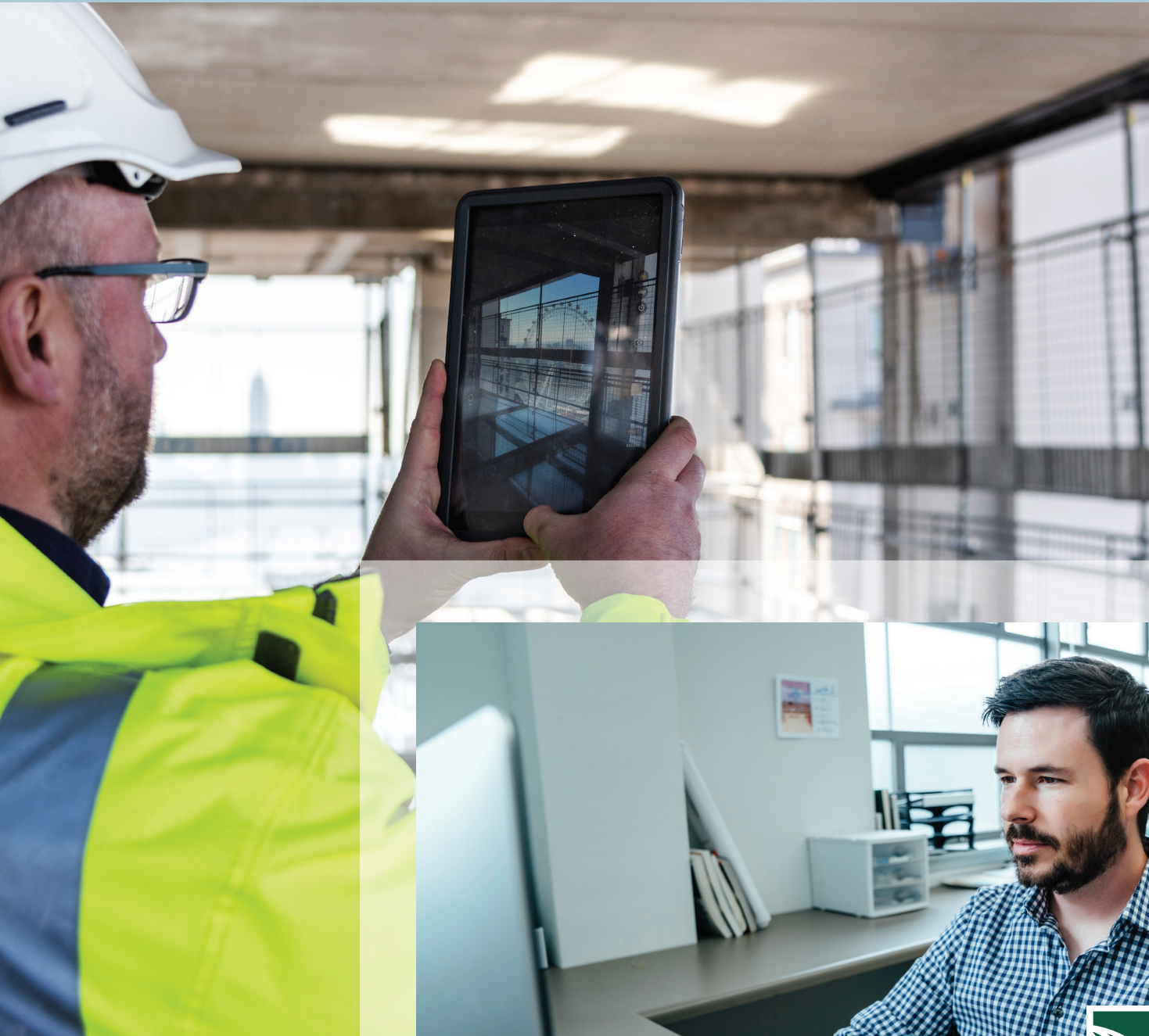


Recommended Practices for Remote Virtual Inspections (RVI)



Recommended Practices for Remote Virtual Inspections (RVI)

First Printing: May 2020

ISBN: 978-1-952468-23-0

COPYRIGHT © 2020
by
INTERNATIONAL CODE COUNCIL, INC.

