Manager, Floodplain Management Program

SUBJECT: Approval of Design

DATE:

The construction plans and specifications for _____
dated _____, are hereby approved. The
project will be eligible for District maintenance assistance upon satisfactory construction in
accordance with the approved design, as determined by the District. Construction must begin
within two years of the date of this memorandum, or the approval will expire. This project may
require federal, state or local permits in addition to this design approval.

In order to facilitate observation of the proposed construction we ask that you provide the
information requested below on the enclosed copy of this memorandum and return the copy to us
with one set of approved construction plans and specifications as soon as possible.

The District will follow the procedure listed below to ascertain the acceptability of the
construction effort. Your assistance with this procedure will be necessary in order to qualify the
project for District maintenance assistance. The District staff, or consultants retained by the
District, will observe the construction.

1. The District and/or its consultant may conduct site visits during project construction
as deemed necessary to observe construction for conformance with the approved
plans and specifications. All grouted boulder installations must receive a pre-grout
sign-off. Construction deficiencies will be reported to your contact who should take
the necessary steps to have the deficiencies corrected. Such visits will not relieve
you, the owner (developer) or the contractor of the obligation to construct the project
in accordance with the approved design. The design consultant should maintain a
construction phase presence in order to clarify the design intent, and verify
construction surveys and layout.
2. Upon completion of the project, representatives from the District and/or its
consultant, local public body, contractor, design consultant, and owner (developer)
shall conduct a walk-through inspection of the project and shall prepare a list of
deficiencies (punch list). You are responsible for arranging the inspection.

- 3. When the punch list items have been corrected, the local public body should notify the District, and the District representative will inspect the project again. If the project is satisfactory, written notice of acceptance of the facility for maintenance eligibility will be sent to you.
- 4. Grass-lined facilities will be eligible for maintenance assistance after an adequate vegetative cover has been established.
- 5. Changes to this approved design can only be made by use of the District's "Notice of Change to Approved Design" form (copy enclosed).

We look forward to working with you on this project.

Bill DeGroot
 Manager, Floodplain Management Program

Contact Address Phone

Local Government

Owner (Developer)

Contractor

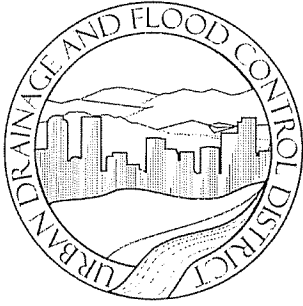
Date of Start of Construction _____

UD ID _____

WGD/DLM/

Enclosures: Copy of this memo
 Sample Notice of Change to Approved Design

NOTICE OF CHANGE TO APPROVED DESIGN



Change No. _____

Date: _____

Design Approval Date: _____

NAME OF PROJECT: _____

Description of Change (attach appropriate drawings, specifications and calculations) made to the Approved Design:

Justification:

Impact of change on function of the facility:

APPROVALS REQUIRED:

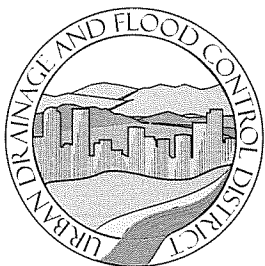
OWNER (DEVELOPER)

DESIGN CONSULTANT

LOCAL GOVERNMENT

CONTRACTOR

UDFCD



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MEMORANDUM

TO:

FROM: Bill DeGroot
Manager, Floodplain Management Program

SUBJECT: Acceptance of Construction of Project for
Maintenance Eligibility

DATE:

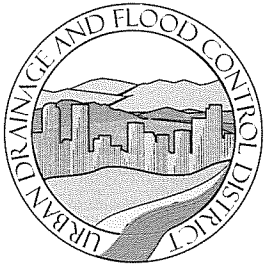
The construction of _____

_____ (Project) at _____

_____ (Location) is accepted for District maintenance assistance. This acceptance is based upon visual inspection of those elements of the project which are visible to the naked eye, and should not be construed as a certification of the structural integrity of any element of the project. A final determination of maintenance eligibility will be made upon establishment of an adequate vegetative cover. It is your responsibility to advise the District in writing when you feel an adequate cover exists; and we will then arrange to inspect it with you or a representative.

Bill DeGroot, P.E.
Manager, Floodplain Management Program

UD ID _____
WGD/DLM/
Enclosure (completion report)
cc: Mark Hunter, UDFCD



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MEMORANDUM

TO:

FROM: Bill DeGroot, Manager, Floodplain Management Program

SUBJECT: Certification of Maintenance Eligibility

DATE:

The construction of _____ in
Section _____, T _____, R _____, _____ County, Colorado is eligible for District
maintenance assistance. This approval is based upon visual inspection of those elements of the
project which are visible to the naked eye, and should not be construed as a certification of the
structural integrity of any element of the project.

Bill DeGroot, P.E.
Manager, Floodplain Management Program

UD ID _____
WGD/DLM/
cc: Mark Hunter