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Honolulu District, Corps of Engineers
Fort Shafter, Hawaii 96858-5440

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19 March 2002

DESIGN REVIEW, LESSONS LEARNED, AND IMPLEMENTATION OF
DESIGN REVIEW AND CHECKING SYSTEMS (DRCHECKS)/CORPORATE
LESSONS LEARNED (CLL)

1. This change to paragraph 6a.(1), POHR 1110-1-5, 30 July 2001, establishes new procedures in response to POD Command Inspection comments.

2. Remove old page and insert new page as follows:

Remove
Page 4

Insert
Page 4, C1

3. File this transmittal sheet in front of the publication.

FOR THE COMMANDER:

Encl

/s/
LORI A. SORAYAMA-CHANG
Chief, Information Management

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30 July 2001

DESIGN REVIEW, LESSONS LEARNED, AND IMPLEMENTATION OF
DESIGN REVIEW AND CHECKING SYSTEM (DRCHECKS)/CORPORATE LESSONS
LEARNED (CLL)

1. PURPOSE. To prescribe policies and procedures for planning, engineering and design-review process, the lessons learned process, and the implementation of DrChecks/CLL at the Honolulu Engineer District.
2. APPLICABILITY. This regulation is applicable to all military, civil works, environmental and public works projects managed by the Honolulu Engineer District.
3. REFERENCES:
 - a. ER 415-1-11 Biddability, Constructibility, Operability, and Environmental Review
 - b. PODR 415-1-16 Biddability, Constructibility, Operability, and Environmental Review
 - c. ER 1110-1-12 Quality Management
 - d. ER 1110-2-1200 Plans and Specifications for Civil Works Projects
 - e. ER 1110-345-100 Design Policy for Military Construction
 - f. Draft QMP Quality Management Plan - Honolulu District
 - g. ER 1105-2-100 Planning Guidance Notebook, App H, Review and Approval of Decision Documents.
 - h. ER 1110-2-1150 Engineering and Design for Civil Works Projects.

4. DEFINITIONS.

a. Technical Evaluator. Designated person in Programs and Project Management Division (PPMD), Technical Review Unit, Construction Branch, Quality Assurance Section, Environmental Branch, and Civil Works Technical Branch who has the responsibility to evaluate submitted lessons learned, pertaining to that person's discipline/expertise. This person either accepts, rejects, or sends back the lessons learned submission to the originator for clarification.

b. Review Coordinator. The Project Manager (PM) is the designated Review Coordinator responsible for setting up the project in the DrChecks system and establishing the review and incorporation of review comments period.

c. Email feature within the DrChecks/CLL system. In DrChecks, the Project Manager has the responsibility to notify all concerned when the project has been setup in DrChecks and when the review and incorporation of comments period is. In CLL, upon submission of a lessons learned, all designated technical evaluators are notified of the submission for evaluation.

d. DrChecks/CLL Coordinator. Presently, Mr. Santiago Mor of the Design Branch is the designated coordinator to administer the DrChecks/CLL system.

5. BACKGROUND.

a. DRCHECKS/CLL software program, developed by Construction Engineering Research Laboratories, offers increased efficiency in the design-review process. This increase in efficiency is gained through the use of the program over the internet to tie all participants together and provide real time information to all concerned on the status of comments and annotations. The end result should reduce costs and deliver a better product by enhancing communication between designers, reviewers, and customers.

(1) DrChecks. This feature of the software program is used to conduct project reviews by recording review comments and designer annotations. Once the comments and/or annotations are recorded, others can instantly view and respond to them over the internet. It also allows better control by the Project Manager (PM) over the scheduling of the design-review process.

(2) CLL. This feature of the software program may be used to capture repetitive deficiencies/lessons learned, identified while conducting reviews in DrChecks, for inclusion into the lessons learned database. CLL may also be used independently; those involved in design and construction can input lessons learned directly into the database. It may also be used to make keyword queries of the date base. The lessons learned must first be approved by designated technical evaluators prior to inclusion into the database.

b. Process.

(1) DrChecks: Review comments are entered on-line via the internet with the review period established by the Project Manager. Once submitted, the comments are immediately available for designers to review and annotate a response. Preliminary agreement on the resolution of comments may occur literally in minutes. The integral e-mail feature may also be used to resolve comments. Status report of comments/annotated responses is instantly available to Project Managers for focusing on problem areas. An electronic record copy is made of comments and annotations by the PM.