ALL RIGHTS RESERVED. This publication is a copyrighted work owned by the International Code Council, Inc. ("ICC"). Without advance written permission from the ICC, no part of this publication may be reproduced, distributed or transmitted in any form or by any means, including, without limitation, electronic, optical or mechanical means (by way of example and not limitation, photocopying, or recording by or in an information storage and retrieval system). For information on use rights and permissions, please contact: ICC Publications, 4051 Flossmoor Road, Country Club Hills, Illinois 60478. Phone: 1-888-ICC-SAFE (422-7233).

The information contained in this document is believed to be accurate; however, it is being provided for informational purposes only and is intended for use only as a reference for recommended practices. Publication of this document by the ICC should not be construed as the ICC engaging in or rendering engineering, legal or other professional services. Use of the information contained in this publication should not be considered by the user as a substitute for the advice of a registered professional engineer, attorney or other professional. If such advice is required, it should be sought through the services of a registered professional engineer, licensed attorney or other professional. This Recommended Practices document does not intend to overrule national building codes or local practices, but to provide a reference for minimum levels of quality to safeguard health, property and general welfare.

Trademarks: "International Code Council," the "International Code Council" logo, "ICC," the "ICC" logo and other names and trademarks appearing in this book are registered trademarks of the International Code Council, Inc., and/or its licensors (as applicable), and may not be used without permission. Errata on various ICC publications may be available at www.iccsafe.org/errata.

PRINTED IN THE USA

Table of Contents

Preface	1
About the International Code Council®	2
1.0 Introduction	3
Purpose and Scope	3
2.0 Definitions and Acronyms	3
3.0 Remote Virtual Inspection Process	3
AHJ: Scheduling Remote Virtual Inspection	4
Customer: Scheduling Remote Virtual Inspection	5
Customer: Prepare for Remote Virtual Inspection	5
Prepare to Receive Remote Virtual Inspection Call	6
What to Expect During the Inspection	7
Inspection Results	7
Maintaining Records of Inspections	8
4.0 Training and Communication	8
Staff Training	8
Customer/Applicant	9
Additional Considerations	9
5.0 Appendix A (Examples of Potential Activities)	10

Preface

Technological advances have created enormous possibilities in all aspects of life, including the building construction and safety industry. Digital and online tools for building design, construction and administrative functions, such as permit application, plan review, inspection and commissioning, have drastically increased the efficiency and accuracy of achieving safe and resilient communities. Local, state and national governments have taken advantage of advancing technologies and have incorporated various levels of digitization into their processes in order to save time and reduce costs. Examples of such efforts include online offering of permit applications, payment of permit fees, submittal of plans and digital plan review.

The speed of adoption and implementation of technology, however, varies by geographic region and depends on a number of factors, including the availability of financial resources and the infrastructure needed to support the technology. Many Authorities Having Jurisdiction (AHJs) have implemented technology at various levels with good success and have embraced greater reliance on digitization as time goes by.

The 2020 global coronavirus pandemic created an impetus in speeding the implementation of modern technologies and taking advantage of new ideas in a much shorter time frame. The spread of COVID-19 and the closing of most businesses and social activities in many parts of the world to create social distancing resulted in many sectors of the economy searching to find new solutions for conducting business.

Many AHJs needed to come up with solutions to perform all aspects of codes and standards administration from remote locations and/or home offices. One such solution using available technology is Remote Virtual Inspections (RVI).

RVI is a method of inspection that allows the needed inspections to proceed in a timely manner by the owner or contractor located on the jobsite and the inspector or inspection teams performing the inspection remotely. While this practice gained good acceptance and implementation during the weeks and months of COVID-19 social distancing, its advantages are so great that it will likely become a popular and routine tool for the foreseeable future.



The advantages and opportunities created by RVI locally, nationally and globally are enormous, allowing those with technical expertise in their specific subjects to offer their services across the globe. Building code specialists, inspectors and consultants will be able to provide services and consulting from far distances and to help building safety and resiliency anywhere needed at the local, national or global level.

