

# American Society of Irrigation Consultants Certified Professional Irrigation Consultant Certification Handbook

## INTRODUCTION

### Goal & Mission of the American Society of Irrigation Consultants Certification Program

The American Society of Irrigation Consultants (ASIC) is a group of irrigation professionals and green industry representatives. We are a unique resource focused on the business and the professional development aspects of irrigation consulting. ASIC strives to represent the most experienced and responsible irrigation professionals in the world. Its members facilitate successful water resource management through their expertise, client advocacy, public service, education, accreditation, and the promotion of allied green industry partnerships. ASIC is a society of professional irrigation consultants dedicated to representing the best interest of the client while advocating the responsible use and preservation of water resources.

The American Society of Irrigation Consultants certification program is designed to provide a mechanism by which individuals can demonstrate their experience, technical competence and professionalism in irrigation design and consultation. Certification is accomplished by passing a series of exams. Certification represents a milestone in one's career that should encourage a continuation of learning and development through additional practice and education to remain competitive in an ever-changing industry.

### American Society of Irrigation Consultants Certification Committee

The ASIC certification program is governed by the Certification Committee. The Committee establishes policies and procedures that govern committee action, certification procedures, staff activities and all other activities related to the administration of the certification process. The Committee develops the exam and testing protocols to ensure that exams are kept secure and current and are fairly graded. The Committee has the additional responsibility for maintenance of the certification process such that it is held in the highest regard by members of the ASIC, the irrigation industry, and related organizations and industries.

## CERTIFICATION PROGRAM DESCRIPTION

### Certified Professional Irrigation Consultant (CPIC)

The Certified Professional Irrigation Consultant is an individual with demonstrated expertise in the following irrigation related topics:

- Construction documents
- Bidding Administration
- Construction Observations
- Master Planning
- System Management
- Existing System Evaluation
- Business Management

Proof of relevant experience and passing the CPIC examination are required to become a CPIC. Candidate must be a current IA Certified Irrigation Designer (CID) in good standing to be eligible for the CPIC exam. More detailed information on the two exams is provided later in this handbook.

All components of the CPIC program must be completed within three years of applying to the program.

### Candidate Eligibility Requirements

To apply to the Certified Professional Irrigation Consultant program, candidates must meet the minimum requirements of an ASIC Professional Irrigation Consultant plus two additional years of experience as an independent consultant.

ASIC Professional Irrigation Consultants are independent\* representatives of their clients without bias or conflict of interest. An irrigation consultant currently spends a minimum of fifty percent of their time per year performing irrigation services. They have a minimum of three years of experience in independent professional irrigation-related services. These services may include, but not be limited to, feasibility studies, detailed construction plans and specifications, construction observation, system analysis, irrigation programming, site review, water management, and GPS/GIS-related services.

\* Independent means a consultant or consulting firm that is unaffiliated with a manufacturer or distributor of irrigation products or a construction contractor that participates in the irrigation industry in a design-build capacity. Multi-disciplinary firms are considered independent consulting firms. Employees of consulting firms may apply for professional membership status.

### Application Process

The candidate must submit the completed application and appropriate fees at least 14 days in advance of the exam date. Information about testing, and application forms, can be found at [asic.org](http://asic.org)

Applications are reviewed to verify information and will be kept confidential. Candidates will not be discriminated against based on race, religion, creed, age, gender, or national origin or ancestry. Candidates who submit a completed application will receive confirmation of their acceptance into the program via email. They will then be able to register for a specific exam site and time.

If the application is incomplete, the candidate will receive an email explaining what is missing and will have 30 calendar days to respond. If the candidate does not respond, the candidate must then submit in writing a request for a refund.

The application may be deemed incomplete for reasons such as the following:

- Required information not supplied.
- Application not signed.
- Appropriate fees not submitted.

If the application is denied, the candidate will receive a letter stating the reason for the denial and will have 30 calendar days to respond. The application may be denied for reasons such as

- Falsification of any information on the exam application.
- Failure to sign the Code of Ethics.

### Accommodation

ASIC complies with the current provisions of the Americans with Disabilities Act and Title VII of the Civil Rights Act. The request for ADA accommodation must be submitted in writing with supporting documentation from a physician or other qualified professional reflecting a diagnosis of the candidate's condition and explanation of exam aids or modifications needed. Please contact ASIC at 248.929.9842 with any questions concerning ADA arrangements.

