

**Palm Beach County**  
**Professional Consultant Qualification**  
**Application**  
**Work Category Definitions**

**1. TRANSPORTATION PLANNING**

**1.01 URBAN AREA AND REGIONAL TRANSPORTATION PLANNING:**

This category of work consists of making a comprehensive study of all factors affecting total transportation within a defined urban or regional area, forecasting future transportation needs for a 20 or 25 year period and developing a recommended plan for meeting these needs. Consideration of ecological and community value factors may also be involved.

Included in this class of work are:

- data collection
- modeling
- alternate systems tests
- cost determinations

This class of work does not include:

- determination of the precise location of a transportation facility
- preparation of construction plans for highway, bridges, drainage systems, subways, monorails or other physical features of transportation systems

**1.02 AVIATION SYSTEMS PLANNING:**

This category of work consists of evaluating the adequacy of the existing airport system with the County, in adjacent Counties, large areas of the State or the entire State, the determination of future needs, and the formulation of recommended plans for future development which will be compatible with other transportation planning within the State and with the airport plans of adjoining States and the Nation.

Typical elements of this category of work include:

- inventory of existing airports
- collection of other necessary data
- modeling
- examination of ecological and socioeconomic features of the system
- forecast of demands for 5, 10 and 20 year periods

## PBC Professional Qualification Work Category Definitions

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This category of work is limited to making general recommendations as to locations and types of airport facilities. It does not include determination of precise locations or the design of the facilities.

### **1.03 AIRPORT MASTER PLANNING:**

This category of work consists of determining the extent and nature of airport development needed at a specific existing or proposed publicly owned airport. The planning is to be based on short, intermediate and long-range (approximately 5, 10 and 20 year) aeronautical service demands of the area which the airport development is intended to serve. The planning may be concerned with the expansion and modernization of existing airports or with the establishment of new airports. This category of work does not include the detailed design of airport facilities.

### **1.04 WATERWAYS AND PORTS PLANNING:**

The objective in this category of work is to survey and discover needs in water transportation and port facilities and to determine suitable answers to these needs.

Subjects may include:

- inland waterways
- selection of sites for new port facilities
- suggested improvements for port facilities
- passenger ferry systems
- cargo handling systems
- terminal facilities

This category of work is limited to determining broad needs and general answers to problems connected with water transportation and ports.

It does not include:

- precise location of facilities or routes
- design of the facilities, systems or carriers

## PBC Professional Qualification Work Category Definitions

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### **1.05 MASS AND RAPID TRANSIT PLANNING:**

This category of work is concerned with solutions to problems involving the movement of large numbers of people efficiently, economically and comfortably.

Typical areas in mass transit are:

- bus travel
- local and long distance
- rail travel including local travel and inter-city
- new systems such as monorail, tracked air cushion vehicles, hovercraft
- other modes

This category of work may include the comparison and selection of the best system among several alternatives or it may be concerned with ways of improving or expanding existing systems. The Mass and Rapid Transit category of work includes general recommendations regarding transit systems or operations but does not include the design of specific transit vehicles, terminals or systems.

### **1.06 ALTERNATE SYSTEMS AND CORRIDOR LOCATION PLANNING:**

This category of work includes the evaluation of alternate transportation systems, taking into consideration all modes of transportation. It also includes studies comparing alternate corridor locations for specific transportation improvements, including but not limited to highways, railroads, waterways, interchanges and terminal transfer facilities.

The work involves evaluating traffic capacity, engineering feasibility and the social, economic and environmental impacts of alternate transportation improvements or systems to the extent necessary to select the best improvement or system.

The category of work is limited to the evaluation of various alternatives for transportation improvements but does not include the detailed design or determination of the precise location of a facility.

## PBC Professional Qualification Work Category Definitions

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### **1.07 ENVIRONMENTAL STUDIES:**

This category of work is defined as the estimation of the effects of proposed transportation improvements on the environment and on human, animal and plant life.

Factors to be assessed include:

- effects on natural resources
- erosion and sedimentation
- wildlife habitat and migration
- air, water and soil pollution
- noise levels
- esthetics
- human social and cultural patterns
- human and animal comfort and well-being

This work is limited to the study of the environmental and ecological effects of proposed transportation improvements.