Recommended Practices for Remote Virtual Inspections (RVI) was developed based on study, research, and discussions related to items that should be considered and addressed for an effective and consistent RVI program and to assist AHJs in implementing the readily available technologies in the adoption and implementation of their own RVI program.

ICC welcomes your comments and feedback to improve future editions of this Recommended Practices publication. Submit feedback at www.iccsafe.org/RVI.

About the International Code Council®

The International Code Council is a nonprofit association that provides a wide range of building safety solutions including product evaluation, accreditation, certification, codification and training. It develops model codes and standards used worldwide to construct safe, sustainable, affordable and resilient structures. The mission of the Code Council is to provide the highest quality codes, standards, products and services for all concerned with the safety and performance of the built environment. ICC Evaluation Service (ICC-ES) is the industry leader in performing technical evaluations for code compliance fostering safe and sustainable design and construction.

Government Affairs Office:

500 New Jersey Avenue, NW, 6th Floor
Washington, DC 20001-2070

Regional Offices:

- Eastern Regional Office (BIR)
- Central Regional Office (CH)
- Western Regional Office (LA)
- Distribution Center (Lenexa, KS)

888-ICC-SAFE (888-422-7233)

www.iccsafe.org

Family of Solutions:



1.0 Introduction

Hand-held devices such as smartphones and tablets have capabilities for real time, online communication of videos and photos. Use of advanced tools and technologies, combined with the power of such hand-held devices, has made it possible for anyone to observe the construction activities of a jobsite from any location, near or thousands of miles away. Using Remote Virtual Inspection (RVI) allows construction projects to continue without impediment and allows the Authority Having Jurisdiction (AHJ) to continue to provide the vital services needed for construction of safe buildings.

Purpose and Scope

The purpose and scope of these Recommended Practices is to provide guidance to the Authority Having Jurisdiction (AHJ) when implementing a Remote Virtual Inspection (RVI) program as well as to the construction industry user. This document specifically addresses implementation and administration of RVI. These procedures are organized in a fashion that can be readily implemented by the AHJ as part of their inspection procedures. This document also provides recommended practices to construction industry professionals submitting to an RVI.

Until recently, Remote Virtual Inspections have been conducted only by a few AHJs at varying levels. As a result, there has not been a standardized program that addresses how to prepare for, conduct and participate in these types of inspections.

2.0 Definitions and Acronyms

1. **RVI: Remote Virtual Inspection:** Remote Virtual Inspection, also known as RVI, is a form of visual inspection which uses visual or electronic aids to allow an inspector or team of inspectors to observe products and/or materials from a distance because the objects are inaccessible or are in dangerous environments, or whereby circumstances or conditions prevent an in-person inspection.
2. **AHJ: Authority Having Jurisdiction.**

3.0 Remote Virtual Inspection Process

Remote Virtual Inspections (RVI) may provide benefits to AHJs and customers alike. In certain circumstances, an RVI may provide a better quality inspection with an increase in efficiency and cost savings. It will increase the efficiency of the inspection process utilizing modern technology. Depending on the loca-



tion and complexity of a project, some limitations may impact its use. In cases where an RVI is not suitable or technology fails to provide sufficient visual clarity (i.e., poor/no service or Wi-Fi, poor lighting, etc.), an onsite inspection may be required. Subject to local approval, the AHJ may choose to use an approved third-party inspection agency or utilize staff inspectors. Where Wi-Fi and/or cellular reception are poor or not available, some AHJs may consider allowing the contractor to provide an acceptable electronic documentation of the area that needs an inspection for review by the assigned inspector or team of inspectors.

A clear understanding of the RVI requirements and communication throughout the process by both parties is paramount to the completion of a successful inspection. The inspector will check all aspects of the permitted construction project to the adopted codes and other applicable laws and regulations no differently than if it were an onsite inspection. Identification of the project jobsite location, posted address and its location within the building will be a critical part of the process.