## PREPARING FOR THE EXAM

Candidates must submit the completed application and appropriate fees 14 days in advance of the exam date. All certification programs are self-study. Education courses are not provided or required for the CPIC exam.

### Exam Specification Sheets

Exam specification sheets are available for the exam. Candidates will receive the appropriate sheet(s) when they apply and pay for the exam. They can also be found in the back of this handbook. The specification sheet provides information such as the number and type of questions; how long the candidate will have to complete the exam; what materials the candidate may bring to the exam; percentage of question categories; and recommended reference materials.

### Equation Sheets

The equation sheets will be provided, via email, after the candidate submits the completed application and appropriate fees.

### Suggested Reading List

Suggested reading lists for the exam are listed on the exam's specification sheet at the back of this handbook.

## EXAMINATION DAY

The confirmation letter will include the test date, time, and location. It will also include an exam specifications sheet indicating what the candidate may and may not bring to the exam. (e.g., calculator, engineer ruler, measuring wheels, etc.)

Candidates must present one form of identification ***that has a current photo with signature*** (driver's license or passport). Candidates should also bring their confirmation letter with them on testing day to be admitted to the test.

Any candidate who loses or does not receive a confirmation email after scheduling the exam should contact ASIC at 248.929.9842 or email [certification@asic.org](mailto:certification@asic.org).

It is recommended candidates arrive at the exam location at least 15 minutes prior to the exam starting time. The candidate may not bring books, papers, study aids, translation aids or other materials into the exam room. **Late arrivals will not be admitted to the room and will be considered "no shows."**

Each candidate will be provided scratch sheets and equation sheets.

### Policies During Exam Administration

A candidate who completes the exam must quietly leave the testing room after turning in all exam materials. The administrator will make sure that the candidate returns all materials. The administrator and candidate must sign across the seal on the exam envelope.

## EXAM SECURITY & CONFIDENTIALITY

### Code of Ethics

To obtain ASIC certification, the candidate must pass the certification exam administered by ASIC and agree to operate by the ASIC code of ethics and declaration on the application form.

## **Security Violations**

No spouses, children, parents, friends, or other outside parties are permitted near the testing room.

Any candidate who gives or receives help during the exam will be asked to leave and their exam will not be scored. Exam fees will not be refunded, and the candidate may be prohibited from taking future ASIC exams.

The performance of all candidates is monitored and may be analyzed to detect fraud. If there is a question about score validity or the identity of an exam candidate at any time after the exam administration, the ASIC Certification Committee will investigate and determine whether it is appropriate to void the exam score.

The ASIC Certification Committee maintains and adheres to a security policy, which is available to committee members and ASIC staff, for the administration of exams and maintenance of the certification program.

## **SCORING & RESULTS**

### **Scoring Process**

Exams are scored using a standardized process and may involve hand scoring exams to verify results and/or reviewing candidate comments.

Candidates are encouraged to use the comment forms that are available in each exam packet. Comments can be related to a specific question or equation, the administration of the exam or the exam site conditions. Comments that may affect whether a candidate passes or fails will be reviewed before the exam is scored. All comments will be reviewed by the Certification Committee at their regularly scheduled meetings.

### **Notification of Results**

Results will be reported for all exams in writing directly to the candidate at the address indicated on the exam registration form. Candidates will receive their results approximately 60 calendar days following the exam administration date. Results are reported as “pass” or “fail.”

Candidates who pass an exam and achieve certification will be notified of their passing status. They will receive an official ASIC CPIC Stamp.

Candidates who fail an exam will be provided with diagnostic information. The “analysis of performance” identifies the area(s) of knowledge in which the candidate’s performance is deficient and is intended to help the candidate better prepare before retaking the exam.

### **Appeal of Exam Results**

Candidates may request a verification of their score, which may involve hand scoring and/or a review by the Certification Committee. Any scoring alteration found because of an appeal of exam results will be applied to all candidates whose pass-fail status was affected; not just the candidate requesting the appeal. All requests must be made in writing within 30 calendar days of receiving exam results to ASIC by email ([certification@asic.org](mailto:certification@asic.org)).

### **Appeal of Exam Administration**

Testing conditions must be such that each candidate has an equal opportunity to be successful. Test sites should be comfortable, accessible, well-lit and free of distracting noise. Proctors should provide clear and uniform instructions and monitor testing conditions throughout the entire session. If conditions of the exam administration do not meet these standards, notify ASIC as soon as possible. Any special considerations made for

testing conditions that are deemed unacceptable because of an appeal will be applied to all candidates whose pass-fail status was affected.

