

From: [Elam, William H](#)
To: [Akpuogu, Emmanuel C](#); [Anderson, Brook E](#); [Atkinson, Paul](#); [Beard Jerry](#); [Billings, Amy A](#); [Boyd, Charlotte R](#); [Cail, William G](#); [Chang, David S](#); [Clawson, Larry D](#); [Clawson, Marshall W](#); [Creech, Dustin D](#); [Djernes, Roger E](#); [Duffield, Danny C](#); [Dunnehoo, Joseph W](#); [Elam, William H](#); [Evans, Rachel C](#); [Fisher, Paul F](#); [Gamber, Anne D](#); [Gulledge, Karen H](#); [Hahn, Ernest J](#); [Harris, Shawn R](#); [Henderson, David R](#); [Henegar, Randall C](#); [Hunt, Walter S](#); [Hunter, Sherrian N](#); [Johns, Linda M](#); [Jones, Gary D](#); [Jordan, Paul A](#); [Keeter, Amy M](#); [Kelly, Michael B](#); [Lassiter, Russell E](#); [Lauffer, Matthew S](#); [Lindsey, Jerry L](#); [Lipscomb, Brian S](#); [Lovinggood, Ray D](#); [McDaniel, Andrew H](#); [Morgan, Stephen R](#); [Mullins, Ryan M](#); [Nguyen, Melanie](#); [Nottingham, Andrew T](#); [Pendergraft, Kirby C](#); [Pratt, Stephanie T](#); [Provetero, John V](#); [Quadri, Syed M](#); [Register, Sally C](#); [Rivers, Vincent N](#); [Sermersheim, Kit A](#); [Sharpless, Carlos R](#); [Shown, Marc T](#); [Snead, Jerry M](#); [Sykes, Stephen](#); [Twisdale, John W](#); [Whitfield, William A](#); [Zerman, William S](#)
Subject: Drainage Structure Numbers
Date: Tuesday, July 28, 2009 11:16:11 AM
Attachments: [Drainage Structure Numbers.pdf](#)

Attached are the instructions for the new Drainage Structure numbering process. This process has been endorsed by Hydraulics Project Managers, Division Engineers, CADD Support, and Roadway's CADD support.

Start using this process on your next job.

Marshall...please send this out to your consultants.

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FIRST DRAFT - SEE FINAL

Drainage Structure Numbers

Hydraulic Unit Designers and Hydraulic Unit Consulting Firms will now be responsible for the permanent numbering of drainage structures, pipe system outlets, pipe collars, elbows, cross pipes, side drain pipes, etc., on plans. Roadway Design will not renumber these drainage structures on plans.

The Hydraulics Unit is currently working on an application which will read the node numbers in Geopak Drainage and place them in the drainage structure number cell on the plans. This application will only number Geopak Drainage nodes and will not number other structure elements drawn using Microstation. Because of this, we will have to hand number some structures. (For instance, we don't use elbows in Geopak Drainage.)

Until the application is written, we will need to do this by hand in the following manner;

1. Place the Structure Number Cell using the Box Number Cell under "Miscellaneous" on the Hydraulics Drainage System Bar Menu
2. Number the structure using four digits. The first two digits will indicate the sheet number and the remaining two digits will be the structure number. For example, for structure number 10 on Sheet 5, label it as "0510". If we have a need for a three digit structure number, we will address it at that time.

It will be stressed to Roadway that in order to keep structure renumbering revisions to a minimum, plan sheet renumbering or plan sheet movement within a plan set should not occur after Hydraulic Designers have begun their design.

The following is a list of Drainage Items that should be numbered.

1. CB's, DI's, 2GI's, JB's, & MH's
2. Converts and Adjust Boxes
3. Collars, Tees, and Elbows
4. All pipes including cross pipes and side drain pipes
5. Rip Rap outlet pads

Items that are not typically numbered

1. Pipe removal
2. Pipe plugs

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Subject: Drainage Structure Numbers
Date: Tuesday, July 28, 2009 1:21:31 PM

As ya'll come up with questions, I will try to answer them and keep you and the documentation up to date. I will get Jerry to put the documetation on the web soon. So here are the first set of questions.

Are we also numbering system outlets?

Yes. The outlets have numbers in Geopak Drainage and Roadway normally numbers outlets. Also number open end pipes going into a system.

When Roadway does renumber sheets, are we now responsible for renumbering structures?