(2) CLL: Repetitive deficiencies are submitted as lessons learned via the CLL feature in DrChecks/CLL (See Lessons Learned paragraph 8 below identifying those who should submit). Once submitted, the automatic e-mail feature will notify the designated technical evaluator(s) that a lessons learned has been submitted and require his or her review and approval. The technical evaluator(s) can either accept, deny, or return the submission back for clarification. Simultaneously the lessons learned coordinator is notified that follow-up action is required. Once accepted, the lessons learned are included in the CLL database. This database may be queried via the internet in CLL.

c. Corps' Partner Participation: Our customers, consultants, contractors, and sister organizations will be provided access to DrChecks/CLL with permissions commensurate with responsibility. The DrChecks/CLL Coordinator and/or the Project Manager will instruct these partners in the use of DrChecks/CLL.

d. Operation: Access is via the internet. Classified and sensitive information should not be placed in DrChecks for security reasons.

(1) Link to DrChecks/CLL site, Application Instructions, and Lessons Learned Guide. Connect to <https://drchecks.poh.usace.army.mil>.

(2) Instructions for Use. Look under the Help menu at the DrChecks/CLL site or go to: <http://www.buildersnet.org/drchecks/>.

6. POLICY.

a. Design Review. All projects shall receive an independent technical review (ITR) and biddability, constructibility, operability, and environmental (BCOE) review except BCOE review is not required for IDIQ work plans when complete design documents/packages are unavailable. The reviews shall be conducted before advertisement unless prior arrangement is made with the Chief of Engineering and Construction Division. **Appendix A delineates the procedures for design review.**

(1) The ITR is defined by references 3c, 3d, 3e, 3f, 3g, and 3h. The Technical Review Team within Design Branch, Environmental Branch reviewers, Civil and Public Works Branch reviewers, and Civil Works Technical Branch reviewers will conduct the applicable technical review of all projects designed by A-E and in-house staff. The Section Chiefs within Design Branch will review all designs, investigations and studies prepared by the Technical Review Team.

(2) The BCOE review is defined by references 3a, 3b, 3c, and 3d. Construction Branch, Quality Assurance Section, the Construction Resident Office and the customer will conduct the BCOE review of all projects, designed by A-E and in-house staff.

b. Lessons Learned. The lessons learned system shall be as described in references 3c and 3f.

(1) In-house and Architect-Engineer designers shall analyze the lessons learned database, extracting those applicable to the project they are designing. **See Appendix C for procedures.** The recommendations associated with each of the extracted lessons shall be addressed in the design analysis. **The final design submission shall include the signed CLL certification, see Appendix B.**

(2) Prior to the start of construction on a project, the Resident Engineer or his designated representative should search the lessons learned database for all lessons applicable to the construction phase of the project at that location. The recommendations associated with each of the extracted lessons should be addressed in the construction Quality Assurance Plan for the project.

c. BCOE Certificate. The BCOE certificate shall be in accordance with references 3a and 3b.

d. DrChecks/CLL shall be the Districts' standard design review and lessons learned tool. DrChecks/CLL will provide immediate feedback to reviewers and designers on comment resolution and a means for in-house staff and consultants to access and search the lessons learned database.

e. Project Life Cycle Review Management. The technical reviews and organizations involved shall be identified in the Project Management Plan (PMP) as required by reference 3f. Although specific reviewers may not be known when the PMP is prepared, once assigned, functional chiefs shall endeavor to maintain the assigned reviewer throughout the project life cycle. Due to fluctuations in workload, it is recognized that this may not always be possible.

7. RESPONSIBILITIES.

a. Chief, Design Branch will have overall responsibility for management and oversight of design review and the lessons learned system. This includes

- (1) Provide staff to perform ITR, and certify completion.
- (2) Administer and maintain DrChecks/CLL.

b. Technical Review Team Leader, Design Branch, is the Lessons Learned Coordinator. He/She will follow-up on lessons learned submissions to insure proper evaluation, completion of process, and coordination with the PM for follow-up actions if required. He/She will also be responsible to screen, maintain the corporate lessons learned data base, and report potential value engineering savings over \$10,000 (estimated) identified during project review, to the Project Manager and the District Value Engineer Officer.

c. Chief, Quality Assurance Section (QAS), Construction Branch shall provide staff to perform BCOE review as requested by the Project Managers.

d. Resident Engineers (RE) shall provide staff to perform BCOE (plan-in-hand) review as requested by the Project Managers. In addition, the RE is responsible to provide a list of the applicable lessons learned, extracted from the lessons learned data base, with annotations showing how each will be addressed in the construction of the project. The annotated lessons learned should be included in the Quality Assurance Plan.

e. PPMD (e.g. Project Managers or PPMD Engrg Tech).