## RESCHEDULING OR CANCELLING AN EXAM

### Rescheduling

Candidates have five business days prior to the exam date to reschedule by email. A rescheduling fee will be assessed.

### Cancellation Policy

A cancellation fee will be assessed to the candidate who fails to cancel a scheduled exam at least five business days before the exam date. Cancellations must be made by email to the attention of ASIC certification (certification@asic.org).

### Failure to Appear

If a candidate fails to appear for a scheduled exam, they will forfeit all fees. All fees will need to be paid again if the candidate decides to reschedule at a later date.

## RETAKE THE EXAM

No candidate will be allowed to retake an exam until 30 calendar days after notification of exam results. There is no refund for failed exams.

A candidate must resubmit their application for review after three years of non-activity in the certification process.

## LOGO USE

ASIC will provide a certification logo for use by certified individuals in good standing (current with certification fees and CEUs). This logo may be used on advertising and marketing materials, business signs, publications and business forms to promote the individual's certified status.

Certified professional marketing resources are the intellectual property of ASIC. Limited rights are granted to certified professionals in good standing to customize these materials for their own use. Contact ASIC for a list of authorized uses.

The certification logo is the exclusive property of ASIC. The certification logo may be used by certified professionals in good standing, as long as they comply with the certification logo conditions of use, provided as part of the logo artwork download.

Marketing resources and logos are provided only for certified professionals' own use. Sharing these files and use by all other individuals, corporations and entities is strictly prohibited without prior express written approval from ASIC.

## Certified Professionals Online Directory

ASIC will recognize certified individuals in the online certification directory on the ASIC website. The following information is publicly available on the ASIC website:

- Candidate name and certification
- Candidate contact information
- If the candidate is an ASIC member

## MAINTAINING YOUR CERTIFICATION

### Certification Renewal Fees

To maintain active status and enjoy associated benefits, a certified individual must pay an annual renewal fee for the designation and maintain the required continuing education units. The annual renewal fee is required commencing with the first year after certification and each year thereafter. The ASIC will send an annual renewal invoice by Oct. 15 with a return date of Dec. 31.

Renewal fees submitted and received after Dec. 31 will be subject to a late fee. Renewal fees are not refundable.

### Continuing Education Units Requirements

It is the candidate's responsibility to maintain and report CEUs. See chart at end of handbook for CEU categories.

All certified individuals must recertify every two years by earning and submitting 20 CEUs in one or more approved categories. **All CEUs must be earned during the current period and cannot be carried forward to future years.**

All certified individuals must retain written supporting CEU documentation for two years following the CEU submittal period. (Supporting documentation can be attendance sheets, course attendee rosters, program agendas, course schedules, a course syllabus, a copy of an article written, etc.) When possible, obtain signed documentation of your participation.

### Failure to Renew or Submit CEUs

A reminder will be emailed to certified individuals who are not current with their CEU submittals or renewal payments stating that their certification has been suspended until they submit the required CEUs and/or payments needed to renew their certification.

By May 1, a final notice will be mailed stating that if the individual does not submit the required CEUs and/or payments, their certification will be revoked on June 15.

Individuals who fail to renew will be given until June 14 to come into compliance with the program standards. After June 14, certified individuals are considered "lapsed" and must retake and pass the exam to regain certification.

Letters will be emailed to all those delinquent individuals, stating that their certification has been permanently revoked and they will need to retake the exam to regain certification.

Individuals will need to reapply and retake the exams at the full exam fee.

### Reporting of CEUs

The certified individual can submit CEUs at any time during the year. Submit CEU forms to the Certification Committee by email at [certification@asic.org](mailto:certification@asic.org). CEU submission forms can be found at [asic.org](http://asic.org)

## CEU Audits

At the end of each CEU cycle, random CEU audits may be conducted by the Certification Committee.

Audited individuals must respond within 60 calendar days of notification. Status letters from the ASIC Certification Committee will be emailed upon completion of the audit. There are two possible Certification Committee responses:

- The individual is in compliance and no action is required.
- The individual is not in compliance and will be given 45 calendar days from the date of his or her status letter to take corrective action.

Status letter will be mailed via certified mail.