It does not include determinations of traffic capacity or engineering feasibility, nor does it involve the design of the transportation improvement.

### **1.08 ATTITUDE, OPINION AND COMMUNITY VALUE STUDIES:**

This category of work consists of collecting and interpreting data as to public opinions, attitudes, and community values by means of questionnaires administered by mail, telephone or personal interview. It involves also the design of questionnaires and the analysis of results. Typical professional personnel required would include psychologists, sociologists, statisticians, mathematicians, demographic specialists and economists.

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# PBC Professional Qualification Work Category Definitions

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## **2. MASS TRANSIT OPERATIONS**

### **2.01 EXPERIMENTAL SYSTEMS RESEARCH AND DEVELOPMENT INCLUDING DEMONSTRATION:**

This category of work is defined to include:

- establishing and maintaining a State-of-the-Art-and-Beyond Manufacturers Data Library on all known application and experimental systems, equipment and facilities for potential future integration into the overall transportation system
- developing and maintaining knowledge and awareness of National Transportation System Test Programs
- analyzing the results thereof for possible application in Florida
- coordinating with State, Local and Federal Agencies and equipment manufacturers for possible establishment of test sites or facilities for advanced systems or equipment proving
- participating in and/or coordinating Demonstration Projects separately or in conjunction with other areas to test feasibility and applicability of systems, equipment or concepts for use in Florida
- participation in preparation of proposals for funding by furnishing applicable expertise and data

### **2.02 AIRPORT DESIGN AND OPERATION:**

This category of work is defined as including the

- design and construction of new and modifications to existing Runways, Taxiways, Terminals, Lighting Systems and other Airport facilities to meet State, Local and Federal requirements
- analyses related to feasibility and acceptability of new facilities and equipment
- application of new and more effective connecting modes of transportation
- implementation of demonstration projects to test model application and/or to provide data for use in future application

### **2.03 PORT AND WATERWAY DESIGN AND OPERATION:**

This category of work includes:

- design and construction of new and modifications to existing seaports and waterways, docking and off-loading facilities to meet Federal, State and Local requirements (including ability to support new concepts in shipping such as Containerization, Unitized Cargo Ship, Roll-on/Roll-off, Lash and Seabee systems).
- It includes the determination of the feasibility and location of new facilities or

## PBC Professional Qualification Work Category Definitions

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modification to existing and implementation of Demonstration Projects to test the application of new modes (such as Hydroski, Hovercraft, Hydrofoil, etc.) and provide data for subsequent use

### **2.04 MASS AND RAPID TRANSIT DESIGN AND OPERATION:**

This category of work is defined to include the design and construction of new, and modifications to existing, mass and rapid transit systems and their support facilities as necessary to facilitate efficient movement of people and goods.

These systems with associated guideways, controls, power, etc., include all modes of intra-city and inter-city transportation (except the private automobile). Guideways will be other than conventional highways unless specifically designed for other than private automobile use, such as exclusive bus lanes. Support facilities include such items as multi-modal terminals, public transportation shelters, bus pullout bays, route and schedule signs, etc.

It also includes conducting Technical Studies and performing analyses related to management, operations, capital requirements, economic activities in preparation for the construction, acquisition or improved operation of mass and rapid transportation systems facilities and equipment; developing methodology to improve and maintain cognizance of existing operations; coordination, design and construction of Demonstration Projects to test the practicality and applicability of new equipment and systems (or new application of existing) such as Rail-use, Steam Bus, Tracked Air Cushion Vehicle (TACV) and Electric Train.

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# PBC Professional Qualification Work Category Definitions

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## **3. HIGHWAY DESIGN ROADWAY**

### **3.01 TWO-LANE OR MULTI-LANE RURAL, GENERALLY FREE ACCESS HIGHWAYS DESIGN:**

This category of work is defined as the production of competently engineered highway plans which conform with acceptable design standards and which meet the specific requirements of the County, and if required, those of the Florida Department of Transportation or the Federal Highway Administration, including accommodation of utilities and creative utilization of roadsides for two-lane or multi-lane rural generally free access highways.