(1) Shall be responsible for inputting project data into the DrChecks system for all projects. The PM shall establish the review period when comments can be entered. The start and end dates for the review period should be communicated/coordinated with all concerned. They may opt to have Design Branch provide these services on a reimbursable basis. **To input project data and establish review periods in DrChecks see Appendix D.**

(2) Shall ensure project reviews are conducted for each design phase, and ensure adequate funds and time is provided.

f. Engineering Services Branch. Shall ensure Standard Design Statement of Work has language requiring A-E designers to complete actions identified in paragraph "Designers" below.

g. Technical Evaluators. Review each lessons learned applicable to their discipline and either concur or remove it from the database. In addition, the Technical Evaluators shall recommend to POD any changes to, e.g. guide specifications, specification addenda, technical manuals, installation site specific design guides or other criteria as a result of the approved lessons learned.

h. All Reviewers. When a project is established in DrChecks, provide comments only in DrChecks for ITR and BCOE reviews. **To input review comments into DrChecks see Appendix E.** Provide lessons learned and value engineering submissions as appropriate. Back check annotated comments.

i. Designers. Include in the Design Analysis a list of the applicable lessons learned, extracted from the lessons learned database, annotated to show how each has been addressed in the design. The annotated lessons learned and completed designer certification (Appendix B) shall be provided with the final design submission. Annotate review comments in DrChecks, indicating how they were incorporated in the design. **To annotate review comments in DrChecks see Appendix F.** The annotated review comments shall be made available prior to design certification. Provide lessons learned submissions as appropriate.

j. Customers. Encouraged to provide review comments in DrChecks/CLL for design review. Back check annotated comments. Provide lessons learned submissions as appropriate. If the customer does not use DrChecks, hard copies of the customer's review comments will still be accepted and will be annotated by hand. If electronic copies of the customer's review comments are provided, PPM may at their discretion copy and paste those comments into DrChecks for resolution.

8. LESSONS LEARNED.

a. District employees, consultants, or customers having responsibility for managing, planning, designing, constructing, or operating projects, who are alert to problems encountered during the design, construction, and subsequent operation, should submit a lessons learned using the procedures herein. The lessons learned may be a problem, which could be avoided on future projects through the use of the lessons learned system.

b. Definition. Lessons learned focuses on gaining knowledge and understanding through experience. These include problems or situations, which may:

- (1) Impact operations
- (2) Be applicable to type of project
- (3) Identify: design issue, process change, and management decision

- (4) Reduce potential failures or mishaps
- (5) Reinforce positive results
- (6) Reduce contract modifications during construction

c. Submission Procedures. Lessons Learned shall be submitted in DrChecks/CLL and contain the information specified in DrChecks/CLL Lessons Learned Guide. The guide is accessed via the internet. The District's After Action Review reports will also be submitted in DrChecks/CLL. **To submit a New Corporate Lesson Learned see Appendix G.**

FOR THE COMMANDER:

- 7 Appendices
- App A - Des Rev Procedures
- App B - Corp Lessons Learned
- App C - Procedures to Review
- App D - Procedures to Input Data
- App E - Procedures to Enter DrChecks
- App F - Procedures to Review DrChecks
- App G - To Submit DrChecks Lessons Learned

/s/
LORI SORAYAMA-CHANG
Chief, Information Management Office

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Appendix A

DESIGN REVIEW PROCEDURES

1. GENERAL

- a. PM coordinates the project schedule with the Project Delivery Team (PDT) and finalizes the review plan in the PMP.
- b. PM coordinates with the PDT to budget the review effort.
- c. Engineering and Construction Division accomplish reviews over the course of the design, and sign the ITR and BCOE certification when done.
- d. PM coordinates amendments and bidder feedback on the advertised documents with Designers before releasing to Contracting Division.
- e. After the project design is 100% complete, and before award for construction, the PM will archive the review records. At the PM's discretion, the project may be left on the system until it is complete, so that all may view the records. The PM must notify Mr. Santiago Mor before the project is removed from the system. This provides a chance for every office to reproduce record copies. After the project is removed from the system, access to the records will be through the PM only.