The applicable Codes and Standards to be used for RVI are the same as the adopted codes and referenced standards of the AHJ. The implementation of the RVI is intended to achieve the same results as the typical in-person site inspection by applying the provisions of adopted codes such as the IBC®, IRC®, IPC®, IFC® and other applicable and adopted International Codes.

AHJ: Scheduling Remote Virtual Inspection

1. Schedule Inspection Time.
 - 1.1. All remote inspections should be scheduled a minimum of one business day prior to the requested date.
 - 1.2. Schedule inspection either online or by telephone.
 - 1.3. Schedule sufficient time for the type of inspection requested.
 - 1.4. AHJ to send an inspection confirmation email or text to the customer with the date, approximate time of RVI and name of inspector.
2. Time slots for inspections.
 - 2.1. Anticipated length of inspections per type (i.e., water heater installation, HVAC replacement, etc.) needs to be established.
 - 2.2. Each customer will be given an approximate time window for inspection.
3. Post the earliest available time for remote inspections and the latest time of the day a remote inspection may be scheduled Monday through Friday or other days selected by the AHJ.
4. Schedule after-hours or emergency inspections on a case-by-case basis.
5. Determine the types of inspections allowed for remote inspections. See Appendix A for examples of qualified inspection activities.
 - 5.1. All inspections may qualify for an RVI, depending on the AHJ's resources and policies.
6. Determine which type of videotelephony is available for use and is compatible with the AHJ's permitting software and videotelephony equipment.
 - 6.1. Videotelephony platform examples: FaceTime, Google Duo, Zoom, WhatsApp, Skype, Tango, WebEx, Microsoft Teams, GoToMeeting, etc.

Customer: Scheduling Remote Virtual Inspection

1. Ensure there is an active permit issued or certificate application filed or obtain the appropriate one prior to attempting to schedule an inspection for the project in question.
2. Electronically sign a notice indicating that the permit holder of record or representative:
 - 2.1. Consents to the use of the remote inspections.
 - 2.2. Is responsible for their own safety during the remote inspection.
 - 2.3. Allows the complete use of the videos and photos of the remote inspection by the AHJ.
 - 2.4. Certifies they are making available the site and inspection items truthfully and to the best of their ability.
 - 2.5. Is responsible for compliance with all codes and standards applicable to the project.
 - 2.6. Acknowledges that participation in the remote inspection program is voluntary (if not a mandatory program within the AHJ's jurisdiction).
 - 2.7. Acknowledges that the decision to perform an RVI is at the sole discretion of the AHJ.
3. Prior to scheduling the inspection, confirm that the minimum criteria for a remote inspection are met. See Appendix A for examples of qualified inspection activities.
 - 3.1. Note that some types of inspections may be too complex or otherwise not compatible for remote inspections.
4. Call to schedule an appointment with the AHJ.
5. Must be at least 18 years old or with an adult to perform the video inspection.
6. When scheduling the inspection, provide the address, permit number, and type and number of requested inspections.

Customer: Prepare for Remote Virtual Inspection

1. Prior to the inspection, ensure that:
 - 1.1. The jobsite is safe at all times for the individual(s) using the device during the remote inspection including health safety.
 - 1.2. The device (smartphone, tablet, drone, etc.) is fully charged and has a suitably charged additional power supply (battery pack).
 - 1.3. The use of a noise-canceling headset is recommended.
 - 1.4. The jobsite has high-speed Wi-Fi connectivity or minimum 4G cellular service with a strong signal.



- 1.5. The necessary tools based on type of inspection are readily available.
 - 1.5.1. For example, carry a flashlight, tape measure, level, step ladder (for close ups of ceiling), GFCI tester, etc. An extending pole for the video device, such as selfie pole, may be very helpful in taking the smartphone or other video device closer to the point of inspection in various places such as very high ceilings.
2. Have approved plans, permit card, and other necessary construction documents available onsite.
3. Make sure good lighting is available and clear the area of any unnecessary objects.
4. All features applicable to the required inspection must be visible at the time of the remote inspection. These features must be captured sufficiently and clearly for the inspector to evaluate.
5. If at any point the inspector believes that the remote inspection process is not allowing them to properly assess compliance, they may require that a site inspection be conducted at a future date or instruct the customer to make different arrangements.
 - 5.1. In areas within the jobsite where there is no Wi-Fi or cell service, at the sole discretion of the inspector, the contractor may be allowed to provide video and/or photographic documentation of the item(s) to be inspected for review by the authorized inspector at a later time.
6. The onsite inspection may be conducted by an approved third-party inspection agency or by the AHJ's inspection staff.