### **3.02 TWO-LANE OR MULTI-LANE WITH CURB AND GUTTER GENERALLY FREE ACCESS HIGHWAYS DESIGN INCLUDING STORM SEWERS:**

This category of work is defined as the production of competently engineered highway plans which conform with acceptable standards and which meet the specific requirements of the County, and if required, those of the Florida Department of Transportation or the Federal Highway Administration, including accommodation of utilities and creative utilization of roadsides for two-lane or multi-lane municipal type highways with curb and gutter, generally free access, including storm sewers.

### **3.03 MULTI-LANE RURAL, LIMITED ACCESS EXPRESSWAY TYPE HIGHWAY DESIGN:**

This category of work is defined as the production of competently engineered highway plans which conform with acceptable design standards and which meet the specific requirements of the County, and if required, those of the Florida Department of Transportation or the Federal Highway Administration, including creative utilization of roadsides and including plans for adjustment of utilities crossing the facility but specifically excluding the accommodation of utilities along and within the highway right-of-way for multi-lane rural limited access expressway type highways.

### **3.04 PRE-DESIGN ENGINEERING STUDIES AND DESIGN OF URBAN EXPRESSWAY:**

This category of work is defined as the production of competently engineered highway plans which conform to acceptable design standards and which meet the specific requirements of the County, and if required, those of the Florida Department of Transportation or the Federal Highway Administration.

## PBC Professional Qualification Work Category Definitions

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It includes the location studies and reports, design studies and reports, preparation of complete construction plans for urban expressway projects.

Plans for urban expressway projects will include plans for adjustment of utilities crossing the facility but specifically excluding the accommodation of utilities along and within the highway right-of-way.

### **3.05 TRAFFIC OPERATIONS STUDIES:**

This category of work includes studies of existing traffic problems within an urban area and determination of the most effective ways to improve traffic flow and safety, largely by the application of traffic engineering techniques and other corrective measures.

It includes:

- street and signal inventories
- intersection and crossing diagrams
- highway lighting information at high night accident locations
- analysis of:
  - accident reports
  - traffic counts
  - travel times
  - parking practices
  - laws and ordinances effecting transportation

This category of work is limited to generalized descriptions and schematic layouts of the proposed improvements including right-of-way requirements and specifically does not include the preparation of construction plans or the writing of specifications.

### **3.06 TRAFFIC OPERATIONS DESIGN:**

This category of work includes the preparation of construction plans and/or specifications for the improvements proposed in category of work 3.05 above.

It includes design of improvements oriented to relieving major traffic problems including:

- signalization
- pavement marking
- signing
- lighting
- minor highway reconstruction
- determination of right-of-way requirements necessary to implement the proposed improvements

## PBC Professional Qualification Work Category Definitions

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### **3.07 TRAFFIC CONTROL SYSTEMS ANALYSIS, DESIGN AND IMPLEMENTATION:**

This category of work involves the use of electrical engineering, electronics, engineering, computer science, and traffic engineering to analyze, design and implement Traffic Control System which provide an area wide coordinated approach to traffic control.

It includes system performance and cost analysis, system hardware and software design, development of management plans, supervision of system installation and operation, system testing and "de-bugging", system documentation, and the training of operating personnel.

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# PBC Professional Qualification Work Category Definitions

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## **4. HIGHWAY DESIGN BRIDGES**

### **4.01 MINOR BRIDGES DESIGN: (Pile Bent, Pedestal Pier, or comparable Foundation)**

This category of work is defined as the production of competently engineered bridge plans which conform to acceptable design standards and which meet the specific requirements of the County, and if required, those of the Florida Department of Transportation or the Federal Highway Administration.

It includes preparation of construction plans for non-complex bridge structures generally using simple span reinforced, pre-stressed concrete, or steel with pile bent foundations or spread footings.

### **4.02 MAJOR BRIDGES DESIGN:**

This category of work is defined as the production of competently engineered bridge plans which conform to acceptable design standards and which meet the specific requirements of the County, and, if required, those of the Florida Department of Transportation or the Federal Highway Administration.