2. REVIEWS

- a. PPMD prepares project data for DrChecks setup.
- b. PM notifies all reviewers including the customer, when the review is open and closed in DrChecks. This start and end date should be communicated/coordinated with all concerned. Reviewers will input comments in DrChecks only; no other forms of comments will be accepted (see paragraph below for customer exceptions to this policy). Once the review period is closed no comments can be entered into the system. After the review is complete, the office point of contact for all reviewers notifies the PM. The PM notifies designers when review is completed.
- c. Designers annotate comments in DrChecks and the lead designer notifies the PM when project documents are submitted. Reviewer's back check annotated comments in DrChecks. Reviewers having no comments, indicate so by submitting a comment with the text "NO COMMENTS".
- d. PM provides hard copies of the design documents to be reviewed. Hard copies of the comments and annotations are not required for those comments entered in DrChecks.

e. PM provides adequate funds for review staff. Functional Chiefs will coordinate with the PM if additional funds are required for review.

f. PM provides a minimum of 10 working days for review unless prior arrangements are made with Chief, Quality Assurance Section, Construction Branch, and Chief, Design Branch, Engineering and Construction Division.

Appendix B

CORPORATE LESSONS LEARNED CERTIFICATION

Project Title: _____

Project Number: _____

Location: _____

I certify that each Lesson Learned listed (Enclosure 1) was reviewed by me or a subordinate designer under my supervision and the recommendations associated with each Lessons Learned have been followed in this design unless specifically noted otherwise.

Lead Designer (Name, Title, & Date)

Designer (Name, Title, & Date) Designer (Name, Title, & Date)

Designer (Name, Title, & Date) Designer (Name, Title, & Date)

Designer (Name, Title, & Date) Designer (Name, Title, & Date)

Designer (Name, Title, & Date) Designer (Name, Title, & Date)

Designer (Name, Title, & Date) Designer (Name, Title, & Date)

Appendix C

PROCEDURES TO REVIEW EXISTING CORPORATE LESSONS LEARNED

Start Internet Explorer

Select and Click on **DrChecks/CLL** Favorites or go to <https://drchecks.poh.usace.army.mil> and

Click on **POH**

Click on **Find® Lessons**

Under the project field, select “**Not project specific**”

Under the client field, select “**Not client specific**”

Under the location field, select “**Not location specific**”

Click on “**Continue**” button

Under the comments discipline field, select “**All Disciplines**”

Under the who field, select “**Any Users**”

Under the project field, select “**Any Project**”

Click on “**Continue**” button to see old lessons learned

After reviewing for applicability to your project, highlight those lessons learned and

Click “**Edit/Copy**”.

Open Microsoft Word and click “**Edit/Paste**” to save to a Word file.

Print this file and attach to the form in **Appendix B**.

Appendix D

PROCEDURES TO INPUT PROJECT DATA AND OPEN/CLOSE REVIEW PERIODS INTO DRCHECKS

(MANAGER)

Start Internet Explorer

Select and Click on **DrChecks/CLL** Favorites or go to
<https://drchecks.poh.usace.army.mil> and

Click on **POH**

Select from menu- **Projects** → **New Project** (to create a new project)

Select and Click **Categories**

Project Category Code (Displays listing of category codes)

Customer (Displays listing, usually used **local customers**)

Location Category (Displays listing of locations)

Click **Continue**

Select and Click **Project Name** (Type in title of project)

Design Start Date (enter date)

Design End Date (enter date)

Select and Click **Project Categories**

Cat Code (Displays listing of project codes)

Client (Displays listing of client listing)

Location (Displays listing of location)

Click **Add Project** when completed

Select from menu- **Projects** → **Access Rights** (to give rights to
the offices involved with the project)

Select and Click **-project**

Select Assignment **-offices**

Continue

Select Unassigned Reviewers - **Add** Offices of Reviewers

Select Unassigned Designers - **Add** Offices of Designers

(Not applicable) Unassigned Managers Box

Select Unassigned Client - **Add** Offices of Clients

Note (individual assignments may also be made and or deleted as required)

Select from menu- **Reviews** → **New/Update** (to Add a New
review phase or Update a Current review)

Select **Project** from the list

Select **New Review phase box**

Type in data to the specified fields for the project

Click Yes - to open a review phase / Click **Add New** when completed
If review period information needs to be revised at any time:
Make the required changes to the review phase and
Select **Update Current Review box**

e.g. Click No - to close a previous review phase / Click **Update** when completed

Appendix E

PROCEDURES TO ENTER REVIEW COMMENTS IN DRCHECKS (REVIEWER)