It is going to depend. If you are using Geopak Drainage, then you would have to rename the drainage nodes in that also. If it is only a couple of pages, then maybe you should. If its alot of work, then I probably wouldn't. I hope that Roadway won't renumber sheets very often because they also benefit from our effort.

Once a number is assigned by the application, will it change the number if the application is rerun with additional structures?

The application will only work on projects run with Geopak Drainage. And yes it will renumber if you have renamed drainage nodes, but it will also move all the structure numbers back to their default location. It may be easier to hand number the additional structures.

Do the numbers start over on each page?

Yes. Sheet 4 will have a structure number 0401 and sheet 5 will have a number 0501.

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Subject: Drainage Structure Numbers--Again
Date: Tuesday, July 28, 2009 3:47:29 PM
Attachments: [Drainage Structure Numbers_final.pdf](#)

Sorry for the confusion.

We do not need to number elbows. Roadway numbers the pipe and the collar as one number, but I think we should number the inlet end of the pipe and the collar so that we can set the elevations.

Also, you don't have to number in the direction of water flow. I know it makes the most sense sometimes, but it is not always practical.

Hopefully the documentation will improve and answer most questions.

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Drainage Structure Numbers

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Until the application is written, we will need to do this by hand in the following manner;

1. Place the Structure Number Cell using the Box Number Cell under "Miscellaneous" on the Hydraulics Drainage System Bar Menu
2. Number the structure using four digits. The first two digits will indicate the sheet number and the remaining two digits will be the structure number. For example, for structure number 10 on Sheet 5, label it as "0510". If we have a need for a three digit structure number, we will address it at that time. Each sheet will have a structure number 1.

It will be stressed to Roadway that in order to keep structure renumbering revisions to a minimum, plan sheet renumbering or plan sheet movement within a plan set should not occur after Hydraulic Designers have begun their design.

The following is a list of Drainage Items that should be numbered.

1. CB's, DI's, 2GI's, JB's, & MH's
2. Converts and Adjust Boxes
3. Collars and Tees
4. All pipes including cross pipes and side drain pipes
5. Proposed outlets and open end pipes tying into systems

Items that are not typically numbered

1. Pipe removal
2. Pipe plugs

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Cc: [Edwards, Bryan L](#); [Mcmellon, James A](#); [Mccollum, Ron](#)
Subject: CADD Users Group meeting / Drainage Structures
Date: Thursday, August 06, 2009 11:28:00 AM
Attachments: [CADD USER GROUP MEETINGAugust 6.doc](#)

Dustin was kind enough to create minutes from this meeting and let me send them out.

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NOTE: The new labeling procedure for drainage structures has been approved.

ROADWAY'S REQUESTS:

- When placing box numbers, place the box number cell such that it is true to the plan sheet. (This is accomplished by orienting the plansheet to be true to the x,y axes and then label the structure numbers such that the label is true to the plansheet.)
- Please place the box number cell in a location that does not interfere or overlap any other information/leader notes. After submission of the red-line set, if Roadway has to place or adjust the location of a note and consequently overlaps the box number cell, Roadway will handle relocating the box number cell.

UPCOMING BUILT-IN PROGRAM ABILITIES:

- A program is being developed to automatically generate the box number cell showing the appropriate box number next to the drainage structure. This will be possible only if you create your design in GEOPAK Drainage.
- In the near future with the assistance of Microstation VBA, the drainage summary sheet that Roadway usually fills in will be computer generated with approximately 70% of the information automatically filled in. Roadway Design will fill in the remaining missing information.

IMPORTANT SIDENOTES:

- Because we will NOT use GEOPAK Drainage in crosspipe design, we will need to manually label such drainage items. Similarly, this applies to drive pipes. (You could set up a dummy crosspipe in GEOPAK Drainage just have the computer label it, but you would still need to conduct the HDS 5 inlet and outlet computations by hand.)
- The use of GEOPAK Drainage is recommended for use on all projects. It is suggested to get familiarized on small projects such a small bridge jobs so that you can easily utilize GEOPAK Drainage in larger projects.
- It has been decided to use an intensity ($I = 4$ in/hr) for all boxes (including 2GIs) for ease of design in GEOPAK Drainage. However, this does not rule out using your engineering judgment if the drainage area for an inlet is extremely large. In this situation, you may need to utilize normal procedures in determining the discharge for that inlet. GEOPAK Drainage will still use the 10-Year intensity to determine discharges for the storm drainage design.

NOTE: Steve Morgan asked about how we should number temporary drainage structures using the new system. **Bill Elam will look in to this.**

Stay tuned