This category specifically includes the preparation of construction plans for high level structures with underwater piers, complex interchange structures with curved girders or other major non-movable bridge structures.

### **4.03 MOVABLE SPAN BRIDGES DESIGN:**

This category of work is defined as the production of competently engineered bridge plans which conform to acceptable design standards and which meet the specific requirements of the County, and, if required, those of the Florida Department of Transportation or the Federal Highway Administration, specifically relating to the preparation of Construction plans for bascule or other movable span bridges.

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# PBC Professional Qualification Work Category Definitions

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## 5. TOPOGRAPHY

### 5.01 LAND SURVEYING:

This category of work includes the determination of boundaries of tracts of land by the laying off or the measurement of lengths and directions of lines forming the boundaries of the tract.

### 5.02 ENGINEERING SURVEYING:

This category of work is concerned with making physical measurements to obtain both horizontal and vertical distances for use in the planning, design and construction of engineering projects.

It includes:

- route surveys for transportation facilities
- topographic surveys to determine the relief of a particular tract of land
- hydrographic surveys to determine the shore and bank of bodies of water, and depths at particular points

### 5.03 GEODETIC SURVEYING:

This category of work includes making precise surveys over areas of such considerable extent that the curvature of the earth must be considered.

It includes:

- traverse
- triangulation
- trilateration
- precise leveling
- astronomic direction finding

### 5.04 AERIAL PHOTOGRAPHY:

This category of work includes taking precise quality photographs from air camera station(s) which are suitable for subsequent photogrammetric mapping and planning studies.

## PBC Professional Qualification Work Category Definitions

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### **5.05 AERIAL PHOTOGRAMMETRY:**

This category of work includes obtaining reliable information about physical objects and environment through processes of recording, measuring and interpreting photographic images and electromagnetic energy.

It includes derivation and production of topographic maps and surveys based on measurements and information obtained from aerial photographs.

### **5.06 REMOTE SENSING:**

This category of work entails, basically, the acquisition of information about an object or phenomenon utilizing an information gathering device that does not have to come in contact with the object under investigation.

The data reduction phase of such work involves expertise in the interpretation and analysis of sensor records by individuals competent in one, or more, of the following disciplines:

- Civil Engineering (e.g. soil mechanics and hydrology)
- Engineering Geology
- Social Science
- several specialized areas of Biological Sciences, Geography and Urban and Regional Planning

### **5.07 CARTOGRAPHY:**

This category of work involves expressing graphically, by the use of maps and charts, the known physical features of the earth's surface including the works of man and his varied activities. Such variations may be in black and white or multicolor.

Cartography invariably includes assembly, evaluation, selection, rejection and presentation of data.

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# PBC Professional Qualification Work Category Definitions

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## **6. SOILS, FOUNDATION, AND MATERIAL TESTING**

### **6.01 GEOLOGICAL AND GEOPHYSICAL STUDIES:**

This category of work includes comprehensive considerations, leading to a solution of highway location or relocation problems, based on known characteristics of foundation materials or a determination of the physical qualities and quantities of unknown or uncommon new foundation materials.

This category of work may involve large scale geological survey programs, utilizing outcroppings of basement materials, combined with drilling tasks and geophysical techniques.

### **6.02 BRIDGE FOUNDATION STUDIES:**

This category of work includes determination of one or more specific sites or alternate sites for a structure, usually a bridge, where soil characteristics must be known for the design of footings or where settlement must be predicted to determine construction methods, surcharge requirements or the necessity of scheduling construction over extended time periods.

### **6.03 PILE FOUNDATION STUDIES:**

This category of work encompasses alternatives or supplements to footing designs described in 6.02 above.

These involve many of the soil and rock sampling tasks required in all foundation studies but additionally they require:

- pile design
- manufacturing considerations
- driving and testing techniques
- special specification and/or contract payment provisions

### **6.04 HYDRAULIC AND HYDROLOGIC STUDIES:**

This category of work includes large scale studies of drainage basins, stream diversions or alternate route analysis to optimize highway locations over bodies of water or marsh area where ground water would seriously affect subgrades and foundation conditions.

