



# Illinois Department of Transportation

## Memorandum

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To: DEPUTY SECRETARIES, DIRECTORS AND BUREAU CHIEFS  
From: Becky Koehler  
Bureau Chief of Personnel Management  
Subject: Technical Vacancy  
Date: January 26, 2018

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Attached are the Position Summary Sheet and Position Description for the vacant technical position listed below. Please post this vacancy announcement Tuesday, January 30, 2018 in the designated areas.

The deadline for applicants to submit their applications for consideration is **4:30 p.m. on Tuesday February 13, 2018**. Applications will not be accepted after that time and date.

**NOTE: A copy of each applicant's ACTIVE Illinois Professional Engineer License must accompany application for this position. Please be advised that if a high volume of applications are received, the applications may be screened to establish a smaller pool of applicants for interview. The screening will be based on the information contained in the application.**

If you have any questions, please contact the Bureau of Personnel Management at 217/782-5594.

CE V

Bridge and Hydraulics Engineer  
Region 3/District 4/Program Development  
Office of Highways Project Implementation  
Peoria

Attachments  
42514

Technical Applications [PM1080 rev 6/1/17](#)\*\***must be received** by the Bureau of Personnel Management, Room 113, 2300 South Dirksen Parkway, Springfield, IL 62764 (Fax# 217/557-3134) or emailed to [DOT.CO.BPM.EmploymentApplications@Illinois.gov](mailto:DOT.CO.BPM.EmploymentApplications@Illinois.gov) by **Tuesday, February 13, 2018 4:30 p.m.** Please include address, daytime phone and position for which applying if not already listed on application. Applicants will be notified in writing to schedule interviews.

**NOTE: A copy of each applicant's ACTIVE Illinois Professional Engineer License must accompany application for this position. Please be advised that if a high volume of applications are received, the applications may be screened to establish a smaller pool of applicants for interview. The screening will be based on the information contained in the application.**



## Illinois Department of Transportation

An Equal Opportunity Employer

### Position Summary Sheet

<b>Classification:</b>	<b>Civil Engineer V</b>	<b>Salary:</b>	<b>\$6,315 - \$8,263*</b>
<b>Position Title:</b>	<b>Bridge &amp; Hydraulics Engineer</b>	<b>Union Position:</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>Position Number:</b>	<b>PW115-23-54-303-30-01</b>	<b>IPR#:</b>	<b>42514</b>

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#### Office/Central Bureau/District/Work Address:

OHPI / Region 3 / District 4 / Bureau of Program Development / 401 Main Street, Peoria, IL

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#### Description Of Duties:

This position is accountable for the supervision of staff engaged in bridge and hydraulic analyses/designs, as well as the preparation of construction plans and specifications for bridge and hydraulic improvements. This position is responsible for improving highway safety and operational effectiveness while minimizing any adverse environmental impact on areas adjacent to highway drainage projects.

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#### Special Qualifications:

##### **Required:**

- Current Illinois Professional Engineer license
- Valid driver's license
- Districtwide travel

##### **Desired:**

- Nine years' experience in civil engineering of which at least five years should be in the specific area of highway engineering, three years of which should have been supervising engineering functions
- Extensive knowledge of the principles and practices of civil engineering, including hydrology, hydraulics, drainage, and bridges
- Extensive knowledge of modern methods and techniques as applied to the design, construction, and maintenance of public works
- Ability to develop and maintain cooperative relationships with departmental staff
- Strong oral and/or written communication and organizational skills

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#### Shift/Remarks:

8:00 am – 4:30 pm / Monday – Friday

\*Individual salary offers are computed based on an applicant's current position and experience level in comparison to the posted title as well as internal equity of staff in the organizational unit.

\*\*Technical Application PM1080 (revised 6/1/17) is required. No previous version of the PM1080 will be accepted.