Prepare to Receive Remote Virtual Inspection Call

1. Ensure that the lens and screen of any device being used to capture images or video has been cleaned. Dust, grit, smudges, etc., might interfere with the image quality and distorting the inspector's view.
2. To minimize interruptions during the RVI and to ensure that the video feed will be uninterrupted, make sure that all notifications are turned off in the Settings of the mobile device used for the RVI. Should the video be interrupted, the inspection could be delayed or have to be rescheduled.
3. Be prepared to answer the inspector's call at any time during the scheduled timeframe. Be cooperative and closely follow the inspector's instructions.
4. As each site and inspection is different, allot the proper amount of time for the type of inspection and accessibility of the site.
5. Carefully follow the inspector's instructions for where to direct the device and for covering the site. Do not rush the inspector but allow him or her adequate time to conduct the RVI to his or her satisfaction.
6. As much as possible, minimize background noise as that can interfere with communication with the inspector.

What to Expect During the Inspection

1. Begin inspection at the street view looking at the structure with the address or other required jobsite identification in the video display.
 - 1.1. Inspector may also verify location through GPS/Geotagging where the service is available.
2. Follow the directions of the inspector with respect to the order and direction of inspection.
3. As the inspection progresses, write down any items that the inspector finds that need to be corrected. Be sure the notes are detailed and ask questions of or seek clarification from the inspector at the time of the RVI.
4. If provided a permit card, do not write on it. During the next in-person visit, the inspector should update it then.
5. In most cases, the inspector will relay the results of the inspection before the end of the RVI of passing, failing or not ready for inspection.
6. Do not cover any work needing corrections until corrections are verified by reinspection. Reinspection fees may apply in accordance with the AHJ's policies.
7. Note: At a minimum, there must be an adult of the required legal age on site who will represent the owner/representative during the entire duration of the RVI.
8. The owner/representative must be able to verbally communicate with the remote inspector at all times during the inspection.

Inspection Results

1. Results of the inspection will be entered into the AHJ's permit database as soon as practicable after the RVI is completed. It is important to note that the inspection was completed using the RVI process.
2. Where an approval tag for utility connections is required, the AHJ should work directly with the utility company.
3. Following the inspection:
 - 3.1. Inspection comments will be available on the AHJ's website, within the AHJ's normal timelines, indicating passing or failing with the list of corrections when applicable.
 - 3.2. In addition, the inspector may email the inspection information upon request to the customer as soon as inspection information is available.
 - 3.3. The inspector will determine whether additional fee(s) for reinspection is required.
4. Scheduling a reinspection or the next inspection needed is based on availability of time slots.
5. The authorized inspector may provide an option for the owner/representative to submit electronic documentation that a deficiency or deficiencies have been corrected.
6. It is incumbent on the owner/representative to provide the address and permit number on all submitted correspondence or communications.

Maintaining Records of Inspections

Required inspection records, including, but not limited to, correction notices, electronic media, recordings or photo documentation, shall be maintained in accordance with the AHJ's policy, laws, regulations, and applicable codes, and may be subject to disclosure.

4.0 Training and Communication

Training and effective communication of processes, procedures and requirements are essential and a critical part to the success of any program. This program is no different as it lends itself to new technology, new programs, and methods that are in many cases, new to the building construction and safety industry. Therefore, training of the AHJ's staff as well as the building industry on the various programs and procedures will save time and money and make the administrative and enforcement process a positive experience with minimal confusion. Training also leads to better communications between an AHJ and its customers.