## PBC Professional Qualification Work Category Definitions

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### **6.05 SOIL TREATMENT:**

This category of work includes special advisory problems where the use of economically available fill material depends upon the use of chemical stabilizers such as lime, cement or other commercial additives.

### **6.06 MATERIALS TESTING:**

This category of work involves conducting tests in accordance with Department of Transportation approved specifications on:

- aggregate
- concrete (pipe, beams or posts products; cement; concrete additions including water and epoxies)
- bituminous material including testing of field mixes
- timber
- metals
- paints
- rubber
- soils
- clay
- masonry products

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# PBC Professional Qualification Work Category Definitions

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## 7. ARCHITECTURAL

### 7.01-7.05 ARCHITECT:

This category of work is defined as the rendering of services in connection with the design and construction of new and modifications to existing structure or group of structures which have as their principal purpose human habitation or use, and the utilization of space within and surrounding such structures.

These services include:

- planning
- providing preliminary study designs, drawings, and specifications
- architectural supervision
- jobsite inspection
- administration of construction contracts

### 7.06 LANDSCAPE ARCHITECTURE:

This category of work is defined as the preparation of plans, specifications, reports, and/or studies directed toward achieving maximum harmony between the transportation corridor and the general landscape through techniques such as:

- preservation of aesthetically pleasing existing land features
- improvements oriented toward enhancing compatibility with existing surroundings
- creative utilization of the corridor to provide a satisfactory mesh with adjacent lands

It includes work such as:

- investigation
- reconnaissance
- research
- site planning
- design ultimately leading to the construction and development of aesthetically pleasing and functional settings and approaches for:
  - structures
  - roadways
  - walkways
  - trails
  - wayside parks
  - rest areas
  - other appurtenant features

## PBC Professional Qualification Work Category Definitions

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- detail plans as
  - planting
  - irrigation
  - lighting
  - grading and drainage as they relate to aesthetics and the landscape

It does not entail judgment of engineering factors or preparation of engineering plans.

### **7.07 THRESHOLD INSPECTION:**

Must be certified, licensed, or registered under Florida Statutes Chapter 471 or 481 per Florida Statutes Section 553.79(5).

## **8. MECHANICAL ENGINEERING**

### **8.01 WASTE WATER TREATMENT SYSTEMS**

### **8.02 WASTE WATER COLLECTION SYSTEMS**

### **8.03 WATER SUPPLY TREATMENT SYSTEMS**

### **8.04 WATER DISTRIBUTION SYSTEMS**

### **8.05 HEATING SYSTEMS**

### **8.06 COOLING SYSTEMS**

### **8.07 SPECIALIZED DESIGN:**

This category of work is concerned with specialized design services which require judgment of engineering factors and/or preparation of engineering plans.

Individual firm qualification will be reviewed with respect to the project specifications under consideration prior to the negotiation of an agreement.

This category of work includes, but is not limited to, such specialized services as the design of:

- small sewage treatment plants
- small water supply systems
- irrigation systems, etc.

Professional engineering judgment is required.

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## PBC Professional Qualification Work Category Definitions

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### **9. ELECTRICAL ENGINEERING**

- 9.01 INSTITUTIONAL FACILITIES**
- 9.02 RECREATIONAL FACILITIES**
- 9.03 INDUSTRIAL FACILITIES**
- 9.04 RESIDENTIAL FACILITIES**
- 9.05 HIGHWAY LIGHTING**

### **10. STRUCTURAL ENGINEERING**

- 10.01 INSTITUTIONAL**
- 10.02 RECREATIONAL**
- 10.03 INDUSTRIAL**
- 10.04 RESIDENTIAL**

### **11. OCEANOGRAPHY**

- 11.01 OFFSHORE SAND STUDIES**
- 11.02 BEACH RESTORATION**
- 11.03 UNDERWATER INVESTIGATION**

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# PBC Professional Qualification Work Category Definitions

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## **12. ENVIRONMENTAL ENGINEERING**

### **12.01 AIR QUALITY INVESTIGATION & AIR POLLUTION CONTROL:**

Work associated with air quality investigation consists of utilizing EPA/DEP approved test equipment and test methods or equivalent for the detection in the outdoor atmosphere of dust, fumes, mist, smoke, other particulate matter, vapor, gas, or odorous substances.