**ILLINOIS DEPARTMENT OF TRANSPORTATION  
POSITION DESCRIPTION**

<b>DATE:</b>	April 22, 2016	<b>POSITION:</b>	Bridge & Hydraulics Engineer
<b>APPROVED BY:</b>	Kensil Garnett	<b>OFFICE/DIVISION:</b>	OHPI/Region 3/District 4 Bureau of Program Development
<b>CODE:</b>	PW115-23-54-303-30-01	<b>REPORTS TO:</b>	Studies & Plans Engineer

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***Position Purpose***

This position is accountable for the supervision of staff engaged in bridge and hydraulic analyses/designs, as well as the preparation of construction plans and specifications for bridge and hydraulic improvements. This position is responsible for improving highway safety and operational effectiveness while minimizing any adverse environmental impact on areas adjacent to highway drainage projects.

***Dimensions***

Subordinate Personnel:	Direct: 1-3; Consultants 5-10
Annual Plan Development:	9-16 in-house plans; 15-30 consultant plans
Annual Plan Value	\$10-\$50 Million per year

***Nature and Scope***

This position reports to the Studies and Plans Engineer as do the four Project Engineers, a Geometrics Engineer, Environmental Studies Coordinator, and an Executive Secretary. Reporting to this position are Bridge and Hydraulics Technician(s). In addition, this position supervises consulting engineering firms performing bridge planning and design.

This position is responsible for the preparation of Hydraulic Studies, Bridge Condition Reports, Project Reports, final designs for hydraulic improvements, and contract plans for bridge approach roadways to accomplish both the short-term and long-range district bridge programs. This position is unique because bridge and hydraulic designs are specialized areas, which require specific training and expertise in addition to the knowledge of roadway design. In order to direct the design and preparation of contract plans needed to accomplish the district bridge program, the incumbent must carefully research and evaluate the numerous, complex, and conflicting rules and regulations which local, state, and federal governmental agencies and drainage districts have established to control drainage design and land usage. These regulations often create a hostile work environment in which s/he strives to develop adequate justification and research to provide sufficient credibility to local agencies and municipalities concerned with possible adverse effects to drainage systems in their area caused by proposed highway improvements. Extensive highway systems are subject to critical hydrologic/hydraulic evaluations. Hydrologic and hydraulic studies for all projects qualifying for federal aid or requiring federal action must include an evaluation of all encroachments into a 100-year frequency floodplain. This position is responsible for the proper sizing of bridges and culverts over waterways requiring extensive knowledge of hydraulics and local conditions in order to develop adequate drainage systems, which will adversely affect property owners.

Typical problems include developing timetables for the timely completion of assigned projects; maintaining the flexibility needed to accommodate changes in priorities; and/or implementing additions/deletions from the program and adjusting to seasonal fluctuations in available staffing. The greatest challenge is resolving technical problems to ensure construction letting deadlines and plan preparation for bridge and hydraulic improvements are met and completed in the most cost efficient manner.

This position personally coordinates a staff which reviews proposed projects; requests adequate surveys relative to drainage to calculate design runoff, velocities, and hydraulic openings for proposed highway structures; and prepares Hydraulic Reports. This report includes probable risk, floodplain environmental impacts, possible measures to mitigate impacts and documentation of features which require waivers of drainage policy. In addition, s/he develops and reviews storm water systems for state highway systems and designs culverts, stilling basins, scour mitigation plans, erosion control plans, and retention basins to control high water. The incumbent reviews private development plans that are adjacent to highways which might affect the state's drainage system. S/he maintains records of peak high water occurrences and obtains all necessary Corps of Engineers, Illinois Department of Natural Resources and Illinois Environmental Protection Agency permits. The incumbent provides hydraulic expertise for immediate solution to on-site drainage problems for the district. This position confers with other agencies and landowners to solve local drainage problems, which requires the explanation of complex drainage systems. Failure to convince local landowners of the Department's intent can often lead to a delay in the project. As the incumbent is considered the district expert for hydraulics and drainage systems, s/he serves as expert witness in litigation involving the state. The incumbent provides training relative to hydrology and hydraulics, considerable amounts of review of research publications, special drainage reports, and pertinent literature on products is required. This position is responsible for maintaining awareness of the latest drainage method developments and reviews new material for updating the Department's Drainage Manual. The incumbent serves as departmental representative at public meetings on, as well as meetings with levee districts and other agencies. S/He performs all scour analysis for waterway crossings and must maintain awareness of changing scour analysis techniques. This position serves as the chairperson of a scour team whose function is to analyze all bridges over waterways for scour potential and recommend corrective measures if necessary.