Start Internet Explorer

Select and Click on **DrChecks/CLL** Favorites or go to
<https://drchecks.poh.usace.army.mil> and

Select POH

Select and Click a project from Reviewer's Projects listing

Select and Click review phase

Fill in the Appropriate Fields:

Select and Click **DOCUMENT TYPE** (will display listing, types used are usually Design Analysis, Plans, and Specifications)

Select and Click **DISCIPLINE** (will display listing)

Select and Click **OTHER FIELDS APPLICABLE** (type in your data in the fields to be used to support your review comments)

Click on **BROWSE BOX** (if attaching a reference document, sketches, etc. to support your review comments)

Click on **REVIEW COMMENT BOX** and type your comments

Select and Click on **Lessons Learned** -Yes or No (if Yes, see Lessons Learned Instructions Appendix G)

Select and Click on **Value Engineering Items** -Yes or No (if Yes, POH Value Engineer will automatically receive an email of your comment)

Click on **ADD COMMENT** when done

Screen will populate to add more comments (If none)

Click **BACK**

Screen will display project with **number of Your Comments made**

Click on **NUMBER**

Screen will display all your comments

Click on **ID NUMBER** to edit (for any changes on your comment)

Click on **UPDATE BUTTON** when edit is completed

(note - if designer has already responded to your comment, you will be unable to make any changes)

To Print:

Make hard copy of your comments for Tech File

Go back to Click on **NUMBER step** (displays all your comments)

Click **PRINT BUTTON** or **PRINT PAGE** to print

Appendix F

PROCEDURES TO ANNOTATE REVIEW COMMENTS IN DRCHECKS

(DESIGNER)

Start Internet Explorer

Select and Click on **DrChecks/CLL** Favorites or go to <https://drchecks.poh.usace.army.mil> and

Select POH

Select and Click a project from Designer's Projects listing

Select and Click design review phase

Fill in the Appropriate Fields:

Select and Click **COMMENT TYPE** (will display listing, type used is usually Pending)

Select and Click **DISCIPLINE** (will display listing)

Select and Click **OTHER FIELDS APPLICABLE** (type in your data in the fields to be used to support your design comments)

Click Continue, Screen will Display all review comments

Select and Click **ID NUMBER** for the review comment you are responding to (screen displays reviewer's comment and comment evaluation box)

COMMENT EVALUATION

Select and click the appropriate statement for your response - Yes or No

Select and click (if any impact)

Click on **JUSTIFICATION BOX** and type your comment

Click on **BROWSE BOX** (if attaching a reference document, sketches, etc. to support your comments)

Click on **SAVE RESPONSE** when edit is completed

To continue responding to other review comments

Go Back to Click on and Select **ID NUMBER** step

Click on **SAVE RESPONSE** when edit is completed

Click **BACK**

To Print

Click **PRINT BUTTON** or **PRINT PAGE** to print

Appendix G

TO SUBMIT DRCHECKS LESSONS LEARNED

Start Internet Explorer

Select and Click on **DrChecks/CLL** Favorites or go to <https://drchecks.poh.usace.army.mil> and

Click on **POH**

Select and Click from menu- **Lessons** → **New Lesson** (submit a new Lesson)

Select and Click **Categories**

What type of project did this issue first appear (Displays listing)

What type of client did this issue first appear (Displays listing)

Project location (Displays listing)

Continue

Select and Click **Project Categories**

Category codes (Displays listing)

Client (Displays listing)

Location (Displays listing)

Select and Click **Lesson Categories**

Discipline (Displays listing)

Spec Section (Displays listing)

Select and Click **Describe Lessons Learned Effects**

Select appropriate Reason/Topic and Effects

Select and Click **Lessons Learned Description**

Lesson Title Box (type in the issue)

Problem Box (type in the problem) also,

Include Discussion in the Problem box as shown below **if** a separate discussion

Paragraph is required:

<I>DISCUSSION: ..</I>(type in the discussion)

Suggest Changing (optional)

Solution Box (type in the recommendation)

also, type in other information to

Include in the Solution box as shown below:

<I>ACTION:..</I>(type in action) and separate with double line

<I>PROJECT:..</I>(type in project) and separate with double line

<I>POC:..</I>(type in point of contact) and separate with double line

Select and Click **File attachments** (to include any documents, etc., attachments)

Select **SUBMIT** when edit is completed

(Screen will display your lesson and the name of the action officer. The action officer will automatically receive your submission for evaluation to approve or disapprove). You will receive e-mails after submission and evaluation.