For those people who do not respond to the initial request, second notices will be mailed requiring a signature receipt. These individuals will have an additional 15 calendar days to respond to the request for documentation. There are two possible Certification Committee responses:

- Documentation is received, and the individual is in compliance and no action is required.
- Documentation is received and the individual is not in compliance and will be given 45 calendar days from the date of their letter to take corrective action.

For those individuals who don't respond to either requests for documentation or the corrective action letter, their certifications will be immediately revoked. This letter will be sent via certified mail to the individual requiring a signature receipt. These individuals will need to retake the certification exam at full price.

## CEU Audit Reinstatement Policy

Any person who was audited but did not respond to the request for documentation or deficiency letter, but submits documentation within 30 calendar days of the revocation letter receipt may be reinstated to the program. This late submittal needs to be complete and have no deficiencies to be accepted. A late submittal fee will be required for processing. If there are deficiencies in the submission and the individual ends up with less than the required CEUs for certification renewal, they will lose their certification. These individuals will need to retake the exam to become certified again. A determination letter will be sent via certified mail.

## Certification Reinstatement

Individuals who have lapsed certifications may be eligible to apply for one of the reinstatement procedures. Individuals may only apply for reinstatement once in a lifetime under this policy. Professionals who have let their ASIC certification lapse for more than four years are NOT eligible for reinstatement. Likewise, individuals who have lost their certifications due to disciplinary actions implemented by the Certification Committee cannot apply for reinstatement under this policy.

Forward the required information, along with payment and completed application form to ASIC. All reinstatement application payments will be processed upon receipt. If the application is not approved, payment, less the nonrefundable reinstatement fee, will be returned.

The Certification Reinstatement Application can be found at [asic.org](http://asic.org)

The Committee reserves the right to grant or deny a request for reinstatement based on merits of the case. If approved, the candidate will receive a new certificate with a date as approved by the Committee.

## Reinstatement of Credentials Lapsed Less Than Two Years

The individual must to complete the reinstatement application, which will require:

- a cover letter explaining why the lapse occurred, all supporting documentation and verification of former certification.
- payment of all past unpaid renewal fees and/or current year's unpaid fees (including late fees) in full.
- payment of \$250 nonrefundable reinstatement fee.
- documentation of CEU activity, e.g., certificates of attendance, transcripts, etc. (averaging 10 CEUs per year).

### **Reinstatement of Credentials Lapsed More Than Two Years, But Less Than Four Years**

Any certified professional whose certifications have lapsed more than two years ago but less than four years can apply for reinstatement and will be considered on an individual basis.

Requests for reinstatement of such Individuals are only granted under the most extenuating circumstances.

Letters of request for reinstatement must include:

- a detailed description of continued involvement in the irrigation field.
- three references including contact information.
- documentation that supports the request (such as medical documentation, transcripts, etc.)

Certification reinstatement, if approved, will be retroactive to the original date of certification, and the CEU cycle and requirements will remain unchanged.

ASIC will confirm receipt of the reinstatement application within five business days. The ASIC Certification Committee response to application may take up to 60 days.

## **COMPLAINT & DISCIPLINE POLICY**

ASIC Certification Committee is responsible for implementing disciplinary policies and procedures.

Grounds for disciplinary action include, but are not limited to:

- evidence of falsification of information provided on documents submitted to ASIC or its agents.
- cheating on certification exams.
- evidence of noncompliance with the code of ethics.
- evidence of improper use of ASIC certification status, logos and/or acronyms.

The Committee has established policies and procedures to fairly and consistently address alleged violations. Disciplinary procedures are designed to ensure that valid and actionable complaints are investigated and considered, and that all parties involved in the complaint have an opportunity to document circumstances warranting the complaint and to respond to the complaint.

All complaints will be reviewed by the ASIC Certification Committee. The Committee will acknowledge receipt of complaint within 14 calendar days. If the complaint can be verified and resolved without further documentation or investigation, the Committee will respond via email to all involved parties, and the complaint will be closed.

If the complaint requires additional information, the complainant will be required to submit a signed complaint form with supporting documents within 30 calendar days of request for further actions to be considered. Upon receipt and review of the complaint form and supporting documentation, the Committee may inform, in writing, the accused and/or complainant of the official opening of an investigation. The Committee will acknowledge receipt of the complaint form and supporting documentation within 14 calendar days. The accused will have the



opportunity to respond to the complaint made against them within 30 calendar days of notification of the investigation.