Staff Training

1. Ensure all staff are trained in the appropriate areas of responsibility.
2. Permit Technicians:
 - 2.1. Review of approved permit applications relative to RVI requirements.
 - 2.2. Required departmental approvals are complete.
 - 2.3. Fee collection process.
 - 2.4. Required documents for the project (plans, calculations, etc.).
3. Remote Inspection Staff:
 - 3.1. Inspection software and hardware.
 - 3.2. Remote inspection procedures.
 - 3.3. Types of platforms used (Facetime, Skype, etc.).
 - 3.4. Reinspection fee procedures.
 - 3.5. Recording inspection results in permit tracking system.

Customer/Applicant

1. Ensure the owner and representative are trained in their areas of responsibility.
2. Permit applicant:
 - 2.1. Knowledge of the AHJ's departmental approvals required for the project.
 - 2.2. Knowledge of the AHJ's RVI protocol.
 - 2.3. Ensuring project meets RVI protocol.
 - 2.4. Ensure that the project is ready for the RVI at the scheduled time.
 - 2.5. Comply with the inspector's direction.
3. Owner/Contractor/Subcontractor:
 - 3.1. Requesting remote inspection process.
 - 3.2. Knowledge of remote inspections procedures.
 - 3.3. Platform required (Facetime, Skype, Google Duo, etc.).
 - 3.4. Jobsite communication requirements (Wi-Fi, 4G, etc.).
 - 3.5. Communication skills.

Additional Considerations

1. Adopt basic online security practices. Consult with your IT department for guidance.
2. Consult with your legal counsel to ensure compliance with all federal, state and local requirements related to your RVI program. For example, you may want to consult counsel to find out whether a homeowner's release is needed to conduct an RVI.
3. Ensure that all staff have access to the codes and standards that are applicable to what they are inspecting. The Code Council's Digital Codes Library (<https://codes.iccsafe.org/>) offers online access to all ICC model codes and standards and most state codes.
4. Document lessons learned to improve your RVI program and to support potential long-term establishment of virtual inspection processes.

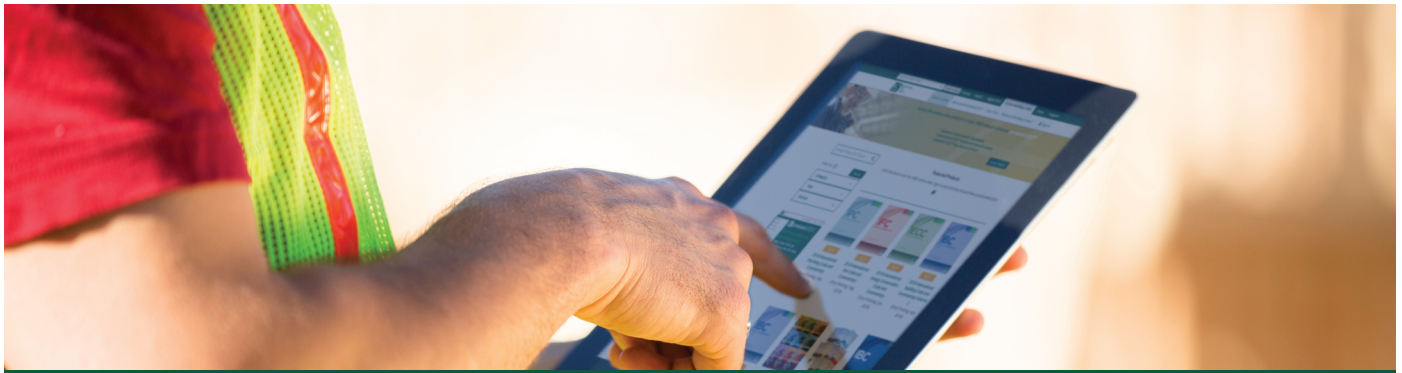


5.0 Appendix A (Examples of Potential Activities)

The following are a few examples of construction activities that may be considered to be included in a RVI Program. This list is not all-inclusive. The determination of whether an inspection can be conducted remotely is at the sole discretion of the AHJ.