Air pollution control consists of the design of any equipment or facility intended to eliminate, prevent, reduce, or control the emission of specified air contaminants to the outdoor atmosphere such that federal, state and local air quality standards are met.

Acquisition of appropriate federal, state and local permits may be required.

### **12.02 ENVIRONMENTAL AUDIT/SITE INVESTIGATION:**

An environmental audit is an assessment of the current status of a property's compliance with applicable federal, state, and local environmental requirements.

The work could consist of a Phase I and/or Phase II audit.

A Phase I audit is a preliminary review of records and documents together with a site visit and should indicate whether sufficient potential for environmental problems exists to warrant actual sampling and analysis. All habitable structures may be required to be tested for radon, asbestos, and lead paint by a qualified professional.

A Phase II audit typically follows a Phase I audit and includes sampling the soil and groundwater in areas where contamination is suspected.

### **12.03 SOIL & GROUNDWATER CONTAMINATION ASSESSMENT & REMEDIATION SYSTEM DESIGN**

Work associated with contamination assessment involves data collection, review of pertinent historical information and site hydrogeological characterization to determine the nature and extent of the soil and groundwater contamination. This may include analysis of soil borings, an aquifer pump test, installation and sampling of groundwater monitoring wells, and review of current and historical aerial photos.

Remediation system design consists of technically feasible and cost effective soil and/or groundwater contamination cleanup designs that prevent or minimize the release or migration of hazardous substances.

## PBC Professional Qualification Work Category Definitions

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Remediation of contaminated groundwater may include design of:

- groundwater recovery
- piping
- treatment
- effluent disposal system

Remediation of contaminated soil may include the design of:

- soil vapor extraction and treatment system
- other technology for soil remediation

Groundwater monitoring is required to evaluate the effectiveness of the remediation system. Acquisition of appropriate federal, state and local permits may be required.

### **12.04 SOLID/HAZARDOUS WASTE MANAGEMENT**

#### **Hazardous Waste Management**

The scope of work for this category involves the systematic control and/or design of a collection, source separation, storage, processing, treatment, recovery, transportation, or disposal system for hazardous waste.

Acquisition of appropriate federal, state and local permits may be required.

#### **Solid Waste Management**

This category of work includes the systematic administration and/or design of activities which provide for the collection, source separation, storage, transportation, transfer, processing, treatment, and disposal of solid waste.

Acquisition of appropriate federal, state, and local permits may be required.

### **12.05 INDUSTRIAL WASTE MANAGEMENT**

This category of work involves the design of any collection, treatment, or disposal system which modifies the solid, semisolid, or liquid waste generated by a manufacturing or processing plant such that the effluent discharge will meet state and federal water quality standards and the waste sludge generated is environmentally acceptable for disposal.

Acquisition of appropriate federal, state and local permits may be required.

# PBC Professional Qualification Work Category Definitions

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## **12.06 WATER RESOURCE EVALUATION AND DEVELOPMENT**

This category of work involves the evaluation and development of surface and groundwater reservoirs in order to evaluate their potential for exploitation as a source of potable water.

Included in this category are studies performed to promote conservation and minimize pollution of the potable water supply.

Specific examples of work include:

- groundwater modeling and mapping
- aquifer pump test design and analysis
- water use permitting
- preparation of groundwater and surface water monitoring plans

## **12.07 WATER AND WASTEWATER TREATMENT PROCESS DESIGN**

Work associated with water treatment includes the design of the collection, treatment, storage and distribution of potable water from source to consumer. The treatment system should be designed to produce potable water that meets all state and federal drinking water quality standards.

Acquisition of appropriate federal, state and local permits may be required.

Work associated with domestic wastewater treatment includes the design of the collection, treatment, and the effluent reuse or disposal system. The treatment system should be designed to produce an effluent that meets appropriate state and federal water quality standards and the waste sludge generated should be environmentally acceptable for disposal.

Acquisition of appropriate federal, state and local permits may be required.

## **13. OTHER**

This category is reserved for specific requests by Palm Beach County Departments.