After all information is received, the Committee will investigate the infraction and determine a course of action, which may include but is not limited to revocation of certification. The accused, who may be in danger of revocation of their status or suspension of their eligibility, will be notified of this pending action via certified mail.

Following the investigation, the Committee will inform the accused of the decision in writing. The complainant will be notified in writing that a decision was reached. If disciplinary action is imposed, the accused may submit an appeal of the decision to the Committee. This appeal must be submitted in writing to the Committee. The accused will have 30 calendar days from receipt of the letter to appeal the decision. The signed appeal must be submitted in writing and clearly state the grounds for appeal.

## **Appeals Process**

Any individual who believes that they have been or will be adversely affected by disciplinary action as a result of a decision made by the Committee shall have the right to appeal. If such person wants to proceed with an appeal, they are instructed to file a signed written appeal via certified mail to the Committee within 30 calendar days of the date of notification of action.

## **Complaint**

The appeal submitted by the appellant shall include

1. the nature of the objection(s) including any adverse effects.
2. actions or inactions that are at issue.
3. the specific remedial action(s) that would satisfy the appellant's concerns.
4. previous efforts to resolve the objection(s) and the outcome of each response.

Within 30 calendar days after the receipt of the appeal, the Committee chair will respond in writing to the appellant regarding the allegation(s).

## **Hearing**

If the appellant and the Committee are unable to resolve the written complaint, the Committee will schedule a hearing with a date agreeable to all participants. Any costs for the hearing will be the burden of the appellant.

## **Conduct of Hearing**

The appellant has the burden of demonstrating adverse effects, improper actions or inaction, and the efficacy of the recommended disciplinary action. The Committee has the burden of demonstrating that all its actions are in compliance with the Committee disciplinary procedures. Robert's Rules of Order Newly Revised shall apply to questions of parliamentary procedures for the hearing not covered herein. This hearing may be conducted via a meeting or conference call.

## **Decision/Resolution**

The ASIC Certification Committee chair shall render its decision in writing within 30 calendar days of the hearing, stating the findings of fact and conclusions, with reasons therefore, based on a preponderance of the evidence. In formulating its decision, the Committee may consider positions, among others, including:

- finding for the appellant remanding the action to the Committee with a specific statement of the issues and facts regarding which fair and equitable action was not taken.
- finding for respondent, with a specific statement of the facts that demonstrate fair and equitable treatment of the appellant and the appellant's objections.

- finding that new, substantive evidence has been introduced, and remanding the entire action to the Committee for appropriate reconsideration.

The decision of the ASIC Certification Committee is final.

The Certification Complaint Form can be found at [asic.org](http://asic.org).

## EXAM FEES

### Step1: Application

Fees: None

### Step 2: Certified Professional Irrigation Consultant Exam

ASIC Member Fee:	\$600
Non-Member Fee:	\$1,000
ASIC Member Retake Fee:	\$400
Non-Member Retake Fee:	\$800

### Renewal Fees (Annual):

ASIC Member:	\$75
Non-Member:	\$150
Late Fee:	\$50

### Additional Fees:

Cancellation/Rescheduling fee (within 5 calendar days of exam):

ASIC Member:	\$100
Non-Member:	\$150

No-Show Fees:

ASIC Member:	Exam fee (No Refund)
Non-Member:	Exam fee (No Refund)

### Refund Policy:

Upon request, refunds will be given to candidates within 30 calendar days of registering for the exam minus a \$75 administration fee.

## Continuing Education Unit Requirements

### Qualifying Continuing Education Units (Beginning January 1, 2024)

CEUs will be required in two-year cycles. CEU cycles will begin the first day of the calendar year after the certification is achieved.

All certified professionals must submit 20 continuing education units per two-year cycle to remain in good standing.

A minimum of four (4) CEUs per cycle must be in the business development category.

## Continuing Education Unit Categories

### Definition of Education Levels

#### Category 1: Leadership roles

1 CEU per hour of service as ASIC Board of Directors  
10 CEU cap per cycle

1 CEU per hour of service as allied Board of Directors  
5 CEU cap per cycle

.5 CEU per hour of service as ASIC Committee Chair or Co-Chair  
5 CEU cap per cycle

.5 CEU per hour of service as allied committee Chair or Co-chair  
3 CEU cap per cycle

#### Category 2 : Publications

2 CEUs per article / chapter / paper  
4 CEU cap per cycle

#### Category 3: Training

##### Level 1

ASIC conference – 1 CEU per hour for irrigation and/or business development

ASIC Level 1 Training – 1 CEU per for of irrigation and/or business development training