- Plumbing system repairs or fixture replacements.
- Construction trailer installations.
- Swimming pool excavations.
- Gas line repairs or gas utility clearance.
- Electric utility clearances.
- HVAC direct replacement or repair.
- Minor residential electrical.
- Miscellaneous repair/exterior repair or upgrades (stucco, windows, etc.).
- Re-roofing/roof covering replacement.
- Water heater or water softener direct replacement.
- New residential plumbing rough-in.
- New residential rough framing inspections.
- Residential rooftop-mounted photovoltaic panel systems.
- HUD manufactured home installation verification.
- Any other inspection approved by the AHJ.

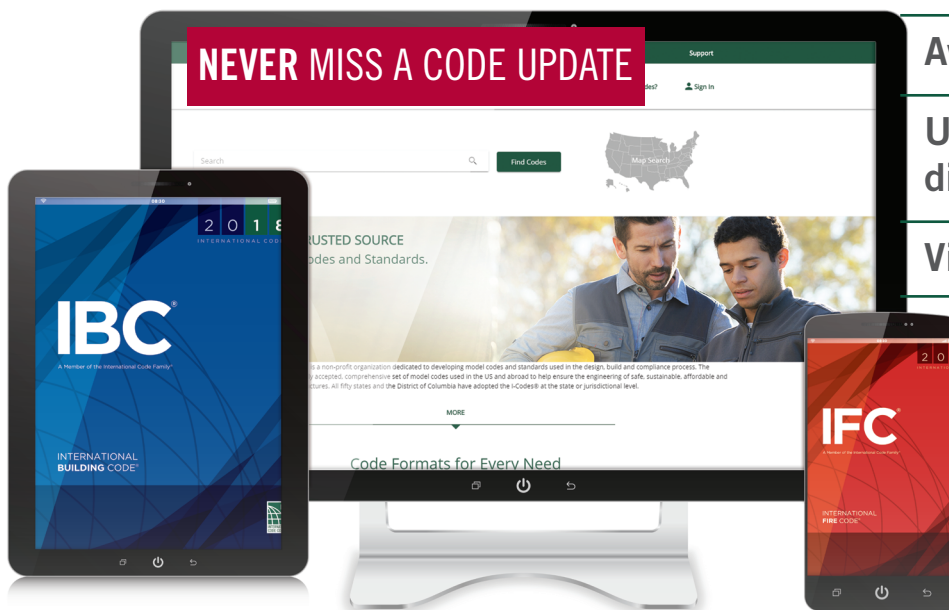




People Helping People Build a Safer World®

Get **FREE** access to hundreds of ICC resources and view the largest collection of code titles

ICC's Digital Codes Library (codes.iccsafe.org) conveniently provides access to the latest code text while on the go, at home or in the office, in an easy-to-navigate format.



Available anywhere 24/7

Use on any mobile or digital device

View over 800+ ICC titles

Learn how to use this powerful tool at codes.iccsafe.org

Recommended Practices for Remote Virtual Inspections (RVI)

Recommended Practices for Remote Virtual Inspections (RVI) is the most complete source of information on remote inspections. RVI is an alternative to on-site inspections using a video call on a 4G or WiFi telephony (smartphone, tablet, etc.) in order to interact with the inspector. It is a comprehensive tool for local jurisdictions and the building industry alike that desire to implement a remote inspection program.

This publication covers the RVI process, inspection scheduling, preparation, what the owner/contractor should expect, training and communications, and recording and maintaining records. While all types of inspections may not be suitable for RVI, a list of potential construction activities suitable for remote inspections is provided.

RVI also lends itself to connect seamlessly as part of an overall online program that will allow jurisdictions to provide complete services to the public utilizing the latest technology. Online permitting and electronic plan review, together with remote virtual inspections, can provide a complete program that keeps the construction industry moving while providing a healthy environment for all participants.

ISBN 978-1-952468-23-0



Item No. 7072S1



ICC FAMILY OF SOLUTIONS

Evaluation Service • Accreditation Service • General Code
S. K. Ghosh Associates • ANCR • NTA • Certification
Digital Code Library • Membership • Plan Review • Publications

www.iccsafe.org • 1-888-ICC-SAFE (422-7233)