Responsibilities are accomplished with the assistance of:

Bridge & Hydraulic Technicians who are responsible for preparing hydraulic studies and bridge inspections, written reports pertaining to bridge design and hydraulics, calculating alignments and quantities for estimates, drafting, researching data, performing, checking calculations, report preparation, and completion of contract plans and studies for the multi-year program.

The incumbent has considerable latitude in accomplishing the objectives utilizing state-of-art knowledge of hydraulics, sound engineering practices, and judgment. S/He operates within the limits of prescribed in department/federal design standards and specifications, hydraulic design policies, the Drainage Manual, Illinois drainage law, and the Illinois Department of Natural Resources (IDNR) Regulatory Program. Certification by the Central Bureau of Bridges and Structures, Hydraulics Section, allow this position to approve, without central office concurrence, Hydraulic Reports for all new structures, superstructure replacements, bridge widening, and structure replacements for those structures not requiring an individual permit from the DNR. The incumbent recommends, for approval to the section chief, design solutions for resolving conflicting situations, and highly technical problems. S/he works with the Central Bureau of Bridges and Structures to get Bridge Condition and Hydraulic Reports approved, prepare structure repair plans, review type, size and location drawings and request their assistance with problems that are too complex for district forces to complete.

Internal contacts include other sections within the Bureau of Program Development for coordination of surveying, traffic data, cost estimates, utility adjustments, right-of-way needs, and agreements for structure related improvements. Other internal contacts are the Bureau of Project Implementation Materials Section for development of structure boring logs, the Bureau of Operations to obtain data for structures needing repairs, the Local Roads and Streets Section to review local agency hydraulic studies, and the Central Bureaus of Bridges and Structures, and Design and Environment. External contacts include the IDNR, the Illinois Environmental Protection Agency, the Federal Highway Administration, the U.S. Corps of Engineers, U.S. Fish and Wildlife, the U.S. Geological Survey, and the U.S. Coast Guard, as well as counties and municipalities, levee districts, consultants, and the general public. This position requires districtwide travel.

The effectiveness of this position is measured by the incumbent's ability to provide direction to departmental and consulting staff in responding promptly and effectively to drainage problems, meet established project schedules, and obtain acceptance of drainage plans by the central office and public/local agencies which facilitate the letting of construction contracts on established schedules and within the restraints of programmed funding.

***Principal Accountabilities***

1. Supervises the development of Bridge Condition and Hydraulic Reports by district staff and consultants. Submits complete Hydraulic Reports to the Bureau of Bridges and Structures for all drainage structures requiring Central Office approval. Requests waivers of policy for those projects which will not comply with drainage policy on Central Office approved jobs. Ensures accuracy, conformance with state policies, timely completion of all assignments and correlation of work with other agencies and bureaus.
2. Provides liaison between the District Bureau of Program Development and consultants on matters pertaining to bridge plans and designs. Reviews consultant and state TS&L drawings to ensure proposed structures meet department standards and are suitable to the specific site.
3. Grants final approval on the Hydraulic Reports for all culverts. After being certified by the process outlined in the Drainage Manual, grants approval of Hydraulic Reports for superstructure replacements, bridge widening, and structure replacements not requiring an individual permit from the DNR. Approval also includes documenting and approving waivers from hydraulic policy for those projects.
4. Serves as district technical expert to all internal/external sources relative to hydrology, bridge design, hydraulics, and the review of private development plans for impacts to the State's drainage system.
5. Conducts scour analysis studies to determine susceptibility for flowline degradation and scour. Designs scour mitigation plans for scour critical structures.
6. Serves as a Project Manager for structurally related Contract Maintenance, Day Labor, and contract plan development for the multi-year program.
7. Provides for continuous and effective communication with local/state/federal agencies and affected property owners to ensure highway drainage proposals are coordinated and properly addresses rules, regulations, and concerns. Obtains required permits for bridge construction from federal/state agencies.
8. Maintains state-of-the-art knowledge on hydraulics, hydrology, and bridge design related to both standard and complex transportation systems.
9. Performs other duties as assigned.
10. Performs duties in compliance with departmental safety rules. Performs all duties in a manner conducive to the fair and equitable treatment of all employees.