##### Level 2

ASIC Level 2 Training – 1 CEU per hour of irrigation and/or business development  
5 CEU CAP per cycle

Allied conference educational training - .5 CEU per hour  
5 CEU CAP per cycle

#### Category 4: Presentations

##### Level 1

ASIC conference – 4 CEU per 1 hour presentation, ½ hour minimum session

##### Level 2

Allied conference – 2 CEU per 1 hour presentation, ½ hour minimum session, 4 CEU cap

## **Certification Program Examination**

### **Step 2: Certified Professional Irrigation Consultant Exam Specification Sheet**

#### **Specifications/Supplemental Materials**

100 Questions – Multiple Choice – Equally Weighted

3 hours allotted time

Calculator\*

#2 Pencils

#### **Passing Score:**

Individual forms of the exam contain different blends of questions for a variety of reasons, including maintaining security of the program.

Determining the equivalence of various forms of the exam involves statistical analyses of the relative difficulty of each question. This process yields a pass / fail score that is dependent on the questions comprising the individual exam.

For this reason, the passing score of the CPIC exam is not announced prior to its administration. Depending on the exam, the passing score typically ranges between 70-75%.

*\*Programmable calculators may be used as long as they are silent, battery-operated and a nonprinting model. Smartphones, tablets, smart watches, pagers, personal digital assistants, or other electronic devices are NOT approved for use on the exam.*

*An equation sheet will be provided when applicants register for the exam. Equation sheets are available in the appendix section of this handbook. A copy of the same equation sheet will be provided in the examination packet.*

## **Certification Program Examination**

### **Step 2: Certified Professional Irrigation Consultant Exam**

#### **Suggested Reading Materials**

ASIC/IA Best Management Practices

Irrigation, 6<sup>th</sup> Edition (published by IA)

National Electric Code

OSHA Trenching and Excavation Safety (published by OSHA)

OSHA Construction – Pocket Guide

CIC Guide

CSI Practical Guide

Specs: The Good, the Bad and the Ugly (ASIC Handout)

Construction Contracting: A Practical Guide to Company Management

Golf Course Irrigation: Environmental Design and Management Practices

CSI Construction Contract Administration Practice Guide (13.13)

CSI Project Delivery Practice Guide

Universal Plumbing Code, UPC, Sections 1502.3 and 1505.5

American Public Works Association, APWA ([www.apwa.net/library/resources](http://www.apwa.net/library/resources))

Water Hammer & Pressure Surges in PVC System

Understanding Pumps, Controls and Wells (published by IA) (Current version now called Pumps and Pumping Systems)

EPA Manual of non-public water systems

Turf Irrigation Manual: The Complete Guide to Landscape Irrigation (Choate)

AIA Contract Documents

CSI and AIA Definitions

## Certified Professional Irrigation Consultant

### Step 2: Certified Professional Irrigation Consultant Exam

#### DETAILED CONTENT OUTLINE

##### A. Construction Documents (8-10%)

1. Design Drawings
2. Installation Details
3. Specifications
4. Standards
5. Operation and maintenance guidelines
6. RFQ and bid forms
7. Bill of materials

##### B. Bidding Administration (10-12%)

1. RFI/Addendum
2. Bid evaluation
3. Contract review
4. Value engineering
5. Submittal review

##### C. Construction Observation (17-21%)

1. Staking
2. Site observation
3. Site visit reports

4. Final approval
5. As built review
6. Record drawings
7. System programming
8. System commissioning
9. Pay application approvals

**D. Master Planning (22-28%)**

1. Site evaluation
2. Bubble diagrams
3. Product standards
4. Hydraulic zoning
5. Flow analysis
6. Volumetric analysis
7. Historic reference ET rate curve
8. Phasing strategies
9. Code compliance

10. Utility coordination
11. Design guidelines

**E. System Management (11-13%)**

1. Soil moisture monitoring
2. Environmental sensor monitoring
3. Drought response strategies
4. Data interpretation
5. Irrigation scheduling
6. Performance analysis

**F. Existing System Evaluation (13-15%)**

1. Auditing and uniformity
2. Equipment analysis
3. Water source analysis
4. Hydraulic analysis
5. Electrical analysis
6. Findings and presentation

**G. Business Management (9-11%)**

1. Insurance requirements
2. Client contract development
3. Project management
4. Professional development